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A NOTE ON SCHOLARLY OPEN ACCESS PUBLISHING[1]

Since the commercialization of the Internet that took place in the 1990s, an increasing number of academic journals have moved towards digital distribution. Many of these journals have chosen to become "open access", meaning that their content is freely available over the web, at no cost to readers. This note looks at open access publishing, examining its background, how content is distributed and issues relating to copyrights and licensing.

Scholarly Publishing

Scholarly publishing, or academic publishing as it is sometimes called, is a subset of the broader publishing industry. It includes both books (often referred to as monographs) and articles—the latter being published within academic journals, the focus of the current note.

Key Elements

A number of features can be used to distinguish scholarly publications from other types of publications. These include:

- Authors of scholarly publications are most commonly associated with research units, particularly faculty affiliated with departments in research universities.

- Authors contributing to publications usually receive no direct compensation for their work, although indirect compensation—in terms of promotion, pay and increased mobility—can be substantial.

- The value of published scholarly work is generally not measured in terms of financial outcomes. Instead, value is derived both from the prestige of the outlet (e.g., journal, publishing house) and the number of times it is cited by other scholars.

- Scholarly submissions are normally vetted through a process known as peer review.

Peer Review

With respect to the last of the key elements of scholarly publishing, peer review refers to a quality control process used to ensure the rigor of research. Prior to publication, authors must submit their manuscript

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(i.e., unpublished work) to journal editors, who then assign researchers in the same field (i.e., peers) to review and critique the submission. Peer review can come in a number of forms, including:

- *Open*: The reviewers and the authors are aware of each other's respective identities.

- *Single blind*: Reviewers know the authors identities, but authors do not know who the reviewers are.

- *Double blind*: Neither authors nor reviewers know each other's identities. This is considered the most rigorous process, since the review is based entirely on the work and not on the reputation of its authors.

The peer review process can be time consuming, since it can involve multiple back and forth cycles between authors, reviewers and editors. Some publications streamline the process by limiting themselves to editorial review. Others accept certain types of submissions, such as invited papers, subject to editorial review. While it is not clear that papers that have been vetted in this manner are necessarily inferior to peer-reviewed work, many institutions do not view them in a positive light, since peer review is widely considered to be the gold standard.

Evaluating Published Scholarship

An important way in which scholarly publishing differs from other forms of commercial publishing is with respect to how outcomes are measured. In commercial publishing, financial measures such as sales drive the process. While the financial implications of publication also play a role in scholarly publishing, that role is much less direct.

In most academic areas, there is a notion of researcher *productivity*. What constitutes productivity varies considerably by discipline. For example, in the humanities, publication of monographs plays a particularly central role. In the sciences and engineering, acquisition of grants and presentations at influential conferences can make or break a career. In the social sciences, such as business, economics and psychology, reputation tends to be driven by publication in peer reviewed journals.

Not all published articles are judged to be equal, however. The problem is that the "quality" of an article, even one that is peer reviewed, tends to have a large subjective component. In fact, substantial evidence exists that individual peer reviewers disagree quite regularly with respect to their assessment of a particular submission (e.g., Starbuck, 2005). Because articles play such an important role in a researchers career—and can mean a lifetime earnings difference of hundreds of thousands or even millions of dollars for a young researcher—there has long been a need to develop objective (if not necessarily accurate) standards for evaluation quality.

For the typical researcher, two objective measures are likely to be most influential in making an assessment of research quality:

1. The ranking of the journal that published the article

2. The number of times the article is cited by other researchers after it has been published

Determining first of these does, of course, involve considerable judgement. For this reason, articles are often published that attempt to develop a consensus from leading scholars on the relative merits of journals in a particular discipline. In addition, data related to the second item can also be compiled for a particular journal. A particularly important measure of this type is *Impact Factor*™, a measure of how

often the average article published in a particular journal is cited over the course of the next two years. An important caveat is that both the citing and cited journals must be included in the *ThompsonReuter's Web of Science* (WoS). Because the process of inclusion in WoS is subject to very strict rules and, even then, can take a decade or more, no Impact Factor is available for most recently launched journals, which includes the vast majority of open access journals.

Transition to Digital Scholarship

From the commercialization of the printing press in the mid-1400s to the early 1980s, the process of publishing involved creating a paper artifact—a book, a magazine, a leaflet, etc. As late as the early 1960s, prior to the widespread availability of photocopying, even making copies of scholarly content was difficult. As a consequence, the principal consumers of scholarly publications were libraries and other institutions, often paying a premium price for subscriptions while individual scholars could receive the same publication at a discount. For most scholars, however, even reduced-price individual subscriptions were impractical, as—even as early as 1950—there were an estimated 60,000 journals and, by the year 2000, that number was projected to grow to 1 million (Larsen & von Ins, 2010, p. 576).

