

Doing Medical Journals Differently: Open Medicine, Open Access, and Academic Freedom

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Abstract: With considerable attention now being paid within scholarly communications to publication models that increase access to research, the launch of the open access journal *Open Medicine* demonstrates the contribution that open access, in all of its various economic models, can make to scholarly traditions of editorial independence, intellectual integrity, and academic freedom. This paper details the history of *Open Medicine*, which was born of an editorial-interference incident in the field of medical publishing, and offers a case study of the current political economy of academic publishing. This new journal demonstrates how open access, in combination with open source publishing and management software, enables new journals to more readily protect the academic freedom of researchers and scholars. As we argue, this method of publishing provides a venue for the emergence of new approaches, ideas, and independence from sources of competing interests in scholarly publishing.

Keywords: Scholarly publishing; Medical journals; Open access; Academic freedom

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Résumé : En s'inspirant de la communication savante qui porte aujourd'hui une attention particulière aux modèles de communication facilitant l'accès à la recherche, la revue à libre accès *Open Medicine* démontre la contribution que le libre accès, sous toutes ses variantes économiques, peut faire aux traditions savantes privilégiant l'indépendance de la rédaction, l'intégrité intellectuelle et la liberté académique. Cet article recense l'histoire d'*Open Medicine*, né d'un incident comportant une tentative de contrôler la rédaction, et offre une étude de cas sur l'économie politique actuelle de l'édition académique. Cette nouvelle revue démontre comment le libre accès, de pair avec l'édition à code source libre et un logiciel de gestion, permet aux nouvelles revues de mieux protéger la liberté académique des chercheurs et des savants. Nous soutenons que cette méthode d'édition offre un contexte qui favorise de nouvelles approches et idées et une indépendance accrue par rapport à tout intérêt concurrentiel en édition savante.

Mots clés : édition savante; revues médicales; libre accès; liberté académique

The movement of academic journals to the Internet has led to a proliferation of new approaches to publishing. It is a new medium, after all, and in economic terms, the subscription model is no longer the only game in town. Among the emerging alternatives, "open access" has become a key phrase, describing the ability of readers to find and read research articles on the Web without having to be a member of a subscribing library (Chan, Cuplinskas, Eisen, Friend, Genova, Guédon, Hagemann, Harnad, Johnson, Kupryte, La Manna, Rév, Segbert, de Souza, Suber, & Velterop, 2002). Authors and readers have begun to discover the advantages of open access, with the early evidence pointing to increased readership and citations for work that has been given open access (Hitchcock, 2007). If the major corporate players in academic publishing such as Elsevier and Springer are introducing million-dollar, thousand-title journal bundles to university libraries, they are at the same time permitting authors to archive copies of published work on the authors' own websites or in open access archives. More recently, these same publishers are also enabling authors to purchase open access for their articles in journals' online editions (to which libraries are otherwise subscribing). And that is only the beginning of the new complexities of access.

Biomedical publishing upstarts, such as BioMed Central and the Public Library of Science, are offering complete and immediate open access to their journals, largely financed by the fees charged to authors. In fields where such author fees would not fly—think of meagrely funded sociologists or grant-less philosophers—groups of scholars are creating open access journals, free of print editions and fuelled by little more than editorial commitment. Funding agencies are further complicating this many-headed market with new mandates that compel authors to deposit a copy of their work, wherever it was published, in open access archives some months after it is published. While the publishers may permit self-archiving by authors, they are also actively lobbying against such mandated archiving, warning it "risks destabilising subscription revenues," and threatens to "destroy the peer review system upon which researchers and society depend" ("Brussels declaration on STM publishing," 2007).

In this complex scramble for the new best economic model for Internet publishing, it is easy to lose sight of scholarly publishing's other basic principles; beyond the editors' commitment to disseminating knowledge and increasing access to that knowledge, they are typically dedicated to protecting and furthering scholarly innovation, intellectual integrity, and academic freedom.

