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Article

Open Access Publishing in Canada: Current and Future Library and University Press Supports

Donald Taylor [1,*], Heather Morrison [2], Brian Owen [1], Kumiko Vézina [3] and Andrew Waller [4]

1   WAC Bennett Library, Simon Fraser University, Burnaby, BC V5A 1S6, Canada;
    E-Mail: gwbowen@sfu.ca
2   School of Information Studies, University of Ottawa, Ottawa, ON K1N 6N5, Canada; E-Mail:
    hgmorris@sfu.ca
3   Concordia University Libraries, Concordia University, Montreal, QC H3G 1M8, Canada;
    E-Mail: kumiko.vezina@concordia.ca
4   Libraries and Cultural Resources, University of Calgary, Calgary, AB T2N 1N4, Canada;
    E-Mail: waller@ucalgary.ca

*   Author to whom correspondence should be addressed; E-Mail: dstaylor@sfu.ca;
    Tel.: +1-778-782-9705; Fax: +1-778-782-4908.

Abstract: Canadian university libraries, Canadian university presses, and non-university scholarly presses at Canadian universities were surveyed in the first part of 2010 as to the level of their support of Open Access (OA) journal publishing. Respondents were asked about journal hosting services in their organization as well as their thoughts on internal and external support for open access publishing. Results showed that most of the organizations are hosting OA journals, largely between one and five in number, and many supply journal hosting services, including some technical support. Personnel resources are a notable factor in the ability to host journals. Most respondents engage in some sort of internal support for open access publishing and are open to options that they are presently not utilizing. They are particularly amenable to OA publishing support from outside of their organizations, especially assistance at a consortial level.

Keywords: open access publishing; support for open access; academic libraries; universities; Canada

1. Introduction

For the last decade, scholarly publishing in Canada has been undergoing an intense period of transformation from print to online. But a new era is being ushered in with a definite increasing shift towards Open Access (OA), defined as free online availability of scholarly literature to anyone, anywhere with an internet connection [1].

There are two basic approaches to providing open access to scholarly information, as a part of the publishing process (open access journals, monographs, *etc.*), or through open access archives [2]. The authors acknowledge and recommend both approaches, though this particular survey focuses on open access publishing. Participants in scholarly publishing in Canada include scholarly publishers (independent scholars, societies, and society presses), university presses, university libraries, and Canada's Social Sciences and Humanities Research Council (SSHRC).

There are several key opportunities where open access publishing is moving forward in Canada. The cross-country *Synergies* project is helping many Canadian society publishers in the Social Sciences and Humanities to go online [3]. With the original funding set to run out in 2013, there will be a need to sustain support for these journals, and identifying an avenue for open access support can help to spur their movement towards open access. SSHRC funding to OA journals via SSHRC's *Aid to Scholarly Journals* program began in 2008, and is potentially scalable to include more journals or disciplines, should libraries be able to commit to funding for OA rather than subscriptions [4]. The Canadian Research Knowledge Network (CRKN) (2008) has endorsed a *Statement on Alternative Publishing Models & Open Access* [5]. The SCOAP3 (2010) initiative [6], which Canadian libraries have committed to through CRKN, provides one example of a model for transitioning library subscriptions to support for open access.

With university libraries and university and scholarly presses around the world now increasingly involved with providing support for scholarly journals, this paper reports on the results of a pan-Canadian survey of these organizations in regard to their support of OA publishing. This survey examined current support for OA journals and models for further development of OAjournals most likely to benefit from broad-based support across Canada.

2. Literature Review

Morrison [2] presents an overview of scholarly communication for librarians, focusing on scholarly journals. There are approximately 20,000–25,000 scholarly, peer-reviewed journals published in the world today. In the last several years, a shift from paper-based to electronic publishing has begun. This has added complexity to a pre-existing crisis in serials publishing, a vicious cycle of increasing prices and cancellations resulting in further price increases.

From the beginnings of scholarly journal publishing in 1665 until the end of the Second World War, almost all scholarly journal publishing was coordinated by scholarly society publishers. After the Second World War, an increase in university-based research created a market for commercial scholarly publishers. In recent decades, the commercial market has undergone considerable consolidation, raising anti-competitive concerns, with the result that today a handful of scholarly publishers are responsible for the majority of the world's journals.

Meanwhile, some of the forces favoring consolidation, such as the initially high price of entry into electronic publishing, have changed, so that it is now relatively easy to begin a new journal, at least from a technical standpoint. The number of journals that are fully or partially open access is substantial, and the numbers are growing rapidly. The Directory of Open Access Journals (DOAJ) listed more than 6700 peer-reviewed, scholarly journals as of July, 2011 that were fully open access (over 20% of the world's scholarly journals). Based on the number of new titles added between July 2010 and July 2011, DOAJ was adding on average more than four new titles per day [7]. In addition, many subscription journals provide free access to back issues of journals (what is sometimes called delayed open access), and/or support open access through author self-archiving.

The survey that is the subject of this article covers two areas in transition in scholarly communication today: university involvement in journal publishing and the economic support provided by universities, particularly through libraries, for scholarly publishing.

Brown, Griffiths and Rascoff, reporting on an extensive study of university publishing in the USconducted for Ithaka, discuss the present situation of increasing marginalization of university presses and argue for a stronger and more central presence for university publishing, touching on the emerging role of libraries in academic publishing [8].

The Association of Research Libraries (ARL) is a group of 126 research libraries in the US and Canada at comprehensive, research-intensive institutions. In a survey conducted of ARL members (Hahn, 2008), it was found that, by late 2007, 44% of the 80 responding libraries were involved in publishing services, mainly journals, and another 21% were in the process of planning publishing services development [9]. Only 36% of libraries were not active in this area.

Edgar and Willinsky conducted a survey of journals using Open Journal Systems (OJS), a freely available open source platform for publishing scholarly journals [10]. This survey is highly relevant, as many Canadian open access journals are known to use OJS. This survey of 998 journals found that the journals are traditional with respect to peer reviewing and other aspects of scholarly publishing, but are exceptional in the number of open access titles, journals with extremely low operating budgets, and journals from developing countries. Edgar and Willinsky suggest that a number of these journals illustrate a third path to scholarly publishing, an alternative to traditional society and commercial publishing routes.

