

# What Is Open Access?

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## Introduction

To further the development of knowledge, scholars require access to relevant scholarly literature. Increasingly, this literature is interdisciplinary, global, expensive, digital, and hidden behind technical walls to comply with license restrictions. It is also burgeoning.

Little wonder that even scholars at the richest universities in the world have difficulty accessing the specialized literature that they need, while those at the poorest barely have any access at all.

What can be done? The open access movement believes it has an answer to this critical question. Many of its prominent figures have little or no interest in reforming the existing scholarly communication system. Rather, they are interested in transforming it so that it can function effectively in the rapidly changing technological environment.<sup>1</sup>

## "Open Access" Defined

There are a variety of definitions of "open access," and the concept is still evolving; however, several key documents, which build upon each other, collectively comprise the best current definition of this term.

## The Budapest Open Access Initiative

In December 2001, the Open Society Institute convened a meeting of prominent scholarly communication change agents in Budapest that strongly influenced the nascent open access movement. The result of this meeting was the "Budapest Open Access Initiative" (BOAI). Its definition of open access (OA), while refined by subsequent documents, remains the most influential one to this day:

The literature that should be freely accessible online is that which scholars give to the world without expectation of payment. Primarily, this category encompasses their peer-reviewed journal articles, but it also includes any unreviewed preprints that they might wish to put online for comment or to alert colleagues to important research findings. There are many degrees and kinds of wider and easier access to this literature. By "open access" to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. . . .

To achieve open access to scholarly journal literature, we recommend two complementary strategies.

I. Self-Archiving: First, scholars need the tools and assistance to deposit their refereed journal articles in open electronic archives, a practice commonly called, self-archiving. When these archives conform to standards created by the Open Archives Initiative, then search engines and other tools can treat the separate archives as one. Users then need not know which archives exist or where they are located in order to find and make use of their contents.

II. Open-access Journals: Second, scholars need the means to launch a new generation of journals committed to open access, and to help existing journals that elect to make the transition to open access. Because journal articles should be disseminated as widely as possible, these new journals will no longer invoke copyright to restrict access to and use of the material they publish. Instead they will use copyright and other tools to ensure permanent open access to all the articles they publish. Because price is a barrier to access, these new journals will not charge subscription or access fees, and will turn to other methods for covering their expenses.<sup>2</sup>

Examining this definition, we note several key points. First, open access works are freely available. Second, they are "online," which would typically mean that they are digital documents available on the Internet. Third, they are scholarly works—romance novels, popular magazines, self-help books, and the like are excluded. Fourth, the authors of these works are not paid for their efforts. Fifth, since most (but not all) authors of peer-reviewed journal articles are not paid and such works are scholarly, these articles are identified as the primary type of open access material. Sixth, there are an extraordinary number of permitted uses for open access materials. Aside from the requirements of proper attribution of the author and the assurance of the integrity of the work, users can copy and distribute open access works without constraint. Seventh, there are two key open access strategies: self-archiving and open access journals (these will be discussed in detail later).

Peter Suber characterizes the core concept of open access this way: open access removes "price barriers" (e.g., subscription fees) and "permission barriers" (e.g., copyright and licensing restrictions) to "royalty-free literature" (i.e., scholarly works created for free by authors), making them available with "minimal use restrictions" (e.g., author attribution).<sup>3</sup>

Why are open access works only digital? After the creation of the first digital copy of a work, the cost of creating additional copies and distributing them on the Internet is marginal. This contrasts with paper-based publishing, which not only entails meaningful paper-copy production costs, but also physical storage and distribution costs.

Are all free digital documents "open access" documents? Just because a digital document is freely available, does not mean that the copyright owner has given consent for the types of permissive uses envisioned in the BOAI. Nor does the absence of a copyright statement necessarily mean that a digital document is in the public domain, and the user should assume that the document is under full copyright until a full investigation of the copyright status of the work is conducted. If a free digital document does not have a license or special copyright statement that specifically grants additional rights, the user's rights are limited by standard copyright provisions, the most relevant right being fair use (or fair dealing in the UK).