The coming together of new access principles with more traditional scholarly values is nowhere more apparent, we would argue, than with the launch of *Open Medicine* on April 18, 2007. The decision of the editorial team at *Open Medicine*, of which we are part, to introduce a new general medical research journal in an already crowded and highly competitive field was not taken lightly.¹ It was inspired by first-hand experience, through our work with the *Canadian Medical Association Journal (CMAJ)*, of how current models in biomedical publishing, operating at the intersection of revenue-driven and professional interests, can all too readily violate editorial independence in scholarly publishing.²

In this article, we treat the circumstances leading up to the formation of *Open Medicine* as a critical incident in biomedical publishing. The authors of this paper are each participant-observers in the incident, given our prior association with the *CMAJ* and now with *Open Medicine*, though we do not strictly follow the research traditions of "critical incident technique," in which the researcher records observations and conducts interviews around such incidents with a goal of "solving practical problems" (Flanagan, 1954, p. 327). We have sought to document the incident that led to the formation of this new journal, drawing largely on the public record, and to place that incident within both the recent history of editorial interference in medical publishing and the emergence of new open access publishing models enabled by new technologies. In starting a journal as editors and publisher in response to this critical incident, we were certainly party to an exercise in practical problem-solving, yet this article is just as much about how this critical incident leading to the launch of *Open Medicine* reflects a new convergence between increased access and academic freedom that has not figured previously in discussions of either of these two important concepts for scholarly work.

We see this convergence as advancing the traditional goals and principles of scholarly publishing, even as *Open Medicine* is one of a new generation of journals setting new standards for the integrity of biomedical publishing. Not only does the open access that this journal provides to its content redress inequitable access to scientific knowledge, but its independence from medical advertising and professional-association support also challenges standards in medical publishing that have proven, on occasion, susceptible to undue political, professional, and commercial influence.

The openness in scholarly communication that *Open Medicine* exemplifies is part of both a long-standing scientific tradition and a very recent development. This openness represents a long history of efforts to extend and increase the circulation of ideas, to open those ideas to evaluation and critique, and to build on and augment those ideas, that dates back, most directly in the case of *Open Medicine*, to the Early Modern period of experimental science and the founding of scholarly journals (David, 2004). Yet there is also a particularly twenty-first-

century aspect to creating *open access* to research and scholarship through online archiving and publishing, which has greatly extended and accelerated the degree and quality of access on a global scale well beyond that achieved by print (Willinsky, 2006). The possibility of greatly extending the openness of scholarly work through new technologies, much as the introduction of the press did centuries ago, is not only about increasing the number of people who have access to this work, but can, as we argue here, affect other qualities that determine the scholarly contribution of research and scholarship. But first, let us set out the critical incident in question.

The violation of editorial independence at the CMAJ

Several of the *Open Medicine* team members were involved in editing the *Canadian Medical Association Journal* in the period leading up to the highly publicized firing of *CMAJ* editor-in-chief John Hoey and senior deputy editor Anne Marie Todkill on February 20, 2006. The dismissal of the two editors, who had been working with the journal since 1994 and 1996 respectively, was the culmination of the growing tension between the journal's editors and its publisher, CMA Holdings, which is the business arm of the Canadian Medical Association (CMA), representing somewhat more than 60,000 physicians in Canada.

Under John Hoey's editorship, the *CMAJ* had developed into the fifth-most-cited journal among general medical titles. The journal was receiving 100 submissions a month, with close to 70,000 subscribers (including the membership of the CMA). At the same time, the *CMAJ* had on more than one occasion published papers and editorials that had noticeably upset the CMA. As an example, a *CMAJ* editorial that was critical of new Québec legislation on hospital emergency-department staffing ("Québec's Bill 114," 2002) pointed a finger at the doctors in a Québec community who had failed to keep an emergency department open, resulting in the death of a patient and this legislative intervention. In response to this editorial, Dana W. Hanson, president of the CMA, published a letter in the *CMAJ* calling for a retraction of the editorial's judgment that the tragic incident at that Québec hospital represented a breakdown in the trust so important to the patient-doctor relationship (Hanson, 2002).

As a result of this and other instances in which the CMA took exception to what was published in the *CMAJ*, as John Hoey & Anne Marie Todkill explained in a 2003 *CMAJ* commentary, "in September 2002 the Canadian Medical Association's board of directors agreed to put in place a Journal Oversight Committee as a mechanism for resolving the association's rare but sometimes strong disagreements with the editors of its wholly-owned journal *CMAJ*" (Hoey & Todkill, 2003, p. 287). Hoey & Todkill envisioned the committee's duties to include, among other things, "protecting the journal from undue influence by its publisher and owner" (p. 287). The oversight committee was not to prove very effective in this capacity.