Shearer reports on an environmental scan (literature review, interviews and case studies) of the landscape for academic publishing undertaken from January–February 2010 on behalf of the University of British Columbia Library [11]. Shearer's report provides qualitative detail that supplements the results of this survey. Shearer found that the majority of Canadian scholarly publishing is conducted by traditional, subscription-oriented publishers, but is in flux, with three key factors contributing to the development of new models: new technology (particularly the internet and Open Journals Systems), the *Synergies* Canada initiative, and open access. A common theme is the emergence of new collaborations, particularly between libraries, publishers, and scholars. Library services typically involve activities such as journal hosting, technical assistance and software training. Shearer reports that OJS software is widely used by Canadian libraries, and that a number of libraries are considering expanding services to include monographs publishing.

The Research Information Network in the UK commissioned a study of scholarly communication at a global level as well as in the UK, covering both cash and non-cash costs at all stages of the scholarly

communication process, from producing research outputs to reading [12]. One key finding was that the bulk of the funding is provided by academic institutions; 53% of the total costs come from academic library subscriptions and a further 23% in the unpaid costs from peer review, for a total of 76%. Non-academic library subscriptions account for another 11% of total costs, for a total of 87% of costs paid for either by academic institutions or by the library sector. From a narrow cash basis, the estimated value of the international scholarly journal publishing industry, responsible for about 1.5 million peer-reviewed articles published annually in an estimated 23,000 journals, generated revenues of about £8 billion per year as of 2007, about half of the estimated £16 billion overall for the scholarly publishing industry. Of this amount, academic library subscriptions are responsible for a substantial majority of revenues, 68%–75% of the total, followed by corporate subscriptions at 15%–17%, and advertising at 4%, as quoted in Ware & Mabe (2009) [13]. The Research Information Network (RIN) report indicates that UK libraries could enjoy savings from a shift to electronic-only publication or from a full shift to open access paid for through author-side fees [12]. The RIN figures are not entirely relevant in the Canadian context because of the impact of the VAT in the UK, which applies to electronic but not paper subscriptions.

Houghton and colleagues have conducted a major macroeconomic analysis of the potential for transition from subscriptions to open access at the country level, first in the UK [14], and more recently in the Netherlands [15] and Denmark [16], indicating significant cost savings from a transition to open access in all countries studied. These studies included a broad range of factors involved in scholarly communication, including unpaid activities such as reading and reviewing. The amount of savings varied with the method of providing open access, with the gold approach or open access publishing providing the smallest savings, green or self-archiving greater savings, and the greatest savings were anticipated with a more radical transition of the whole scholarly publishing system to one involving publishing through institutional repositories with a peer-review overlay. The significance of these studies is that they illustrate the financial advantage of even a unilateral move by one country to open access, even in countries such as the UK where a favorable balance of trade is enjoyed due to high profits of local publishers.

A 2010 issue of Prometheus features a debate on the Houghton studies, with an introduction to the studies by Houghton and Oppenheimer [17] and responses by Harnad [18] (2010), emphasizing the benefit/cost ratio of 40 times for green open access or open access archiving and suggesting that Houghton *et al.* may have overestimated the cost. Also in the issue, Martin Hall [19], points out that these are works in progress, and brings up the important philosophical point that "use of knowledge in the subscription publishing model are a form of rent that works against the inherent benefits in the properties of knowledge". Steven Hall, a publishing consultant, critiques the methodology of the Houghton studies in some detail [20]. Kennan, who writes from the perspective of a researcher who is supportive of open access, points out that the Houghton studies are essential, although the final forms of open access may be different from any of the scenarios examined [21]. May queries the report on several non-economic aspects [22]. In the next issue of Prometheus, Houghton and Oppenheimer present a response to the questions raised in the debate issue [23].

In the US, a feasibility study by Houghton, Rasmussen and Sheehan was conducted which indicates that over a 30-year period the benefits of the proposed Federal Research Public Access Act (FRPAA) would be eight times the cost throughout the world and five times within the US, for an estimated $1

billion in additional benefits for the US [24]. This model assumes a central archiving approach, with each government department creating and maintaining an archive for the research that particular department funds.

The Canadian Association of Research Libraries (CARL) initiated an institutional repository program in 2003; as of 2010, over 80% of CARL libraries have a functioning institutional repository [25]. Vézina conducted a study of researchers in major Québec universities, and found that while a quarter of researchers had previously published in OA journals, only 2% had self-archived in their institutional repository, but 83% indicated that they would self-archive willingly given an institutional mandate to do so, a figure that is consistent with other international studies in this area [26].

Nariani and Fernandez surveyed CARL member libraries from November 2010 through January 2011 [27]. Their results showed that a majority of respondents had dedicated open access funds (12/18), the same number were involved in sponsorship support for OA publishers, and half covered OA article processing charges for authors from their institutions. Most did not have a formal policy for supporting open access publishing but were still engaged in this in some way. The most common place this funding came from was the library collections budget.

Certain OA initiatives inspired some of the survey questions on models for OA support. One of these initiatives, the Sponsoring Consortium for Open Access Particle Physics Publishing (SCOAP3) (2007, 2010) aims to transition the whole of particle physics publishing from a subscriptions basis to full open access, by creating a global collaboration of libraries that will commit the funds currently spent on subscriptions towards open access [6]. As soon as sufficient funds have been received, negotiations will begin. As of 2010, SCOAP3 was over 70% of the way in funding commitments [28].

The Stanford Encyclopedia of Philosophy (SEP), a scholar-led "living" encyclopedia featuring regular updates of articles from invited experts, is experimenting with an endowment fund approach to sustainable open access [29]. The idea is for libraries around the world to commit about what they would pay for several years' worth of licensing to a similar subscription-based resource, in order to create an endowment fund to pay for ongoing open access. Libraries can support the SEP by joining an organization called the Stanford Encyclopedia of Philosophy International Association (SEPIA). The SEPIA website (2010) provides information for libraries about why and how to join and links to relevant information such as reviews of SEP [30]. Sanville's (2005) document prepared for the International Coalition of Library Consortia outlines the philosophy and overall approach of the endowment model for SEP.