However, it should be noted that some influential open access proponents, such as Stevan Harnad, assert that free access alone is sufficient to constitute open access.<sup>4</sup>

## The Bethesda Statement on Open Access Publishing

Another landmark meeting was held in April 2003 at the Howard Hughes Medical Institute in Chevy Chase, Maryland. It resulted in the "Bethesda Statement on Open Access Publishing," which extended the definition of open access. The key section of the Bethesda Statement says:

1. The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license 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, as well as the right to make small numbers of printed copies for their personal use.
2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, PubMed Central is such a repository).<sup>5</sup>

The Bethesda Statement builds upon the BOAI, but how does it differ from it?

The BOAI does not indicate how copyright owners will operationalize the open access concept. Aside from being able to access it freely, how will users know that a specific work is an "open access" work? By contrast, the Bethesda Statement specifies that copyright owners will grant users certain rights under licenses, and these rights shall be "free, irrevocable, worldwide, perpetual." A license is a contract, with terms and conditions that describe permitted uses. As such, it supercedes users' copyright rights if it specifies terms and conditions that negate them.

One such right under the Bethesda Statement, which the BOAI doesn't specify, is the right to make derivative works. For example, a work could be translated into another language without requiring permission.

Certain Creative Commons licenses can be used to grant open access rights.<sup>6</sup> For example, the Creative Commons Attribution License gives users a "worldwide, royalty-free, non-exclusive, perpetual" license to reproduce and distribute works and to create derivative works from them in all existing and future media, subject to certain conditions such as author attribution, retention of the original copyright statement, and provision of the license or a link to it (the license also grants other rights). The license states that: "Nothing in this license is intended to reduce, limit, or restrict any rights arising from fair use, first sale or other limitations on the exclusive rights of the copyright owner under copyright law or other applicable laws."<sup>7</sup> A variety of other "open content" licenses also exist.<sup>8</sup>

The Bethesda Statement also introduces the requirement that open access documents be deposited in digital repositories in "well-established" organizations, as opposed to author home pages or digital archives whose long-term prospects are in doubt. These repositories will engage in "long-term archiving." In other words, they will digitally preserve open access documents.

Again, some open access advocates assert that these two broad requirements are not necessary for open access.<sup>9</sup>

## The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities

In October 2003, the Conference on Open Access to Knowledge in the Sciences and Humanities issued the "Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities." Although there are minor differences between the Bethesda Statement and the Berlin Declaration, they essentially say the same thing. The reader is urged to read the original text for details.<sup>10</sup>

A follow-up meeting, Berlin 3 Open Access: Progress in Implementing the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, issued the following statement in March 2005:

In order to implement the Berlin Declaration institutions should implement a policy to:

1. **require** their researchers to deposit a copy of all their published articles in an open access repository

and

2. **encourage** their researchers to publish their research articles in open access journals where a suitable journal exists (and provide the support to enable that to happen).<sup>11</sup>

## The BBB Definition of Open Access

Peter Suber refers to the collective BOAI, Bethesda Statement, and Berlin Declaration open access definitions as the "BBB definition of open access,"<sup>12</sup> and he notes that this definition "removes both price and permission barriers."<sup>13</sup> However, Suber asserts elsewhere that: "Removing price barriers alone will give most OA proponents most of what they want and need."<sup>14</sup>

It should be noted that open access is rooted in existing copyright law: copyright owners permit users to freely access their works and grant them additional rights that remove permission barriers. Open access does not require that copyright laws change in order for it to exist.<sup>15</sup>

## Other Views of Open Access

There have been numerous additional open access declarations and statements by various groups that further contribute to our understanding of open access, including the "Access to Research Publications: Universities UK Position Statement,"<sup>16</sup> "Australian Research Information Infrastructure Committee Open Access Statement,"<sup>17</sup> Group of Eight's "Statement on Open Access to Scholarly Information,"<sup>18</sup> "IFLA Statement on Open Access to Scholarly Literature and Research Documentation,"<sup>19</sup> "Messina Declaration,"<sup>20</sup> "Scottish Declaration of Open Access,"<sup>21</sup> "Washington D.C. Principles for Free Access to Science,"<sup>22</sup> and World Summit on the Information Society's "Declaration of Principles"<sup>23</sup> and "Plan of Action"<sup>24</sup> (see Peter Suber's "Timeline of the Open Access Movement" for others<sup>25</sup>).