Three years later, on December 12, 2005, the *CMAJ* published an editorial entitled "The Editorial Autonomy of *CMAJ*," in which editors flatly stated that they had "a transgression to report" (2005, p. 9). They went on to describe how the publisher had interfered in the publication of an investigative journalism piece (Eggertson & Sibbald, 2005), at the behest of the Canadian Pharmacists

Association. The paper described how Canadian pharmacists were engaging in invasive questioning (dealing with sexual histories) of women who were seeking to purchase the emergency contraception drug known as Plan B, an over-the-counter drug in Canada. The paper was based on the experience of 13 women who had been recruited by a reporter for the *CMAJ* to approach pharmacists across the country. In order to run the piece in the *CMAJ*, the editors had been forced by the publisher to remove any references to women's experiences with the pharmacists, ostensibly on the grounds that the reporter's procedures did not constitute a proper research method for a medical journal. In response to this interference, the editors stated in the journal's editorial on this incident that they had established "an advisory group" made up of medical editors and a health reporter "to examine *CMAJ*'s editorial autonomy and governance structure" ("The Editorial Autonomy of *CMAJ*," 2005, p. 9).

On February 7, 2006, the *CMAJ* posted a news story on its website with the headline "Two-tier Tony Clement Appointed New Minister of Health" (2006). The press had previously nicknamed the minister "two-tier Tony" because of Mr. Clement's stated interest in permitting private health plans, which was widely seen to undermine support for the country's public health system. Once more, the editors of the *CMAJ* were pressured by the publisher to revise one of their papers, reducing its critical aspects and replacing the original title with "Tony Clement Appointed as Canada's New Health Minister," while retaining the CMA president Ruth Collins-Nakai's endorsement of Tony Clement's appointment (Kondro & Sibbald, 2006).

It was later that month, on February 20, 2006, that John Hoey and Anne Marie Todkill were dismissed by Graham Morris, president of CMA Holdings and *CMAJ* publisher, who told the press that he "just felt that it was time for a fresh approach" (Webster, 2006, p. 720). By way of further explanation, Ruth Collins-Nakai, president of the CMA, commented later and somewhat more candidly in a letter to the journal that it was "a case of irreconcilable differences" (2006, n.p.). While denying that the firings had to do with any particular paper, she points more than once in her letter to tension between "on the one hand, the rights of the editor for independence and, on the other, the responsibility of the publisher to protect the organization's legal, financial and liability interests" (2006, n.p.). Collins-Nakai's letter was in response to the publication in the *CMAJ* of the report on editorial autonomy that Hoey commissioned (Kassirer, Davidoff, O'Hara, & Redelmeier, 2006; more on this below). For their part, Hoey and Todkill were contractually constrained from talking about the incident.

The firing of the two editors was covered by *The Globe and Mail* (Curry, 2006) and *The New York Times* (Austen, 2006) among other newspapers, as well as by medical journals *The Lancet* (Webster, 2006) and *The New England Journal of Medicine* (Shuchman & Redelmeier, 2006). In each case, it was made clear that editorial autonomy was the probable cause of dismissal; as *The Globe and Mail*'s Helen Branswell put it, "The firings are believed to be the culmination of an ongoing struggle between Dr. Hoey's team and the journal's owners over the editorial independence of the publication" (2006, p. A7). In a "perspective" piece on the incident for *The New England Journal of Medicine*, Shuchman

& Redelmeier concluded that the political nature of the medical profession should not be minimized:

Organized medicine is a political and social entity, and Canada has emphasized its political functions by doing such things as giving provincial medical associations the authority to negotiate all fees for physicians' services under universal health care. It shouldn't be surprising that Canada is now the epicenter of the ongoing struggle over the scope and limits of editorial freedom at association-owned journals. (2006, p. 1339)

A week after Hoey and Todkill were dismissed, acting editor Stephen Choi resigned from the journal, after the CMA refused to accept his proposed "Editorial Governance Plan for CMAJ," which sought to ensure the "absolute" independence of the editor (see Kassirer, Davidoff, O'Hara, & Redelmeier, 2006).

Not long after this, the committee that Hoey and Todkill had announced on December 12, 2005, which had been struck to examine editorial independence at the *CMAJ*, issued a highly critical report, first released by the *CMAJ* on February 28, 2006. The brief, "Editorial Autonomy of CMAJ," stated that "despite claims by the CMA. . . the editorial autonomy [of the CMAJ] is to an important degree illusory" (Kassirer, Davidoff, O'Hara, & Redelmeier, 2006, p. 950). The report did fault the journal editors, including Hoey, for their willingness "to respond to pressure from the CMA by modifying a report slated for publication in the journal," while saving their major criticism for the CMA "for blatant interference with the publication of a legitimate report" (p. 247).