3. Survey Methodology and Response

The survey was constructed during January–March 2010. It was tested with one scholarly press manager and a selection of library colleagues of the authors.

The survey was web-based using the Simon Fraser University Web Survey Tool with the survey available in both English and French. Messages requesting participation were sent via email to the directors of the 73 member university libraries that comprised the Canadian Research Knowledge Network, the Canadian national consortium of university libraries. A further 19 e-mail requests for participation were sent to the managers of Canadian university presses and scholarly presses located at

universities (the definition of a scholarly press was a press operating at a Canadian university but that is not a university press). Requests for participation in English were sent to English-speaking libraries and presses and requests in French to French-speaking libraries and presses. The survey was completed from March 29 to April 20, 2010. Recipients were sent a follow-up email on April 12 to remind them to complete the survey if they had not already done so. Due to the anonymity feature of the survey tool, the authors did not know if the initial recipient filled out the survey, or if they passed it on to a colleague whom they felt was better able to respond to the survey questions. The survey results were compiled in the period May–July 2010.

Ethics approval was obtained by all of the authors at their home institutions.

The survey is reproduced in Supplementary A.

The English language consent form that was seen by English speaking respondents is reproduced in Supplementary B.

Thirty-three responses were received out of a total of 92 surveys for a total response rate of 36%.

The response rate from university libraries was 38% (28/73) and 32% from scholarly/university presses (6/19). For sub groups, the response rate was 40% (10/16) for libraries at universities with medical schools, a 29% (17/59) response rate from libraries at universities without a medical school, 38% (5/13) for university presses and 17% (1/6) for scholarly presses.

The response rate from the presses was lower than anticipated, but a significant minority of the scholarly presses surveyed was not involved in journal publishing or online publishing in any way, and may thus have seen no relevance for themselves in filling out the survey.

Results of the survey were presented to the Scholarly Communications Committee of CARL in Edmonton, AB, May 19, 2010, at the Canadian Association of Learned Journals (CALJ) meeting at the CFHSS Congress in Montreal, June 1, 2010, at the Berlin 8 Conference in Beijing, China, October 26, 2010 and at the School of Library, Archival, and Information Studies (SLAIS) Research Day, University of British Columbia, Vancouver, BC, March 11, 2011.

4. Results and Discussion

4.1. Survey Results—Journal Hosting

Journal hosting services cover a range of possibilities for the organizational hosting of e-journals. The spectrum can range from a library hosting a journal in its institutional repository, to libraries or other organizations providing journal hosting software, such as OJS, and hosting those journals to full blown publishing support with an extensive suite of editorial services. Of the 33 respondents, 18 (55%) provide journal hosting services, with 15 of the 18 organizations being responsible for the maintenance of their own journal hosting platform. One of these sites, a library at a university with a medical school, was not yet hosting journals at the time they completed the survey, but they did have all the infrastructure and services in place. Three of the six scholarly/university presses responded that they provided journal hosting services, nine of 17 libraries at universities without a medical school provide journal hosting services, and six out of 10 libraries at universities with medical schools provide journal hosting services (Figure 1).

Figure 1. Proportion of journals hosted that are Open Access (OA).

The majority of organizations are hosting open access journals, with only two organizations not hosting at least some open access journals. This is unsurprising as the scholarly communications policies at many universities explicitly endorse open access, and thus they would naturally favour hosting open access journals if they had the infrastructure in place.

Of the 18 (out of 33) organizations that provide journal hosting services, the vast majority provide a great deal of support to journals with regard to technical infrastructure and related technical assistance, and also with the initial set-up of the journal (Figure 2). Not surprisingly, when an organization is asked about its level of support for the management of the publishing workflow, the level of support drops. Seven organizations (out of a total of 18 organizations) provide support to the continuous running of the journal, including some support for the management of the publishing workflow. Four organizations provide "a lot of support" in the provision of full online journal publishing services, including management of the entire publishing workflow. The responses to the questions about support of the publishing workflow illustrated a possible difference in interpretation between libraries and university/scholarly presses. This difference is illustrated by the fact that out of 15 libraries, six stated that they provide some, or a lot of, support to full online journal publishing services. These results would mean that 40% of hosting libraries provide the same level of publishing support as do the university/scholarly presses that host journals. This is a highly untenable proposition, particularly when in responses to question 8 (Figure 3), only two libraries indicated that they have more than 1.1 Full Time Equivalent (FTE) staff devoted to journal hosting. As libraries become more and more involved in hosting journals, they will need to clarify for themselves and their clients the true level of support they provide to the publishing workflow.

Figure 2. Amount and type of journal hosting support.
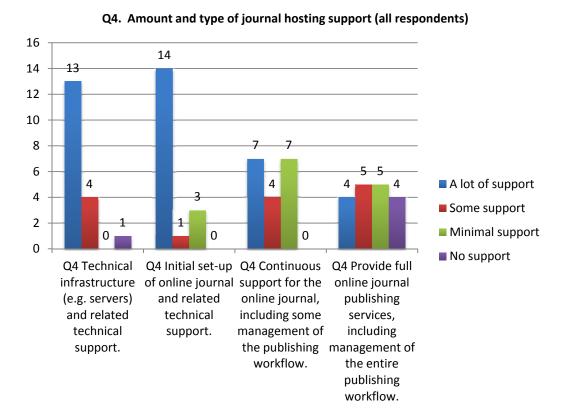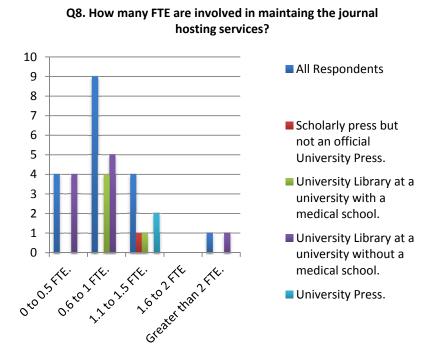

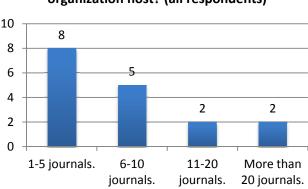**Figure 3.** Full Time Equivalent (FTE) number involved in journal hosting services.