Peter Suber has speculated that open access will extend its scope of coverage in three phases, with "royalty-producing literature" being included in phase two and copyright reform that expands the public domain occurring in phase three.<sup>26</sup>

In practice, a wide range of scholarly works beyond preprints and postprints (e.g., books, conference presentations, electronic theses and dissertations, and technical reports) are currently freely available on the Internet, some of which are under Creative Commons or similar licenses.

# Self-Archiving

Self-Archiving is the first open access strategy identified by the BOAI. Stevan Harnad refers to it as the "Green Road" to open access,<sup>27</sup> and this term has come into common usage.

## "Self-Archiving" Defined

When authors make their articles freely available in digital form on the Internet, they are said to be "self-archiving" them.<sup>28</sup> These articles can be either "preprints" or "postprints."

Preprints are draft versions of articles that have not undergone peer review or editorial review and modification. Most preprints are intended for submission to journals, but some are not. The exchange of preprints among authors, especially scientific authors, has a long history and, prior to the Web, was done by postal service mail, fax, e-mail, FTP servers, Gopher servers, and other means.<sup>29</sup>

Postprints are the final published versions of articles. They can either be the publisher's version of the article or an updated preprint that the author creates to reflect any changes made during the peer review and editorial processes.

Authors can make digital postprints available because either: (1) they have retained copyright and only granted certain nonexclusive rights to publishers, (2) they have transferred all rights to publishers, but publishers' policies permit authors to distribute preprints under specified terms and conditions (most publishers now have such self-archiving policies), or (3) they have modified the preprint using errata/corrigenda (other less common variations are also possible).

Publisher self-archiving policies are quite diverse. Stevan Harnad groups and codes them as follows: "gold (provides OA to its research articles, without delay), green (permits postprint archiving by authors), pale green (permits, i.e. doesn't oppose, preprint archiving by authors), gray (none of the above)."<sup>30</sup> The SHERPA Project maintains a public database of publishers' self-archiving policies.<sup>31</sup>

Both digital preprints and postprints are called "e-prints."

Although the open access movement focuses on peer-reviewed literature, the term "e-print" is also widely used to refer to digital versions of articles that will be or have been published in scholarly, but non-peer-reviewed journals and magazines.

Moreover, other types of scholarly digital materials, such as conference presentations (e.g., PowerPoint presentations), may be said to be "self-archived" by their authors.

## Self-Archiving Strategies

The most common ways that e-prints are made available on the Internet are: (1) authors' personal Websites, (2) disciplinary archives, (3) institutional-unit archives, or (4) institutional repositories.<sup>32</sup>

These self-archiving strategies are not mutually exclusive. An author may self-archive the same e-print in a personal author Website, a disciplinary archive, an institutional-unit archive, and an institutional repository. Doing so increases the likelihood that it will be found by interested users. With the exception of the personal Website, this act of self-archiving is referred to as "depositing" the e-print.

While helpful, the below classification of self-archiving strategies is not intended to be comprehensive or definitive. Given the increasingly powerful capabilities of archiving and repository systems and the fecund imaginations their users, self-archiving strategies are constantly evolving.

Let's look briefly at the main self-archiving strategies:

1. **Author's Personal Websites:** These Websites are often as simple as a few linked Web pages, with associated e-print files in HTML, PDF, Word, or other formats; however, they can be much more elaborate. E-print links are typically in a separate publications list or integrated into a vita. Website files are usually indexed in major search engines, which is useful if the searcher has specific information about the desired e-print, such as its title. Since the life circumstances of authors change (e.g., they change jobs) and they die, the stability of these e-prints is variable and their permanence is not assured. Example: Stevan Harnad's "Online Research Communication and Open Access," <http://www.ecs.soton.ac.uk/%7Eharnad/intpub.html>.