Meanwhile, the resignations continued at the *CMAJ*, with 15 members of the 19-member editorial board stepping down on March 13, 2006, reflecting an overall loss of trust in the CMA's ability and willingness to preserve the autonomy and intellectual integrity of the journal (Ubelacker, 2006). This loss of trust was not to be restored by the CMA's striking of an outside governance review panel, whose 25 recommendations for ensuring editorial independence at the *CMAJ* were accepted by the CMA when the report was published on July 14, 2006 (Gandhi, 2006). The governance review panel, headed by Dick Pound, recommended in its report that, for example, the *CMAJ* Mission Statement "enshrine, as a specific goal and objective of the CMAJ, the principle of editorial integrity, independent of any special interests" (Pound, 2006, p. 36).

By that point, however, the dismissed and deserting alumni of the *CMAJ* had become convinced that what was needed, on the part of the CMA, was something more than the acceptance of a series of well-intentioned recommendations. There needed to be recognition on the CMA's part that something had gone terribly wrong in the mix of professional-association politics and medical research publishing. Failing this recognition on the part of the CMA, the former editors and editorial board members pursued the possibility of establishing an entirely independent journal in the field of general medicine—a journal that did not have to depend on a careful set of checks and balances to minimize the inevitable conflict of interests. This was not, after all, the first time that a publisher had interfered in the editorial content of a medical journal. And before considering the role that open access can play in the formation of independent journals, it is worth consid-

ering the larger pattern of undue influence and interference that has beset medical journal publishing in recent times, as it will make apparent the reasons this concept of editorial independence is particularly critical in medical publishing.

A brief history of editorial interference in medical journal publishing

In 1992, the *Annals of Internal Medicine* published a paper on pharmaceutical advertising that concluded that “many advertisements contained deficiencies in areas in which the FDA has established explicit standards of quality [for medical advertising]” (Wilkes, Doblin, & Shapiro, 1991). As a result of publishing this study, several large pharmaceutical companies withdrew an estimated US\$1.5 million in advertising from the journal. Ensnuing tensions between the journal’s co-editors, Robert and Suzanne Fletcher, and its publisher, the American College of Physicians, led to the editors’ resignation in 1993. A subsequent survey of North American journal editors found that 12% observed conflicts between editorial decisions and advertisers’ wishes and almost one quarter had no control over the advertising that ran in their journal (Wilkes & Kravitz, 1995). As Robert Fletcher later put it, “The pharmaceutical industry showed us that the advertising dollar could be a two-edged sword, a carrot or a stick. If you ever wondered whether they play hardball, that was a pretty good demonstration that they do” (cited by Tsai, 2003, p. 759).

The political side of biomedical publishing came into the glaring light of press coverage on January 15, 1999, when George Lundberg, editor-in-chief of the *Journal of the American Medical Association*, was dismissed after he published a paper by Stephanie Sanders & June Reinisch (1999) examining college students’ perception of what constituted “having sex,” based on Kinsey Institute data, which included the results that nearly two thirds of the students did not count oral sex in their definition. The paper was published just as President Clinton was publicly asserting that he did not have sex with Monica Lewinsky. The AMA executive vice-president, Dr. E. Ratcliffe Anderson Jr., claimed that Lundberg’s publishing of the paper “threatened the historic tradition and integrity of [the journal] by inappropriately and inexcusably interjecting *JAMA* into a major political debate that has nothing to do with science or medicine” (cited by Hoey, Caplan, Elmslie, Flegel, Joseph, Palepu, & Todkill, 1999, p. 508).³

Later that same year, Jerry Kassirer, editor-in-chief of the *New England Journal of Medicine* (*NEJM*), was forced to resign in a conflict over how the *NEJM* “brand” was being used to start new publications for doctors and the general public by the journal’s publisher, the Massachusetts Medical Society (Altman, 1999). Kassirer felt that such use of the “brand” was inappropriate, given that these materials would not go through the same level of scrutiny and review; he had asked in an earlier annual report, “Does the society want to become a business” (n.p.)? It might be said that any journal that generates \$15 million in profits on \$75 million in revenue (estimates for 2005), even if it is for the non-profit Massachusetts Medical Society, is very much a business already (Smith, 2006). That Kassirer’s resignation as editor-in-chief was followed by the appointment of Jeffrey Drazen, who had a history of strong ties to the pharmaceutical industry, only served to further affirm the financial orientation of the journal.