With the introduction of desktop computing and graphic printers, the nature of publishing began to change. Initially, databases of periodicals (both scholarly and commercial) became available on large time-share mainframes, sold principally to libraries and corporate customers. In parallel, early tools for archiving and searching documents—with whimsical names such as Gopher, Archie, Jughead and Veronica—became available on the embryonic pre-web Internet of the 1980s. These tools were used primarily by researchers, since the only institutions with readily available connectivity tended to be universities, government agencies and research labs.

The big transformation to academic publishing can be traced to the early 1990s, when three technologies made digital scholarly publishing practical:

1) The WWW for displaying, accessing and linking documents,

2) Portable document format (PDF) for storing and rendering documents, and

3) Indexing and search technologies for finding documents on the web

By the year 2000, most research libraries were rethinking their commitment to maintaining current subscriptions to, and paper or microfiche archives of, the most widely used research journals. Instead, they invested an increasing proportion of their available funds into database subscriptions to collections of journals, such as ABI-Inform. While these subscriptions were expensive, they provided access to thousands of journals. In addition, they offered several additional advantages:

- They reduced dependency on hard to maintain library catalog systems—which had begun their own transformation from paper-based to computer-based as early as the 1970s.

- They freed up physical space from the library stacks.

- They allowed faculty and student stakeholders to acquire much of the library's content online.

- They came with search tools that made finding information in the literature much easier.

By 2010, the vast majority of literature-based research in the sciences was being accomplished online. The research library had essentially become virtual in nature.

Open Access Journals

As just noted, scholarly publishing experienced transformative—and disruptive—change during the preceding three decades. That change had both democratized access to knowledge and, simultaneously, made it much harder to assess the quality of knowledge sources. A major factor in this ongoing disruption has been the emergence of open access journals. Another aspect of the transformation of scholarly journals from physical to digital was the introduction of open access journals. The common principal governing these journals was that the research product should be available for distribution to readers at no cost. Other details, such as who held the copyright of published work, how submissions were reviewed, and how the content was maintained online, varied considerably from journal to journal.

The evolution of open access journals (OAJ) paralleled a similar open source software (OSS) movement in the software industry. The underlying philosophy driving the two industries was the same: that information should be shared freely. In the case of open source, "information" referred to programming code. In the case of scholarship, "information" referred to published research.

Within both the OAJ and OSS movements, there was considerable potential motivation for the suppliers of free content. The motivation of the researchers submitting to OAJ was the easiest to understand. A single widely-recognized research publication could make a researchers career—establishing reputation and adding substantial amounts (hundreds of thousands of dollars, or even more) to his or her expected lifetime earnings. As a result, researchers were used to submitting manuscripts to journals without being paid directly when their article was accepted and published. Even articles that were not breakthroughs were important, as they established and maintained the researcher's academic qualifications, and could impact promotion and tenure decisions.

In the case of OSS, the reputational and intrinsic motivational benefits of submitting to an open source project tended to be the driving force behind developer participation. In addition, deep knowledge of an OSS project could lead to long term career benefits, as organizations using these tools had come to understand that while the software itself was free, installation, modifications and long term support were not. Thus, many companies—such as Red Hat Linux—had been built around supporting open source software deployments.

Operationalizing Open Access

A variety of challenges face scholars seeking to develop an open access scholarly publication. These include financial, intellectual property and impact issues.

OAJ Business Models

Prior to the digitization of scholarly research publications, the costs of physical publication (e.g., layout, proofing, printing, mailing) and the complicated logistics of mailing articles back and forth during the review cycles made open access unattractive. In the digital world, however, the economics changed dramatically. Specifically:

- Word processed submissions and computer-drawn graphics eliminated most of the need for typesetting and artwork.

- Online submission environments allowed the peer review workflow process to be organized and conducted entirely online.

- Online publication eliminated the need for printing. Even where printed editions of the journal were required, on demand printers—such as Amazon.com's *CreateSpace*—led to dramatic reductions in printing costs, even for publication runs as short as a single copy.

Even with dramatic cost reductions, the lack of subscription revenues made it challenging to monetize an OAJ. Three models, individually and in combination, tended to be used:

1) *All volunteer model.* Authors, editors and reviewers all contributed their efforts at no cost. Typically, the unavoidable costs of running the journal—such as website hosting fees and review system costs—were provided by an institution or through donations.