The vast majority of organizations (17 out of 18) have 1.5 FTE or less devoted to maintaining journal hosting services, with the mode being an FTE of between 0.6 and 1.0. One organization, a library at a university without a medical school, has more than 2.0 FTE devoted to journal hosting

services. Except for three libraries at universities without medical schools, all organizations are responsible for the maintenance of their journal hosting platform.

Among those organizations hosting journals, the most common number of journals hosted is between one and five journals (eight of 17 respondents) (Figure 4). There was also one library that was not yet hosting journals at the time they completed the survey, but did have all the infrastructure and services in place. At the other end of the scale, one library at a university without a medical school and one press host over 20 journals while two libraries (one at a university with a medical school, one without) and one press host between 11 and 20 journals.
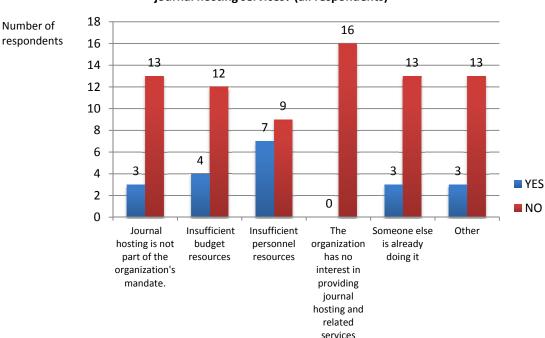
Figure 4. Number of OA journals hosted.

Half of the libraries hosting journals host only open access journals, while one press does this. One library did not host any open access journals, but is planning on doing so in the future, and the one press that did not host any open access journals was unsure if they would host OA journals in the future.

Those organizations that were not hosting journals were asked a series of questions as to why they do not provide journal hosting services (Figure 5). Respondents could choose as many responses as they saw fit. The single largest reason given (seven of 16 responses) for not providing hosting services was insufficient personnel resources. As well, three organizations (including two presses) stated that journal hosting was not part of their mandate, four stated that insufficient budget resources played a role, and three also stated that others within the institution were already hosting journals.

Lastly, eight of the non-hosting organizations are definitely considering hosting journals in the future, two were unsure, and five are not currently considering hosting journals. Of those planning on offering journal hosting services in the future, one is a press, three are libraries at universities with a medical school, and four are libraries at universities without medical schools. For these organizations, their interest in journal hosting will likely translate into concrete action. Consequently, 26 of the 33 respondents are either currently providing journal hosting services, or have plans to provide journal hosting services in the future.

Figure 5. Main reasons for not offering journal hosting services.

Q11. What do you see as the main reasons why your organization is not offering journal hosting services? (all respondents)

4.2. Survey Results—Internal Support

All respondents were asked questions about the level of support they have for various methods of supporting Open Access publishing and Canadian academic journals (Table 1). They were given five choices for a response: Currently Support, Would Support, Might Support, Would Not Support and Not Applicable. The survey provided the two responses of would support and might support in order to gauge the level of partial support for the different proposals. A response of "would support" is evidence of a greater willingness to support the proposal, whereas "might support" shows less willingness to support the proposal, but not outright rejection of the proposal. Included in the suggested methods were both intra-institutional funding and extra-institutional funding mechanisms. The Fisher exact test for significance was conducted on these findings by conflating the Currently Support, Would Support and Might Support responses into a positive (yes) response and treating Would Not Support responses as a negative (no) response in order to get a binary set of responses; the Not Applicable responses were not included in the Fisher exact test. Due to the small number of responses from presses (six in total) it was decided to conduct the Fisher test on the responses from libraries at universities without medical schools and from libraries at universities with medical schools to see if the differences between their responses could be considered statistically significant, or simply indicative of possible trends. Perhaps due to the limited numbers of responses (10 from universities with medical schools and 17 for universities without medical schools), or perhaps because of the closeness in value of their responses, none of the findings were found to contain statistically significant differences in the responses between the two groups.

Table 1. Level of internal support for OA.

	Currently support	Would support	Might support	Would not support	N/A	did not answer
Support Canadian academic journals through subscriptions	19	3	6	2	2	1
Pay for Open Access article processing fees, with revenue used by the journal to lower subscription prices	5	5	12	8	3	0
Organizations purchase memberships or provide similar payments to Open Access publishers.	8	6	13	2	3	1
Dedicate a portion of overhead money from grants to pay open access publishing charges	2	13	7	7	3	1
Organizational budget monies (e.g., a portion of Library Collections budget) used to support Open Access publishing	5	6	16	4	2	0
Host preprints or postprints of articles in the institutional repository	16	5	6	2	4	0
Have library consortia transition to consortial purchase of open access publishing services (e.g., SCOAP3 model)	2	13	13	0	4	1
Endowment model: commit subscription monies to create endowment for ongoing open access (e.g., Stanford Encyclopedia of Philosophy model)	4	8	14	2	5	0

When asked if they would support Canadian academic journals through subscriptions, the majority of respondents stated that they were already doing this, and only two respondents, both libraries at universities without medical schools, would not support this method. Respondents were also queried about their support levels for directly supporting OA journals through the payment of author fees, use of grant overhead funds, becoming members of OA organizations, and using a portion of organizational monies to directly support OA publishing. When asked to support Open Access publishing by paying article processing charges on behalf of authors (with revenue being used by the journal to lower subscription prices), five organizations (four libraries and one press) stated they were already doing this. However, support among others was tepid, with only five organizations responding "would support" but 12 responding "might support" and eight "would not support". This may relate to the "hybrid OA option" that is offered by some commercial publishers whereby an author can pay to have their article published open access in a journal that is not ostensibly open access. This option received the least favorable response from libraries, perhaps because of the less than enthusiastic support from librarians for the hybrid OA option, a result of the lack of these programs actually resulting in any drop in subscription prices for most publishers [31]. As well, the hybrid open access option is often explicitly excluded (partly or completely) from institutional programs that pay the article processing fees for publication in open access journals (examples include the multi-institutional Compact for Open Access Publication and many other institutional programs).