Pharmaceutical companies placed U.S.\$448 million–worth of advertisements in medical journals in 2003, making it possible for the American Medical Association to reap a \$40.7 million profit from its journals in 2004 (Fugh-Berman, Alladin, & Chow, 2006).⁴ In addition, pharmaceutical companies purchase millions of reprints to distribute to physicians whenever a paper reflects well on their medications, just as they are known to provide physicians with sponsored subscriptions to *The Lancet*, the *NEJM*, and other journals. Finally, studies have shown that authors conducting clinical trials have far too often held consulting contracts with the participating pharmaceutical companies (Perlis, Perlis, Wu, Hwang, Joseph, & Nierenberg, 2005).⁵

Clearly, medical journals are in a financial class of their own, compared with journals in any other field within scholarly publishing. By the same token, medical journal editors have taken special steps to protect the integrity of their journals. It is now standard practice, for example, to ask authors for a statement of competing interests (financial and otherwise; see note 2 for a statement from the authors of this paper), with many journals requiring the same for reviewers and editors (Lee & Bero, 2006). In addition, the International Committee of Medical Journal Editors (ICMJE) adopted a policy in 2004 that called for all clinical trials to be registered before the results would be published, in a move that would prevent drug companies from burying unfavourable studies (De Angelis, Drazen, Frizelle, Haug, Hoey, Horton, Kotzin, Laine, Marusic, Overbeck, Schroeder, Sox & Van Der Weyden, 2004).

***Open Medicine* as an independent medical research journal**

In light of this history, the editors of *Open Medicine* are not only committed to adhering to the safeguards that are now becoming common practice for medical journals, but have also made it a policy neither to seek nor accept sponsorship from professional associations nor to accept drug or medical device advertising. They were inspired, in part, by the example of the editors of *PLoS Medicine*, who had a few years earlier announced that they would not accept medical advertising, as they were determined not to become “part of the cycle of dependency. . . between journals and the pharmaceutical industry” (Barbour, Butcher, Cohen, & Yamey, 2004, n.p.).

The editors at *Open Medicine* also decided that once the journal was underway, papers would be published as soon as they were ready, and that the journal would not engage in the common practice of sending out “advance articles” to the press with an embargo ensuring that any press coverage is withheld until the journal publishes the paper, a practice that Vincent Kiernan argues does more to direct and control press coverage of medical research issues than to serve public interests (2006).

The editors of *Open Medicine* were also committed to establishing a journal with open access in ways that went beyond John Hoey’s original initiative with the *CMAJ*, which had made the online edition free to readers while restricting reprints and other use of the content. With *Open Medicine*, authors are not asked to turn over the copyright for their work to the publisher. The published paper is placed under a Creative Commons licence that enables its reuse and further distribution, as long as it includes proper attribution to the author and journal, and

on the grounds that access will continue to be open. The Creative Commons licence enables others not only to freely access papers, but to utilize the work in new productive ways through such bio-informatic innovations as data mashups and information mining (Good, Kawas, Kuo, & Wilkinson, 2006; Hodgkinson, 2007). The rise of open access in scholarly publishing is proving critical to the formation of independent and innovative journals, and this new approach to the circulation of knowledge needs to be considered in more detail.

The open access model

Open access represents, above all, the use of the Internet to extend the circulation and sharing of knowledge. That extension is not to everyone everywhere, certainly, in light of the considerable and persistent digital divide, but open access does represent an extension that goes well beyond what was proving possible with print journals. As should be clear by this point, open access is not taking any one form, either in terms of economic models or conditions of access to a journal's content. Open access is part of an important new chapter in the long historical process of opening science and scholarship to a wider world. That chapter includes open data initiatives (Uhlir, 2005), open source biology (Maurer, 2003), open encyclopedias, and a variety of "open science" projects (David, 2004).

Among open access journals, there are those that have been born digital and free, which have risen to the very top of their fields in a relatively short time, such as the Public Library of Science's *PLoS Biology*, and there are highly ranked *éminences grises*, such as *The New England Journal of Medicine*, which makes each issue free to readers six months after initial publication. In addition, most publishers in the biomedical field also support the World Health Organization's HINARI project and other initiatives that provide free online journal access to research libraries in low-income countries, although the implementation of this support by the commercial publishers has been questioned (Villafuerte-Gálvez, Curioso, & Gayoso, 2007).