2) *Submission fee model.* Authors are charged a fee for submitting a manuscript, whether or not it is accepted. These may vary by submitter category, for example some journals charge more for submissions from the U.S. than they do for submissions from developing countries.

3) *Publication fee model:* Authors are charged a fee in order to publish an accepted manuscript. These fees may be a flat rate, charged on a per-page basis, include surcharges for types of content (such as color graphics) and may also include an extra fee for making an article open access (e.g., *Science*, published by AAAS, charges a $3000 base fee or $4000 if the article is to be published open access).

New models were continually being developed. For example, *ScienceInsider* reported that a new journal, *Collabra*, was being launched that planned to pay peer reviewers with the goal of helping them afford publications fees when they submitted (Chawla, 2015). Some journals also employed advertising on their websites.

It should also be noted that some of these fee models were also employed by journals, some of which are quite prestigious, that are not open access (*Science* being an example). What distinguishes the open access journal is the fact that it has no other sources of revenue.

OAJ Intellectual Property Models

There are a variety of models that an OAJ can use to maintain its intellectual property rights and those of its authors. A particular common source of these license variations are offered by the *Creative Commons* (Exhibit 1), a non-profit organization devoted to open access.

In addition to the basic model governing copyright ownership, authors may retain certain rights through the use of an author addendum. The *Open Access Scholarly Information Sourcebook* (http://www.openoasis.org/) describes these addenda as follows:

> Under all jurisdictions, copyright is a bundle of rights and authors may opt to transfer some of these rights to the publisher (for example, the right to publish the work commercially) whilst retaining others for themselves. For instance, authors may wish to retain the right to reproduce, distribute, display and perform their own work in respect of either their research or their teaching work.

> Author addenda state the rights that the author will retain after passing an article to a publisher for publication. Addenda vary considerably, so care must be taken to choose an addendum that suits the author (or institution) in each particular case. Many addenda restrict the author to use the

work for non-commercial purposes, for example, which may work well if the author is publishing a journal article, but may restrict the author too much if the output is another type of work. Another raft of restrictions may be imposed upon the publisher and in the case of institutionally-developed agreements, there is usually provision for the institution itself to hold some rights to use the work as well.

Challenges Facing Open Access Journals

Open access journals are not without their detractors. To the contrary, any OAJ needs to be very concerned with two issues in particular: dismissal by peers and predatory publishing.

Dismissal by Peers

For a number of reasons, many scholars are suspicious of any publication that derives from an open access outlet. These reasons vary, but may include:

- *Insufficient reputation.* In many research fields, objective verification of the quality of published research is very hard to verify. For this reason, journal reputation can become a critical element in the perceived quality of a particular publication. Because of the costs involved, open access publishing did not become practical until the internet became a viable alternative to print distribution early in the 21st century. The reputation of traditional scholarly print journals, however, often takes many decades to build. Few open access outlets have been round long enough to acquire a long-term reputation.

- *Concerns about quality control*. Open access journals can have relatively low startup costs, meaning that many have been launched in recent years. In recent years, growth in the number of journals has far outpaced corresponding growth in the number of scholars. As a result, both the challenge of filling a journal with high quality articles and finding sufficient qualified reviewers for each journal has similarly increased. This leads to justifiable fears that the average quality of article in these new journals will necessarily decline.

- *Concerns about longevity*. Open access journals are frequently underfunded and do not have the backing of well-established publishers. As a consequence, they are more likely to fail or be abandoned. Articles previously published in a journal that has ceased to exist are unlikely to retain the stature of published articles in journals that remain active.

- *Fears of publication for a price*. As academic institutions place an increasingly high weight on published research for the purposes of promotion, tenure and compensation, the pressure of faculty members to see their work published grows ever-more intense. Open access journals that include submission or publication fees in their business model can be perceived as outlets where publication is "for sale". This is an example of predatory publishing, the final topic.

Predatory Publications

Because of the potential value of publications to an academic career, many faculty members feel a pressing need to publish. As the cost of setting up a scholarly publication outlet declined, it became possible to establish a profitable scholarly journal that subsisted entirely on submission and/or publication fees. The drawback of such an approach was that it created a strong incentive to accept nearly any submission, regardless of intrinsic scholarly merit. In many cases, blatant abuses—such as plagiarism—were tolerated in order to accumulate fees. As such journals started to emerge, they became known as predatory publishers. A widely-known listing of the characteristics frequently associated with predatory publishers developed by library scientist Jeffrey Beall is presented in Exhibit 3.