Purchasing memberships or providing similar payments to open access publishers was a more popular option, with eight respondents currently supporting it and 19 stating they would support or might support it. Seven respondents (four from libraries at universities without medical schools) did not support the proposal.

Twenty-two respondents (currently support (two), would support (13), or might support (seven)) supported dedicating a portion of overhead money from grants to pay open access publishing charges. Interestingly, this question and the question on paying for open access article processing fees had the highest levels of Would Not Support of seven and eight, respectively. Four of the respondents who indicated "would not support" (three from libraries at universities without medical schools, one from libraries at university with a medical school) replied the same for both questions.

Using organizational budget monies to support OA publishing was also a popular idea among respondents, with 27 answering that they are either currently supporting, would support, or might support this, and only four respondents responding that they would not support the practice. Along the same lines, another question asked respondents about having library consortia transition to consortial purchase of open access publishing services along the lines of the SCOAP3 model. This question did not receive a single negative response and had the highest support of any model.

Committing subscription monies to help create endowments for ongoing open access along the lines of the Stanford Encyclopedia of Philosophy was also strongly endorsed by respondents, with only two respondents not supporting it.

Supporting open access through the hosting of preprints/postprints in institutional repositories was strongly supported, with only two respondents (both from libraries at a university without a medical school) responding with a "would not support".
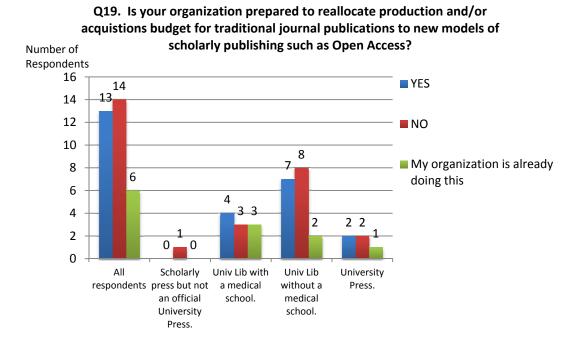
4.3. Survey Results—External Support

Three questions were asked of respondents about their support for models for supporting scholarly publishing that involved external funding (e.g., funding agencies) instead of internal funding (e.g., library budgets) (Table 2). The first question queried support for the model of dedicating a portion of overhead money from grants to pay open access publishing charges. This had a high level of support with 26 respondents in the currently support, would support or might support camp. Only three respondents replied with "would not support". The next question found strong support for the idea of having funding agencies extend financial support to open access journals, with zero respondents selecting Would Not Support. Lastly, the idea of having provincial governments direct funding to support open access publishing was well thought of too, with 29 responding that they would support or might support such a measure. Only two respondents did not support this.

Table 2. Level of external support for OA publishing and Canadian academic journals.

	Currently support	Would support	Might support	Would not support	N/A	did not answer
Dedicate a portion of overhead money from grants to pay open access publishing charges.	3	16	7	3	3	1
Funding agencies extend financial support to Open Access journals.	2	24	5	0	2	0
Provincial government funding directed to support Open Access publishing in your organization's province.	0	21	8	2	2	0

Similar to question 15, respondents were asked a simple yes/no question about whether or not their organization is prepared to reallocate production and/or acquisitions budget for traditional journal publications to new models of scholarly publishing such as open access (Figure 6).

Figure 6. Reallocating traditional budgets to new models of scholarly publishing.

Of the 33 respondents, 13 responded yes, six responded that they were already doing this, and 14 responded no. Ergo, a majority of respondents (both presses and libraries) believe that their organization is prepared to reallocate funds or production away from traditional journal publications and towards supporting new scholarly publishing models. As well, four of the "no" respondents put in their comments that they answered no because they either did not know, or else because their answer depended on the details of the situation, and thus they could not say "yes" absolutely.

Question 21 asked if the respondent's organization belonged to a variety of different types of open access initiatives (Table 3; Figures 7–9). The Fisher exact test was conducted on this question to see if there was any statistical significance in the difference in responses between libraries at universities with medical schools and libraries at universities without medical schools. Differentiating based on the presence or absence of a medical school was chosen since the most well know annual ranking of universities in Canada is the Maclean's University Rankings which separates universities into universities with and without medical schools. Therefore, this same differentiation has been applied in this analysis. The difference in responses was statistically significant for two questions: membership in advocacy organizations such as SPARC and whether or not the respondents were members in none of the open access initiatives. For membership in advocacy organizations such as SPARC, three of 17 university libraries without medical schools were members whereas eight of 10 university libraries with medical schools were members ($p = 0.003$). As well, seven non-medical school libraries do not belong to any of the Open Access initiatives whereas all the institutions with medical schools belonged to at least one type of open access initiative ($p = 0.026$). Overall, it appears that libraries at universities without medical schools are much less likely to be members of various open access initiatives than are libraries at universities with medical schools. As well, universities with medical schools are also usually Association of Research Libraries (ARL) members, so it may also be a difference between ARL and non-ARL sites with respect to SPARC initiatives.

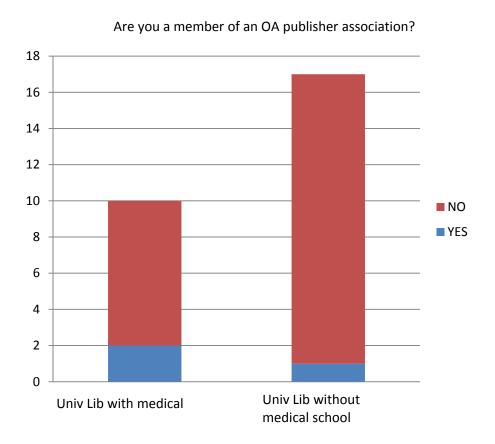**Figure 7.** Membership in OA publisher associations.