Scholarly societies are also finding ways to contribute to this greater openness without jeopardizing the subscription revenues on which they depend. For example, among medical societies using Highwire Press, a division of Stanford University Libraries, for their online editions, one finds titles whose contents are freely available (*Canadian Medical Association Journal*) or delayed by a matter of months (*The New England Journal of Medicine*), adding up to the free availability of 1.7 million papers drawn from Highwire's collection of more than 1,000 journals. Among the funders of biomedical research, the Wellcome Trust insists that all grant recipients deposit copies of their published work in the open access PubMed Central six months after publication, while the National Institutes of Health in the U.S. requests a similar form of deposit. This sort of open access mandate for grant-funded research has been taken up or is under consideration by a number of funding bodies.⁶

Yet up to this point, the argument for open access among libraries, journal editors, and researchers has been about increasing access to research for researchers, professionals (such as physicians), and the public (Willinsky, 2006). At issue has been the human right to know what is known, and all the more so, surely, when that knowledge has been funded by public and philanthropic

sources. There is yet another side to the access question, however, which has to do with who is able to participate in the circulation of knowledge and on what terms. This is the point at which, as we have learned through our work with *Open Medicine*, open access provides a means of defending and furthering academic freedom.

Academic freedom and open access

The concept of “academic freedom” took shape during the twentieth century as a way to protect the right of faculty members to pursue independent lines of research and scholarship, with this work judged solely on its scholarly quality and contribution. A critical incident in the formation of this concept, for example, came when Edward Ross was dismissed by Stanford University in 1901 because his ideas about economic reform met with the disapprobation of Jane Stanford, wife to Leland Stanford, an act followed by the resignation of seven professors in protest. When John Dewey became the first president of the American Association of University Professors in 1915, he struck a committee to examine the state of academic freedom and tenure; the committee included Arthur O. Lovejoy, one of the professors who had resigned at Stanford (Pollitt & Kurland, 1998). The standard statement in the field of academic freedom from the American Association of University Professors, known as the 1940 Statement of Principles on Academic Freedom and Tenure, states as its first principle that “Teachers are entitled to full freedom in research and in the publication of the results” (American Association of University Professors, 1940, n.p.).

While the concept of academic freedom has typically involved undue interference in a faculty member’s ability to pursue research and teaching that otherwise meets common academic standards, we take the editorial independence of scholarly journals to be a natural extension of this concept. We see this editorial independence as no less necessary for the realization of faculty members’ academic freedom, given that this freedom depends on their work receiving a fair hearing and opportunity for wider circulation. The journal editor, in this sense, is the handmaid of academic freedom. The editor creates opportunities and guidance for the publication of innovative work, nurtures authors’ works, and mediates differences between reviewers and authors to ensure that the work receives a fair and critical reading (at least in principle).

Certainly, in the humanities, journal papers are where trial balloons are floated and new ideas given their first run, with authors going on, not infrequently, to fully develop their papers into book-length manuscripts. The journal is also where new and old ideas are most readily and immediately contested. Books and papers are subject to extensive public review in journals, in addition to the closed peer review. This closed and open review process is particularly important to academic freedom, as it is not simply an instance of free speech or a civil liberty (Slaughter, 1980). And the peer-reviewed journal is the best available device—though by no means perfect (cf. Horrobin, 1990)—for providing the level of review and scrutiny needed to ensure that academic freedom can continue to make its contribution to the generation of knowledge.

Journals are also where disciplines define themselves—where the old guard, as editors and reviewers, carefully maintains traditional definitions of the field

and its boundaries. By the same token, new journals are often about the formation of new disciplines. Consider how the emerging field of women's studies was marked by the launch of *Women's Studies Quarterly* in 1972, with *Signs* following in 1975 and *Feminist Review* in 1979 (preceded in biomedical publishing by the *Journal of the American Medical Women's Association*, founded in 1947). It seems fair to say that these journals made a significant contribution to the academic freedom of scholars working in what was then a new area. The journals, with their interdisciplinary titles, provided a vehicle for work that challenged entrenched disciplinary approaches and boundaries. They created a sense of possibility for going with one's work where others had not gone before.

If the journal can serve as one of the great defenders of academic freedom, then the ability to start a journal that is able to establish its intellectual, as well as financial, independence from forces and traditions that might otherwise compromise that freedom becomes all the more important. Among the factors today inhibiting the initiation of new titles is the corporate publishers' practice of licensing to research libraries bundles of hundreds, if not thousands, of titles at a single price, which locks down a growing proportion of those libraries' serial budgets with multiple-year and no-cancellation contracts. Prior to 2003, when Cornell University cancelled its bundle of 900 Elsevier titles (Elsevier now has 2000 titles), it had been paying 20% of the library's serial budget for 2% of its titles through this bundling process ("After Failed Negotiations," 2003). With the journal market squeezed by the major publishers—the six leading publishers now control 60% of peer-reviewed titles and a much larger portion of libraries' serials allocations given the much higher pricing of commercially published journals (Bergstrom, 2002; Crow, 2006)—it has become that much harder for a new journal or a journal that is not part of a major organization to secure library subscriptions.