Any OAJ wishing to retain its credibility needed to take considerable care in ensuring that its practices and policies did not land it on one of the predatory publisher lists. Once included, it could take years for the journal to rebuild its credibility. Ensuring that the journal's website was adequately protected against security threats would clearly be an element of these practices.

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Biography

Grandon Gill is a Professor in the Information Systems and Decision Sciences department at the University of South Florida. He holds a doctorate in Management Information Systems from Harvard Business School, where he also received his M.B.A. His principal research areas are the impacts of complexity on decision-making, the diffusion of academic research findings and applying the case method to STEM education. He is currently Editor-in-Chief of *Informing Science: The International Journal of an Emerging Transdiscipline* and an Editor of the *Journal of IT Education.* He is the founding editor of two discussion case repositories: *Journal of IT Education: Discussion Cases* and *Informing Faculty*.

Exhibit 1: Creative Commons License Types

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Exhibit 2: Criteria for Determining Predatory Open-Access Publishers

By Jeffrey Beall
3rd edition / January 1, 2015

The criteria below are intended to provide a framework for analyzing scholarly open-access publishers and journals. The criteria recognize two documents published by the Committee on Publication Ethics (COPE):

Code of Conduct for Journal Publishers
Principles of Transparency and Best Practice in Scholarly Publishing

Evaluating scholarly open-access publishers is a process that includes closely, cautiously, thoroughly, and at times skeptically examining the publisher's content, practices, and websites: contacting the publisher if necessary, reading statements from the publisher's authors about their experiences with the publisher, and determining whether the publisher commits any of the following practices (below) that are known to be committed by predatory publishers, examining any additional credible evidence about the publisher, compiling very important "back-channel" feedback from scholarly authors, and taking into account counter-feedback from the publishers themselves.

Some journals of course are "single titles." They publish independently of any multi-title publisher. In most cases, however, we evaluate journals that are part of a publisher's multi-title platform. This is very often described as a "fleet," a term meant to clarify that even a new publisher suddenly launches a large number of new journals, ranging from several dozen to hundreds of titles all at once.

The practices described below are meant to apply both to single-title independent journals and to publishers with or multiple or "fleet" journals in their portfolios.

Editor and Staff

- The publisher's owner is identified as the editor of each and every journal published by the organization.
- No single individual is identified as any specific journal's editor.
- The journal does not identify a formal editorial / review board.
- No academic information is provided regarding the editor, editorial staff, and/or review board members (e.g., institutional affiliation).
- Evidence exists showing that the editor and/or review board members do not possess academic expertise to reasonably qualify them to be publication gatekeepers in the journal's field.
- Two or more journals have duplicate editorial boards (i.e., same editorial board for more than one journal).
- The journals have an insufficient number of board members , (e.g., 2 or 3 members), have

concocted editorial boards (made up names), name scholars on their editorial board without their knowledge or permission or have board members who are prominent researchers but exempt them from any contributions to the journal except the use of their names and/or photographs.

- There is little or no geographical diversity among the editorial board members, especially for journals that claim to be international in scope or coverage.
- The editorial board engages in gender bias (i.e., exclusion of any female members).

Business management

The publisher...

- Demonstrates a lack of transparency in publishing operations.
- Has no policies or practices for digital preservation, meaning that if the journal ceases operations, all of the content disappears from the internet.
- Begins operations with a large fleet of journals, often using a common template to quickly create each journal's home page.
- Provides insufficient information or hides information about author fees, offering to publish an author's paper and later sending an unanticipated "surprise" invoice.
- Does not allow search engines to crawl the published content, preventing the content from being indexed in academic indexes.
- Copy-proofs (locks) their PDFs, thus making it harder to check for plagiarism.

Integrity

- The name of a journal is incongruent with the journal's mission.
- The name of a journal does not adequately reflect its origin (e.g., a journal with the word "Canadian" or "Swiss" in its name when neither the publisher, editor, nor any purported institutional affiliate relates whatsoever to Canada or Switzerland).
- In its spam email or on its website, the publisher falsely claims one or more of its journals have actual (Thomson-Reuters) impact factors, or advertises impact factors assigned by fake "impact factor" services, or it uses some made up measure (e.g. view factor), feigning/claiming an exaggerated international standing.
- The publisher sends spam requests for peer reviews to scholars unqualified to review submitted manuscripts, in the sense that the specialties of the invited reviewers do not match the papers sent to them.
- The publisher falsely claims to have its content indexed in legitimate abstracting and indexing services or claims that its content is indexed in resources that are not abstracting and indexing services.
- The publisher dedicates insufficient resources to preventing and eliminating author misconduct, to the extent that the journal or journals suffer from repeated cases of plagiarism, self-plagiarism, image manipulation, and the like.
- The publisher asks the corresponding author for suggested reviewers and the publisher subsequently uses the suggested reviewers without sufficiently vetting their qualifications or

authenticity. (This protocol also may allow authors to create faux online identities in order to review their own papers).