Figure 8. Membership in an OA providers' organization.

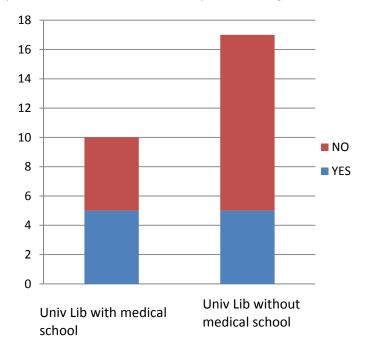Are you a member of an OA content providers' organization?

Figure 9. Membership in an OA advocacy organization.

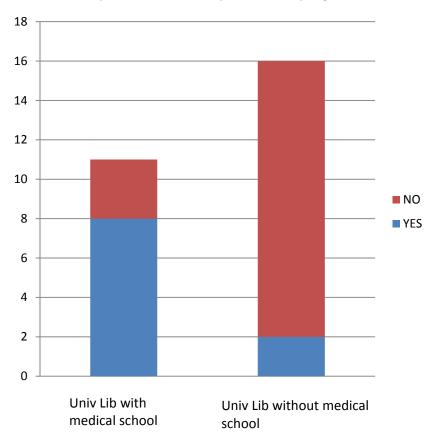Are you a member of any OA advocacy organizations?

<div style="text-align:center">**Table 3.** Membership in OA initiatives.</div>

	YES	NO
Open Access publisher organizations (e.g., Open Access Scholarly Publishers Association).	5	28
Open Access content providers (e.g., PLoS, BioMed Central).	10	23
Advocacy organizations (e.g., SPARC).	11	22
Open Access resources and services (e.g., Directory of Open Access Journals).	16	17
Not currently a member of any of the above groups.	11	22
Do not know.	1	32

4.4. Discussion

The finding that only 50% of libraries at universities with medical schools were hosting journals was somewhat surprising since, in other responses in the survey, the majority of this group of respondents were either actively supporting, or were in favour of, various institutional supports for open access (such as putting organizational budget monies towards supporting open access publishing). As medical sciences is one of the disciplines where OA is accepted quite readily, and since the hosting of open access journals is a significant contribution to open access, one could theorize that academic libraries at universities with medical schools might have a greater propensity to host journals than other academic libraries, possibly due to heightened awareness of OA. One would not expect them to necessarily host medical journals, but one might expect that due to the likelihood of overall heightened awareness of OA due to the presence of a medical school, that libraries at these institutions might be more likely to provide OA journal hosting services of some fashion. However, only 50% of libraries with medical schools (the response rate for this group was 60% (10 out 16)) state that they host online journals. This could be explained by the fact that, in Canada, universities with medical schools are large and also often have a university press, and therefore other entities on campus may be just as disposed towards hosting online journals as the library, or even more so.

The responses of libraries to questions about support of the publishing workflow illustrate a possible difference in interpretation between libraries and university/scholarly presses. Out of 15 libraries, six stated that they provide some, or a lot of, support to full online journal publishing services. These results would mean that 40% of hosting libraries provide the same level of publishing support as do the university/scholarly presses that host journals, which appears on the surface to be an unlikely proposition, particularly when in responses to question eight only two of these libraries have more than 1.1 FTE staff devoted to journal hosting. However, when breaking down these respondents by the number of journals they are hosting, it turns out that four of the six sites host five journals or fewer and each of these four locations has between 0.6 and 1.0 FTE working on the journal hosting. With a small portfolio of journals, a library may be able to provide intense publishing assistance with very low levels of dedicated staffing. This level of support may be in jeopardy though if the library increases its portfolio of journals without a concomitant increase in FTE staffing for journal hosting support. Therefore, as libraries become more and more involved in hosting journals, they will need to clarify for themselves and their clients the true level of support they are able to provide to the publishing workflow.

It is noteworthy that when the 15 respondents who do not host online journals were asked why they were not hosting e-journals, no respondent chose the response "The organization has no interest in providing journal hosting and related services". This is good news for open access advocates, as all organizations surveyed are at least interested in the possibility of hosting electronic journals and do see the value of such an endeavour to the furthering of scholarly communication. Furthermore, this interest is not all driven by outside demand, as only six of the 15 organizations stated that they have had expressions of interest from university faculty members about providing journal hosting services. However, it is difficult to ascertain the accuracy of this response, as particularly in an academic library, various librarians may have been approached by faculty enquiring about journal hosting but the individual answering the survey may not be aware of these interactions. Therefore, conceivably, the number of enquiries about journal hosting may be higher than what was reported.

When asked if they would support Canadian academic journals through subscriptions, the majority of respondents stated that they were already doing this, and only two respondents, both libraries at universities without medical schools, would not support this method. That two libraries would not support Canadian academic journals through subscriptions is an interesting finding, since obviously the libraries in question are subscribing to Canadian academic journals. Possibly the respondents were thinking of further support, such as a consortial subscription to a suite of Canadian academic journals in a big deal type of scenario, reflecting a difference in interpretation of the question.

Using organizational budget monies to support open access publishing was a popular idea among respondents, with 27 answering that they are either currently supporting, would support or might support this, and only four respondents responding that they would not support the practice. Along the same lines, another question asked respondents about having library consortia transition to consortial purchase of open access publishing services along the lines of the SCOAP3 model. This question did not receive a single negative response and had the highest support of any model. Perhaps the high support for these two options stems from the fact that they represent a fixed cost to a library, whereas paying open access article processing fees is a variable cost that could be viewed as more difficult to administer than a fixed annual payment to consortia or directly to select publishers. As well, it is possible that the library consortial model is of interest because it reduces uncertainty, enhances likelihood of success (all libraries in the program together), and also because the SCOAP3 model caps the commitment of libraries at the level of current subscriptions. Another reason may be the need to develop entirely new funding models to support alternate publishing options and that this is better done at a concerted and coordinated level via consortia. These two models also more closely resemble the subscription model from a payment processing perspective, and would thus fit more easily into current library collections workflows. Support for a consortial approach to financing OA publishing on the part of Canadian university libraries (including majority support of those at institutions with medical schools—six "would support", two "might support" and two "NA") signifies that it would be beneficial for Canadian library consortia (such as CRKN) to consider developing models to support open access publishing in Canada. Such developments could result in a national funding strategy for open access publishing and help sustain the many voluntary (or partly voluntary) OA journals in Canada. As noted by Gargiulo and Cassella, national funding strategies are key in sustaining open access publications [32].