Enter the many forms of open access in scholarly publishing. Open access enables a new journal to become part of the larger academic community immediately, without first having to convince a major corporation or organization to sponsor it or having to assemble sufficient resources to sell initial subscriptions through some combination of advertising and agents. (One estimate sets the price of securing 500 subscribers in the first three years at roughly US\$50,000 [Page, Campbell, & Meadows, 1997]).

Open access enables journals to establish a global presence online to reach readers worldwide. In addition, open access versions of scholarly indexing, such as Google Scholar, PubMed, and Citeseer, enable readers to find this work and in some cases to track who has cited the work and in what context. This improves the ability to appreciate how new developments in research are taking root long before the ideas become well established enough to be picked up by citation indexes such as the ISI Web of Science. Finding a way into libraries and, even more challenging, being picked up by the major indexes—once necessary for a journal to begin to offer its authors a fair and widespread reading—no longer stand as major barriers to a new journal's ability to serve the cause of academic freedom.

The newfound support for academic freedom afforded by open access is also being realized by universities in low-income countries. It has long been a chal-

lenge for new journals in such settings to gain recognition and circulation for local research initiatives. Yet work that is made open access can turn up in the same search results as work from the leading journals. In addition, open access is serving the emergence of regional initiatives, with journal hosting programs such as African Journals Online (<http://www.ajol.info>) and Bioline International (<http://www.bioline.org.br/>), indexes like SciELO (<http://www.scielo.org/>) and LatinIndex (<http://www.latindex.unam.mx/>), and individual open access titles, whether they are the born-digital *African Journal of Biotechnology* (<http://www.academicjournals.org/AJB>) or the 85-year-old *East African Medical Journal* (<http://www.eamj.com/>).

The opening ahead

Open access may enable immediate presence, but it still leaves in question the longer-term sustainable economic model for publishing the journal. In the case of *Open Medicine*, the editors who had been working with the *CMAJ* had come off a multi-million-dollar annual budget devoted to publishing a biweekly, highly ranked journal with a full-time professional production and management staff. They are now engaged in an all-volunteer professional editorial effort, which resulted in a high-quality first issue as well as editorial processes and a flow of manuscripts that will enable it to publish papers on a continuing basis, with an output initially equivalent to a quarterly. Open access made it possible to establish a journal with an immediate presence, visited by tens of thousands of readers in its first month, while attracting press coverage from across Canada. It enabled *Scientific American* (Mims, 2007), as well as a number of bloggers, to pick up one of its initial papers, which compared health care expenditures and outcomes in the U.S. and Canada (Guyatt, Devereaux, Lexchin, Stone, Yalnizyan, & Himmelstein, Woolhandler, Zhou, Goldsmith, Cook, Haines, Lacchetti, Lavis, Sullivan, Mills, Kraus, & Bhatnagar, 2007).

At this point, the *Open Medicine* team is considering a variety of economic models aimed at sustaining and expanding this open access journal. A number of donations have already been made to the journal, and it will be soliciting non-medical advertising. The team is also considering nominal author fees, a library cooperative, and other ideas, but at each point it remains committed to realizing and re-asserting the basic principles of scholarly publishing in the medical field. It does not pretend to be unique in taking this principled stand, as *PLoS Medicine*, which was first issued in 2004, remains very much an inspiration in its open access policies and independence in terms of professional associations and medical advertising. But *Open Medicine* has been able to demonstrate how this re-assertion of scholarly principles can happen on a far more modest and immediate scale, born of an urgent national need for an alternative model in general medicine.

Open Medicine was able to mount a peer-reviewed journal from scratch with a first issue of 10 papers in less than a year, through the dedicated commitment and experienced professionalism of its editors. But these tireless efforts were also facilitated by parallel developments in the field of software and publishing systems. What enabled the editors and board members to collaborate across Canada (and with Sally Murray in Australia), was another open development, this time in the form of open source software for journal publishing. The journal uses the

freely downloadable Open Journal Systems (Willinsky, 2005) to manage and publish the journal (just as the open access archives in many libraries use the open source EPrints and DSpace systems to enable authors to archive their published work).⁷ In addition, Tarek Lubani, a recent medical school graduate and part of a new generation of physicians with technical savvy, has used the open source Drupal to establish the journal's OM Blog, which Dean Giustini uses to bring almost daily currency and immediacy to the journal, and a wiki to help organize editorial meetings. It is that particular combination, then, of open access to research and open source software that has become the new enabler of academic freedom in an age in which access to knowledge can otherwise operate like just another commodity market.