2. **Disciplinary Archives:** Disciplinary archives include e-prints (or e-prints plus other types of digital works) by authors from around the world covering one or more subjects. They are typically full-featured systems that support author deposit and metadata creation, deposit screening by archive moderators, fielded and keyword searching, browsing, and export of metadata to specialized search engines using a protocol called OAI-PMH. The stability and permanence of these archives is usually determined by their formal affiliation with institutions or professional organizations; informal individual or small group efforts may be subject to the same issues outlined for personal Websites, plus the ongoing level of interest of participants. Disciplinary archives are often implemented using free open source software, such as EPrints. Example: arXiv.org (a major disciplinary archive for computer science, mathematics, nonlinear sciences, physics, and quantitative biology), <http://arxiv.org/>.
  
3. **Institutional-Unit Archives:** Institutional-unit archives include e-prints (or e-prints plus other types of digital works) by authors in a single academic unit (e.g., a department or school) of an institution. While departmental (or smaller unit) archives can be simple and resemble personal author Websites, they can also use the same free open source software and have the same functional capabilities as disciplinary archives. Since they are associated with institutional units, the stability and permanence of these archives is generally high, although archives in smaller units may depend on informal individual or small group effort. Example: Duke Law Faculty Scholarship Repository, <http://eprints.law.duke.edu/>.

4. **Institutional Repositories:** Institutional repositories include diverse types of digital works (e.g., electronic theses and dissertations, e-prints, learning objects, presentations, and technical reports) by authors at one institution or, less frequently, at multiple institutions. They are often established and maintained by libraries or libraries working in partnership with other major institutional entities, such as the institution's information technology unit. Since they are formal institutional functions, institutional repositories are permanent and stable. There is often a commitment to use digital preservation techniques to ensure the continued availability and usefulness of the digital materials that they contain. Institutional repository systems share the capabilities described previously for disciplinary and institutional-unit archives, but may be further optimized to more fully support a wide range of digital materials, the autonomous operation of institutional units, and digital preservation. They may include electronic document publishing functions, such as e-journal management or conference paper management systems. They typically utilize free open source software, such as DSpace, EPrints, or Fedora, but may be externally hosted by vendors for designed fees. Institutional repository staff may offer a range of services, such as document deposit, metadata creation, repository promotion, training, and user support. (Although less common, there are also institutional e-print archives that only contain e-prints.) Example: DSpace at MIT, <https://dspace.mit.edu/index.jsp>.

Some universities, such as Queensland University of Technology<sup>33</sup> and the Universidade do Minho,<sup>34</sup> have mandated self-archiving by their scholars. The "Institutional Self-Archiving Policy Registry"<sup>35</sup> provides access to university self-archiving policies.

## Self-Archiving Copyright Practices

Although e-prints are freely available, their authors do not follow consistent copyright notice or license practices, and, consequently, they may have: "(1) no copyright statement (under US law they are under copyright by default); (2) a conventional copyright statement; (3) a copyright statement that is modified by specific use provisions (e.g., liberal use permitted for noncommercial purposes); (4) a Creative Commons or other license, which may or may not permit commercial use or derivative works; or (5) another variation."<sup>36</sup>

## Open Access Journals

Open access journals are the second open access strategy identified by the BOAI. Stevan Harnad refers to open access journals as the "Gold Road" to open access.<sup>37</sup>

### "Open Access Journals" Defined

Open access journals have the following characteristics: (1) they are scholarly, (2) they utilize quality control mechanisms like those of conventional journals (e.g., editorial oversight and copy editing), (3) they are digital; (4) they are freely available, (5) they may allow authors to retain their copyrights, and (6) they may use Creative Commons or similar licenses.<sup>38</sup>

There is some dispute as to whether open access journals must utilize peer review as a quality control mechanism. Most do, but there are also some high-quality journals that don't and meet all other criteria, yet have great impact on their fields of study. *D-Lib Magazine* is an example of such a journal.<sup>39</sup>

Likewise, the question of whether the journal must use a Creative Commons or similar license is another area of dispute. This dispute reflects the deeper, fundamental question of whether "open access" is just free access or free access plus a set of specified use rights that go significantly beyond normal copyright rights.