Hosting preprints or postprints in an institutional repository was highly supported by respondents, but two, both university libraries without medical schools, did not support the use of institutional repositories. It is possible that these two libraries are at institutions that do not have a repository, hence their non-support for the concept. Alternatively, they could be at smaller, less research intensive universities.

All models for external funding to support scholarly publishing in Canada received high levels of support. External funding refers to funding provided by entities apart from the respondent's organization. For example, funding provided by the SSHRC or money from a researcher's grant to pay article processing fees would be external funding. Interestingly, one university press, one library with a medical school, and one library without a medical school did not support the use of funding agency grants to pay for OA article processing fees.

The model of external funding agencies extending financial support to open access publishing was supported by 100% of respondents. One theory for this unanimous support could be that it is always easier to support models that use someone else's money, and hence, the respondents would naturally be in favour of outside sources of funding as it would free up their own organizational budgets. Another explanation might be that current funding agency programs already provide support directly to two key components—authors and journals—and it makes sense to work through these existing conduits. Also, in Canada, with the long standing practice of SSHRC supporting Canadian academic journals, it seems logical that respondents would favour funding agencies extending financial support to Canadian open access journals. External funding agency support and library consortial support for OA publishing in Canada, both of which are very strongly supported by respondents, would go a long way to establishing stable, long term funding for open access in the Canadian environment.

Provincial government funding for open access was strongly supported but not universally; one university press and one library without a medical school did not support provincial funding. These institutions are from British Columbia and Ontario and their opposition may reflect wariness about provincial funding commitments in those jurisdictions or a feeling that such funding would be unlikely. Utilizing provincial funding to support Canadian scholarly publishing is not an entirely new idea though it is uncommon. Currently in Canada, the province of Quebec provides some support for open access publishing through its grants to the Erudit platform which promotes and disseminates primarily French language research and utilizes a two year rolling wall thus providing embargoed access to the content [33].

The survey asked respondents a simple yes/no question (question 19) about whether or not their organization is prepared to reallocate production and/or acquisitions budget for traditional journal publications to new models of scholarly publishing such as open access. Thirteen responded yes, six responded that they were already doing this, and 14 responded no. The responses to this question echo the responses to an earlier question (question 15) that asked about the level of support for various methods of supporting open access publishing and supporting Canadian academic journals; 11 respondents answered either Currently Support or Would Support to that question, with 16 responding Might Support. Comparing questions 15 and 19, it would seem that support for new scholarly publishing models is stronger than what was indicated in the responses to question 15, since many of the "might support" respondents in question 15 answered Yes to question 19 as to whether or not their organization is prepared to reallocate funds or production to new models of scholarly publishing.

As well, four of the No respondents in question 19 were more or less "maybe" responses, since in the comments the respondents indicated that they were choosing No because they could not definitely say Yes. Consequently the findings could be restated as 13 Yes responses, six responses of "already doing this", four responses of Maybe, and 10 responses of No. Therefore, under the right circumstances, 23 respondents are currently willing to reallocate production or acquisitions budgets for traditional journal publications towards new models of scholarly publishing. These findings would imply that organizations would be able to find new money to support consortial funding models for open access publishing, since no respondent answered Would Not Support when asked if they supported having library consortia transition to consortial purchase of open access publishing services along the lines of the SCOAP3 model. Particularly on the part of libraries, those that answered No to question 19 must feel that the funds to support such consortial models can be found from sources other than the current journals budget.

Question 21 asked if the respondent's organization belonged to a variety of different types of open access initiatives. Over all, it appears that libraries at universities without medical schools are much less likely to be members of various open access initiatives than are libraries at universities with medical schools. Reasons for this could be their larger budgets and thus a greater opportunity to be part of the initiatives, and also because of greater awareness of open access initiatives at these universities and their high awareness of open access funder mandates as reported in Greyson *et al.* [34].

5. Conclusions

It is clear from the results of this survey that support for open access publishing, particularly OA journal publishing, is present among university libraries, university presses, and scholarly presses in Canada. There is support in action; many organizations are already hosting open access publications and providing the technical infrastructure to make this content available to the world. It is also clear from the responses dealing with internal and external support options that respondents are open to, are thinking about, and are employing methods by which their OA publishing activities can be maintained and grown.

It will be interesting to revisit this situation in future years (or even months). The world of scholarly communication is ever-changing and this will undoubtedly be represented in the community queried in this survey. Hopefully, there will be continued growth in open access publishing with more support options being exploited and perhaps more cooperation with OA content and advocacy associations (something that was not that strongly represented in the survey results).

References

1. Budapest Open Access Initiative. Available online: http://www.soros.org/openaccess (accessed on 28 August 2010).
2. Morrison, H. *Scholarly Communication for Librarians*; Chandos: Oxford, UK, 2009; pp. 81–102.
3. Synergies Canada. Available online: http://www.synergiescanada.org (accessed on 28 August 2010).

4. Social Sciences and Humanities Research Council—Open Access. Available online: http://www.sshrc-crsh.gc.ca/about-au_sujet/policies-politiques/open_access-libre_acces/index-eng.aspx (accessed on 24 April 2013).

5. Canadian Research Knowledge Network (CRKN)—Statement on Open Access. Available online: http://www.crkn.ca/sites/default/files/agm/en/2008/CRKN_alt_pub_and_open_access_stmt_9Sep08_BDapp.pdf (accessed on 24 August 2011).

6. SCOAP3 Working Party. *Towards Open Access Publishing in High Energy Physics*; Sponsoring Consortium on Open Access Particle Physics Publishing: Geneva, Switzerland, 2007. Available online: http://scoap3.org/files/Scoap3WPReport.pdf (accessed on 24 August 2011).