It may be fair to say that *Open Medicine* has yet to arrive at a long-term financial model (although, for that matter, *The New York Times* is also still searching for a stable model for online publishing, judging by the array of initiatives with which it continues to experiment). But given the commitment of everyone involved in *Open Medicine*, it is very unlikely that it will back away from its open access principles. While we cannot predict which economic model will prevail with this journal, or with the field of online journal publishing generally, what is clear is that people are finding innovative ways of increasing access to this body of knowledge.

Yet it is also fair to claim that *Open Medicine* has raised the stakes for open access by demonstrating how this combination of open access and open source can be used today to re-assert editorial independence, intellectual integrity, and academic freedom. These principles of scholarly communication, as this critical incident in the development of scholarly publishing also demonstrates, are never entirely secure from the competing interests of a knowledge-based economy in biomedical journal publishing. Constant and critical vigilance are needed to protect research principles from undue influences, and only innovation and experimentation will provide corrective measures and a way forward. Fortunately, such critical and innovative work is the stock in trade for the academic community, even if this critical sensibility is seldom applied to the communication practices at work in our own particular corner of the knowledge economy. It takes a critical incident to help us realize what principles underwrite this form of communication and to test our commitment to them.

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Notes

1. At the launch of the journal, the *Open Medicine* editorial team consisted of editors Stephen Choi and Anita Palepu; deputy editor Claire Kendall; associate editors James Brophy, William A. Ghali, Dean Giustini, John Hoey, James Maskalyk, Sally Murray, and Anne Marie Todkill; contributing editor David Moher; technical advisor Tarek Lubani; publisher John Willinsky; marketing consultant Joanne Currie; and media liaison Lindsay Borthwick.

2. Prior to resigning from the Canadian Medical Association Journal in 2006, Palepu and Kendall were associate editors with the journal, Murray was an editorial fellow, and Willinsky was an editorial board member; their current positions with *Open Medicine* are listed in note 1.
3. Hoey et al. point out in their editorial on the Lundberg firing that the AMA is a political organization—"Since 1989 the AMA Political Action Committee has given more than US\$14 million to US Senate and House candidates; these donations have favored Republicans over Democrats by a ratio of 2 to 1" (1999, p. 508)—and they note how the paper in question lent support to Clinton's claim. The editorial concludes with a note on the firing, some seven years before it would happen to at least two of the editors of the *CMAJ*: "Editors can of course be fired, like anyone else. But firing a respected editor in the absence of any frank misconduct on his part, without debate or witnesses, does not meet anyone's criteria for fairness" (1999, p. 508).
4. Fugh-Berman, Alladin, & Chow (2006) report that the *JAMA*, the *NEJM*, *The Lancet*, and *British Medical Journal (BMJ)*, all weeklies, had advertising rates in 2006 that ranged from US\$7,000 to US\$15,000 a page and circulations ranging from 34,000 to 344,000. Also see Kassirer (2007) on pharmaceutical advertising in biomedical journals.
5. Richard Smith (2006) points to a particularly troubling instance in which Merck purchased 900,000 reprints of a study from the *NEJM*, with the *NEJM* later publishing a cautionary note on the accuracy of the study and Merck withdrawing the drug featured in the study. In an earlier, boldly titled paper, "Medical Journals Are an Extension of the Marketing Arm of Pharmaceutical Companies," Smith had pointed to the power of the reprint: "For a drug company, a favourable trial is worth thousands of pages of advertising, which is why a company will sometimes spend upwards of a million dollars on reprints of the trial for worldwide distribution. The doctors receiving the reprints may not read them, but they will be impressed by the name of the journal from which they come. The quality of the journal will bless the quality of the drug" (Smith, 2005, n.p.).
6. See Peter Suber's *Open Access Newsletter* for reviews of the current state of open access mandates: <http://www.earlham.edu/~peters/fos/newsletter/archive.htm>.
7. Open Journal Systems (OJS) was developed by the Public Knowledge Project, in a partnership among the Faculty of Education at the University of British Columbia, Simon Fraser Library, and the Canadian Centre for Studies in Publishing. Open Journal Systems is being used by more than 1,000 journals, 20 percent of which are new titles and all of which offer some form of open access, with somewhat more than half being published in low-income countries.

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