Other

A predatory publisher may...

- Re-publish papers already published in other venues/outlets without providing appropriate credits.
- Use boastful language claiming to be a "leading publisher" even though the publisher may only be a startup or a novice organization.
- Operate in a Western country chiefly for the purpose of functioning as a vanity press for scholars in a developing country (e.g., utilizing a mail- drop address or PO box address in the United States, while actually operating from a developing country).
- Provide minimal or no copyediting or proofreading of submissions.
- Publish papers that are not academic at all, e.g. essays by laypeople, polemical editorials, or obvious pseudo-science.
- Have a "contact us" page that only includes a web form or an email address, and the publisher hides or does not reveal its location.

Poor journal standards / practice

The following practices are considered to be reflective of poor journal standards and, while they do not equal predatory criteria, potential authors should give due consideration to these items prior to manuscript submissions:

- The publisher copies "authors guidelines" verbatim (or with minor editing) from other publishers.
- The publisher lists insufficient contact information, including contact information that does not clearly state the headquarters location or misrepresents the headquarters location (e.g., through the use of addresses that are actually mail drops).
- The publisher publishes journals that are excessively broad (e.g., Journal of Education) in order to attract more articles and gain more revenue from author fees.
- The publisher publishes journals that combine two or more fields not normally treated together (e.g., *International Journal of Business, Humanities and Technology*).
- The publisher charges authors for publishing but requires transfer of copyright and retains copyright on journal content. Or the publisher requires the copyright transfer upon submission of manuscript.
- The publisher has poorly maintained websites, including dead links, prominent misspellings and grammatical errors on the website.
- The publisher makes unauthorized use of licensed images on their website, taken from the open web, without permission or licensing from the copyright owners.
- The publisher engages in excessive use of spam email to solicit manuscripts or editorial board

memberships.

- The publishers' officers use email addresses that end in .gmail.com, yahoo.com, or some other free email supplier.

- The publisher fails to state licensing policy information on articles or shows lack of understanding of well-known OA journal article licensing standards, or provides contradictory licensing information.

- The publisher lacks a published article retraction policy or retracts articles without a formal statement (stealth retractions); also the publisher does not publish corrections or clarifications and does not have a policy for these issues.

- The publisher does not use standard identifiers such as ISSNs or DOIs or uses them improperly.

- For the name of the publisher, the publisher uses names such as "Network," "Center," "Association," "Institute," and the like when it is only a solitary, proprietary operation and does not meet the definition of the term used or implied non-profit mission.

- The publisher has excessive, cluttered advertising on its site to the extent that it interferes with site navigation and content access.

- The publisher has no membership in industry associations and/or intentionally fails to follow industry standards.

- The publisher includes links to legitimate conferences and associations on its main website, as if to borrow from other organizations' legitimacy, and emblazon the new publisher with the others' legacy value.

- The publisher displays prominent statements that promise rapid publication and/or unusually quick peer review.

- Evidence exists showing that the publisher does not really conduct a bona fide peer review.

- The publisher appears to focus exclusively on article processing fee procurement, while not providing services for readers, or on billing for fees, while abdicating any effort at vetting submissions.

- The publisher creates a publishing operation that demonstrates rapacious entrepreneurial behavior that rises to level of sheer greed. The individual might have business administration experience, and the site may even have business journals, but the owner seems oblivious to business ethics.

- The publisher or its journals are not listed in standard periodical directories or are not widely cataloged in library databases.

- The publisher copies or egregiously mimics journal titles from other publishers.

- The publisher includes text on its website that describes the open access movement and then foists the publisher as if the publisher is active in fulfilling the movement's values and goals.

- None of the members of a particular journal's editorial board have ever published an article in the journal.

- There is little or no geographic diversity among the authors of articles in one or more of the publisher's journals, an indication the journal has become an easy outlet for authors from one country or region to get scholarly publications.

- The publisher has an optional "fast-track" fee-based service for expedited peer review which appears to provide assured publication with little or no vetting.