Canadian Scholarly Journals at a Technological Crossroads

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Abstract: This article discusses the dynamics of a transition from print to online publishing by Canadian social science and humanities (SSH) journals. It reports the results of a survey of publishing practice, financial operations, and attitudinal orientation to the online environment. The survey results are analyzed and the dynamics of an evolution to online publishing are proposed and considered.

Résumé : Cet article traite de la dynamique du passage fait par les revues canadiennes en sciences humaines et en lettres vers l'édition en ligne à partir d'éditions imprimées. Il rapporte les résultats d'un sondage sur les pratiques et les finances en édition ainsi que sur les attitudes d'éditeurs envers le milieu en ligne. L'article analyse aussi les résultats du sondage puis présente et évalue la dynamique d'une évolution vers l'édition en ligne.

Keywords: Online journal publishing; Online publishing technologies; Open access; Online publishing survey

Introduction
Online publishing technologies facilitate access to information. They bring content in a variety of media, and sometimes interactivity, to the workstation of the user at any time and in an increasingly wide spectrum of locations around the world. With such technological capacity available, and given that any user can upload information and any other user can find it (sometimes with search-engine help), it is tempting to call for the abandonment of the old, print-based technology, as well as print publishers. Some who support the Open Archives Initiative (http://www.openarchives.org) have made such a call and embrace new online technology with new elements, new players, and a new publishing process. Such a technology-driven view tends to disregard current social practice, that is, the organization of knowledge production and dissemination that is undertaken by scholarly journals. It overlooks publishing's non-technological elements, such as editorial leadership and vision, human factors in peer review processes, and the recognition of existing journals as credible information sources known to both scholars and reference librarians.

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Opposed to such an exuberant embrace of technology are a certain number of scholars and print journals that tend to be involved in the social practice we know as journal publishing. Their position seems based on the notion that there is an inexorable connection between the social organization of knowledge and certain characteristics of print-on-paper technology.

There is an alternative middle perspective. It seems reasonable to assume that the 150 to 200 SSH journals that exist in Canada are currently providing a useful service to scholars, students, and society by organizing the acquisition, review, editing, production, and dissemination of research and analysis. Given that:

- existing journals are administering this social process;
- such a process is a necessary element of scholarly publishing; and
- maintaining an orderly and continuous production and dissemination of knowledge is desirable;

it would seem advantageous for these activities to continue, rather than be curtailed and slowly re-established as they proved to be necessary. At the same time, given the power of online technology to facilitate many aspects of journal publishing, including manuscript handling, peer review, editing, publication, and dissemination, it would seem informative to examine the operating realities of these serial publishers to determine their nature and cost and how both would be affected by a move to online publishing. Such an examination could also determine the willingness of the journal community to use online publishing technology. The object of the exercise would be to provide the knowledge necessary for an orderly transition from print to online publishing should a decision be taken to make that transition. This knowledge would enable journals making such a transition to identify the costs and potential of online technology and to utilize the individuals who currently oversee the publication of social science and humanities (SSH) scholarship in Canada.

This paper begins with a review of online journal-publishing activities and an introduction to the Synergies project. It then reports on a survey of SSH journal publishing in Canada. It analyzes publishing and financial operations of journals and reports on existing journals’ attitudes to online publishing. Thirdly, it considers the financial elements of print and online journals, on the one hand, and research libraries, the main customer of the journals, on the other. Finally, it develops a model for moving to online publishing with no net increase in resources. It considers the necessary and possible allocations of resources required to achieve online publishing as the dominant manner of disseminating SSH research in and outside Canada, while at the same time considering the international context.

A brief review of online scholarly journal publishing

It seems difficult to argue with the simple notion that, on the whole, it would be desirable for students, scholars, and the general public to have ready access to scholarly research at any Internet-connected workstation. Underlying this view of online access as a positive development is the idea that much of the value of schol-
early research lies in its availability for reference purposes. Users want to know about a certain topic, and they “look to the literature” to see what is there. The usefulness of such an arrangement is demonstrated by the presence in the marketplace of such databases as EBSCO (http://www.epnet.com/default.asp), Micromedia Pro-Quest's CBCA (www.mmltd.com), JSTOR (http://www.JSTOR.org), and indeed a host of other services that increases almost monthly.

In this context, online publishing seems like a good idea due to the ease and breadth of access to a reference literature it provides. Online publishing also offers the possibility of increased richness of presentation, such as the cost-effective use of colour images and the incorporation of movement, which can also be co-ordinated with sound. This increased media palette, together with easier access, has the potential to transform the representation of knowledge, and hence knowledge itself. Already, in an average North American university, the subscriptions to online journals outstrip print subscriptions. Even in a new small university such as the University College of the Fraser Valley, while the library subscribes to 700 print journals, these are vastly augmented by Internet access to another 7000 full-text journals (Wilson, 2003).

Also, in thinking about online content that would be a contribution to knowledge, one can easily expand one’s vision to include other content—for example, the current and back issues of certain cultural, literary, and analytical magazines that are sometimes used in print form in university classrooms. For the humanities and social sciences, not only would such magazines provide information for research, but the ready availability of magazine content to students working on projects would also encourage a greater social and intellectual cohesion among creative artists and others in the intellectual community within a country and around the world. Similarly, newspaper access unrestricted by time would be valuable. The ability to have ready access to data collected and codified by other researchers would also offer a net benefit to scholars and to society as a whole, as would ready access to government documents, theses, and dissertations.

As SSH journals contemplate the online environment or begin to publish online, they can learn lessons from both the commercial and non-commercial worlds of science, technical, and medical (STM) journal publishing. Commercial STM journals charge a premium for their online products. The commercial world is also bundling its electronic journals and providing access to a wider range of journals at a price that is more than libraries currently pay but less than it would cost to have print subscriptions to the same number of journals. It is an invitation to spend—and to rob humanities and social science budgets yet again.