7. Directory of Open Access Journals—DOAJ Statistics. Available online: http://www.doaj.org/doaj?func=newTitles&uiLanguage=en (accessed on 24 August 2011).

8. Brown, L.; Griffiths, R.; Rascoff, M. *University Publishing in a Digital Age*; Ithaka S + R: New York, NY, USA, 2007. Available online: http://www.sr.ithaka.org/research-publications/university-publishing-digital-age (accessed on 25 April 2013).

9. Hahn, K. *Research Library Publishing Services: New Options for University Publishing*; Association of Research Libraries: Washington, DC, USA, 2008. Available online: http://www.arl.org/storage/documents/publications/research-library-publishing-services-mar08.pdf (accessed on 25 April 2013).

10. Edgar, B.D.; Willinsky, J. A survey of scholarly journals using open journal systems. *Schol. Res. Comm.* **2010**, *1*, 020105:1–020105:22.

11. Shearer, K. *A Review of Emerging Models in Canadian Academic Publishing*; University of British Columbia Library: Vancouver, Canada, 2010. Available online: https://circle.ubc.ca/handle/2429/24008 (accessed on 25 April 2013).

12. Research Information Network (RIN). *Activities, Costs and Funding Flows in the Scholarly Communication System in the UK*; Research Information Network: London, UK, 2008. Available online: http://is.gd/3Q7cm (accessed on 26 April 2013).

13. Ware, M.; Mabe, M. *The STM Report: An Overview of Scientific and Scholarly Journal Publishing*; STM: International Association of Scientific, Technical and Medical Publishers: Oxford, UK, 2009. Available online: http://www.stm-assoc.org/2009_10_13_MWC_STM_Report.pdf (accessed on 21 April 2013).

14. Houghton, J.; Rasmussen, B.; Sheehan, P.; Oppenheim, C.; Morris, A.; Creaser, C.; Greenwood, H.; Summers, M.; Gourlay, A. Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits: A Report to the Joint Information Systems Committee; Loughborough University: Leicestershire, UK, 2009. Available online: http://www.jisc.ac.uk/publications/reports/2009/economicpublishingmodelsfinalreport.aspx (accessed on 21 April 2013).

15. Houghton, J.; de Jonge, J.; van Oploo, M. *Costs and Benefits of Research Communication: The Dutch Situation*; SURF Foundation: Utrecht, Netherlands, 2009. Available online: http://www.surffoundation.nl/SiteCollectionDocuments/Benefits of Research Communication_April 2009_ FINAL_logos2.pdf (accessed on 21 April 2013).

16. Christoffersen, M. The danish experience of the houghton studies: Costs and benefits of alternative publishing models. *Sciecom Info.* **2009**, *5*, 1–4.

17. Houghton, J.; Oppenheim, C. The economic implications of alternative publishing models. *Prometheus* **2010**, *28*, 41–54.

18. Harnard, S. The immediate practical implication of the houghton report: Provide green open access now. *Prometheus* **2010**, *28*, 55–59.

19. Hall, M. Minerva's owl: A response to john houghton and charles oppenheim's 'the economic implications of alternative publishing models'. *Prometheus* **2010**, *28*, 61–71.

20. Hall, S. A commentary on "the economic implications of alternative publishing models". *Prometheus* **2010**, *28*, 73–84.

21. Keenan, M.A. The economic implications of alternative publishing models: Views from a non-economist. *Prometheus* **2010**, *28*, 85–89.

22. May, C. Openness in academic publication: The question of trust, authority and reliability. *Prometheus* **2010**, *28*, 91–94.

23. Houghton, J.; Oppenheim, C. The economic implications of alternative publishing models: Authors' response. *Prometheus* **2010**, *28*, 203–205.

24. Houghton, J.; Rasmussen, B.; Sheehan, P. *Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs*; Scholarly Publishing and Academic Resources Coalition (SPARC): Washington, DC, USA, 2009. Available online: http://www.arl.org/sparc/publications/papers/vuFRPAA/index.shtml (accessed on 29 July 2011).

25. Canadian Institutional Repositories. Available online: http://www.carl-abrc.ca/en/scholarly-communications/canadian-institutional-repositories.html (accessed on 26 April 2013).

26. Vézina, K. Libre accès à la recherche scientifique: opinions et pratiques des chercheurs au Québec. *Partnership: Can. J. Lib. Info. Pract.* **2006**, *1*. Available online: http://journal.lib.uoguelph.ca/index.php/perj/article/view/103/170 (accessed on 21 April 2013).

27. Fernandez, L.; Nariani, R. Open Access Funds: A Canadian Library Survey. *Partnership: Can. J. Lib. Info. Pract.* **2011**, *6*. Available online: http://journal.lib.uoguelph.ca/index.php/perj/article/view/1424/2084 (accessed on 21 April 2013).

28. Mele, S. SCOAP3 Sponsoring Consortium on Open Access Particle Physics Publishing; Berlin 8 Open Access Conference, Beijing, China, October 2010. Available online: http://scoap3.org/files/25102010_berlin8_mele.pdf (accessed on 26 April 2013).

29. Stanford Encyclopedia of Philosophy. Available online: http://plato.stanford.edu (accessed on 25 April 2013).

30. SEPIA for Libraries. Available online: http://plato.stanford.edu/support/sepia.html (accessed on 25 April 2013).

31. Shieber, S.M. Equity for open-access journal publishing. *PLoS Biol.* **2009**, *7*, e1000165:1–e1000165:3.

32. Gargiulo, P.; Cassella, M. Open Access in Italy. In *Open Access in Southern European Countries*; Anglada, L., Abadal, E., Eds.; FEYCIT: Madrid, Spain, 2010; pp. 63–82.

33. A propos d'Erudit. Available online: http://www.erudit.org/apropos/info.html (accessed on 23 April 2013).

34. Greyson, D.; Vézina, K.; Morrison, H.; Taylor, D.; Black, C. University supports for open access: A canadian national survey. *Can. J. High. Educ.* **2009**, *39*, 1–32.