The *Directory of Open Access Journals*, which is published by Lund University Libraries, provides access to about 2,000 digital journals that have been classified as open access journals based on stated criteria.<sup>40</sup> Open access journals may also be included in conventional index and abstract databases.

### Types of Open Access Journal Publishers

The major types of open access journal publishers are: (1) born-OA publishers, (2) conventional publishers, and (3) non-traditional publishers.<sup>41</sup> The same disclaimers apply to this taxonomy as were indicated for the self-archiving one.

Let's examine these types of open access journal publishers in more detail:

1. **Born-OA Publishers:** With the establishment of the open access journal publisher BioMed Central<sup>42</sup> in 2000, a new type of journal publishing venture was created—what I call the "born-OA" publisher. These digital commercial or nonprofit publishers were established for the sole purpose of publishing open access journals, and they typically utilize the Creative Commons Attribution License (or a similar license) for their publications. Authors usually retain their copyrights. Different funding strategies are employed by these publishers, including advertising, author fees (these fees may be paid by authors' grant funds or waived by the publisher in cases of financial hardship), grants to the publishers, library membership fees (these fees entitle authors at the library's institution to publish articles without paying all or part of the publisher's author fees), and supplemental products (e.g, print copies). Example: The Public Library of Science, <http://www.plos.org/>.
2. **Conventional Publishers:** As the open access movement has gained momentum, conventional commercial and nonprofit journal publishers have begun to experiment with open access publishing programs or to establish permanent open access programs. For example, the Springer Open Choice Program<sup>43</sup> currently allows authors to publish their articles as open access works for a fee of US \$3,000. The articles are published in both print and digital form. A license is used that is similar to the Creative Commons Attribution NonCommercial License.<sup>44</sup> The author can self-archive the digital article, and it is freely available on SpringerLink. Once a year, Springer adjusts the library subscription price for journals in the program in accordance with the number of open access journal articles published (e.g., if more were published than in the prior 12 months, the cost is reduced). You'll note that, unless all authors choose the open access option, this program results in journal issues having a mix of open access and restricted access articles. Example: Hindawi Publishing Corporation, <http://www.hindawi.com/oa/>.

3. **Non-Traditional Publishers:** During the late 1980s and early 1990s, the Internet had developed to the point that scholars began to publish free digital journals utilizing existing institutional infrastructure and volunteer labor (e.g., *EJournal*,<sup>45</sup> *PostModern Culture*,<sup>46</sup> and *The Public-Access Computer Systems Review*<sup>47</sup>). These journals were not intended to generate income; they were "no-profit" journals. Although many of these journals allowed authors to retain their copyrights and they had liberal copyright statements regarding noncommercial use, they preceded by a decade or more the Creative Commons, and, consequently, did not embody that kind of copyright stance. While some of these journals ceased publication and others were transformed into non-profit ventures, they provided a model that others followed, especially after the popularization of the Internet began in the mid-1990s, which followed the earlier introduction of Web browsers. In recent years, the availability of free open source journal management and publishing systems, such as the Open Journal Systems,<sup>48</sup> further simplified and streamlined digital journal publishing, fueling additional growth in this area. Now, a wide variety of academic departments or schools, institutes and research centers, libraries, professional associations, scholars, and others publish digital journals, a subset of which comply with the strictest definition of an open access journal and a larger subset which comply with the looser definition of an open access journal as a free journal. Since these diverse "publishers" would have been unlikely to be engaged in this activity without facilitating digital technologies and tools, I refer to them as "non-traditional publishers." Many of them are also "no-profit" publishers as well. Example: *SCRIPT-ed: A Journal of Law and Technology*, <http://www.law.ed.ac.uk/ahrb/script%2Ded/index.asp>.

## Open Access Journals' Copyright Practices

Although the ideal is for open access journals to use a Creative Commons or similar license for their articles, the reality is that they can use a variety of copyright strategies that mirror those described earlier for self-archived e-prints.

## Learning More About Open Access

An annotated listing of a wide range of resources about open access (e.g., bibliographies, directories, e-journals, FAQs, mailing lists, organizations, overviews, specialized search engines, projects, programs for developing countries, and Weblogs) can be found in the *Open Access Webliography*.<sup>49</sup>

## Notes

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