In the non-commercial STM journal-publishing world, faced with higher-than-necessary access costs to scientific research, organizations such as BioMed Central (http://www.biomedcentral.com) have begun to challenge the commercial publication of journals by launching a whole array of new online journal titles. BioMed Central is an independent publishing house committed to providing immediate free access to peer-reviewed biomedical research. Instead of charging readers subscription fees, they charge authors a fee to publish their articles. In
turn, the author obtains the funds to publish through a research grant or institution. BioMed Central has also signed at least one agreement with a national research-funding agency to purchase bulk access to its journals for scientists working in the country in which the agency is based, namely the U.K.

Journal publishers can also take heed of the international context of all types of journal publishing. Hosts of international initiatives, some of which are discussed in this issue, are in place or being put in place predicated on online journal publishing as the foundation for the circulation of knowledge. The Netherlands has created a national project, DARE (Digital Academic Repositories), to put all its scholarly journals online (http://www.openarchives.org/pipermail/oai-general/2002-November/000211.html). The Nordic countries, led by Denmark, are looking to follow suit (http://elpub.scix.net/cgi-bin/works/Show?id=0309). As is apparent from Kim Braun’s contribution to this volume, Germany is also developing its own system to assist German journal publishers with online publishing. The EU is supporting a number of projects, including life-cycle modelling of research and scientific publications (see, for example, http://elpub.scix.net/cgi-bin/works/Show?id=0317). There is a wide variety of projects going on in Britain, particularly at the University of Southampton. In Brazil, in addition to Bioline (http://www.bioline.org.br/), both projects and research abound, with active participation by the National Library of Brazil (http://elpub.scix.net/cgi-bin/works/Show?id=0318).

In the U.S., the many different online publishing projects include the 200 journals of Project Muse at Johns Hopkins University (http://muse.jhu.edu); the 60 at the University of Chicago Press (http://www.journals.uchicago.edu); the 330 journals of HighWire Press at Stanford University (http://highwire.stanford.edu); BioMed Central (http://www.biomedcentral.com); the activities of the Scholarly Publishing and Academic Resources Coalition (SPARC) of the Association of Research Libraries (http://www.arl.org/sparc/home/index.asp?page=0); and the archiving LOCKSS (Lots of Copies Keep Stuff Safe) initiative, also at Stanford University (http://lockss.stanford.edu). Other organizations, such as the International Network for the Availability of Scientific Publications (http://www.inasp.org.uk) and the George Soros–funded Open Society Institute (http://www.soros.org), are signing agreements with commercial publishers to make their journals available to developing countries for reduced rates. In Canada, individual journals, the National Research Council Press in Ottawa (http://pubs.nrc-cnrc.gc.ca/cgi-bin/rp/2_jour_e), Projet Érudit (http://www.erudit.org), and the International Consortium for the Advancement of Academic Publication (http://www.icaap.org) are all moving ahead with online publishing.

This explosion of projects—and many more could be cited—suggests that if Canadian scholars and Canadian scholarly journals expect to be part of the mainstream discourse of ideas, they will by necessity have to be available online, because so much is already available online and because so many people are looking online first, and sometimes last.
In this context, a proposal to establish a scholarly information network with journal content as a core element of its offerings was developed. The Synergies project was designed to decrease the uncertainties of SSH journals in moving from print to online publishing. The project originated as a proposal submitted to the Canada Foundation for Innovation (CFI) seeking funds to put in place a robust infrastructure—an interoperable federated database initially housed at five universities—that would allow the whole of the social science and humanities journal community to begin publishing online. Funding was turned down by CFI in April of 2004. Attempts are being made at the time of writing to find other funding.

Synergies is intended to do more than allow journals to publish online. It also offers the opportunity to make datasets, discussions, theses and dissertations, some magazine back issues, pre-prints, and perhaps learning objects available. Its greatest ambition and potential is to transform the nature of knowledge by enriching the way in which research is recorded and made accessible. Should it achieve that ambition, it can be expected that the population of users both within and outside the research community will be extended, thereby laying the foundations for the building of a cohesive knowledge-using community.

Like Project Muse at Johns Hopkins University Press, HighWire Press, or the University of Chicago’s online journals, Synergies is designed to be a first-publication service, not a secondary compiler or aggregator of journal content (e.g., EBSCO or ProQuest). Synergies will be a public service, and as it will be based at Canadian universities, the academic community will own it. Synergies will allow journals to define their own access and to determine whether they want to become part of a joint marketing effort or other joint initiatives. It may assist in the marketing of journals to institutional subscribers and it will develop value-added features to parallel or exceed those provided in the industry (both EBSCO and BioMed Central provide good examples of added online features). Synergies will also make international connections to assist with the circulation of Canadian research in other countries.

In the context of this hive of online journal-publishing activity, the survey that is the centrepiece of this paper was undertaken.

**Survey methodology**

A list of 211 Canadian SSH journals was compiled through online research and a list provided by the Social Science and Humanities Research Council (SSHRC). A preliminary e-mail in the fall of 2002 was sent to these journals, describing the project in brief and notifying them that a survey would be forthcoming. A questionnaire was constructed and sent with an explanatory cover letter to the journals with a note that a research assistant would follow up by phone over the next few weeks (in the spring of 2003).

The questionnaire contained two sections. The first section of 60 questions requested identification and publishing information. The second section (four questions, each with a number of elements) requested financial information of the type that a journal would normally submit to SSHRC in their grant requests.
Journals were asked to complete the questionnaire and return it as soon as possible. Research assistant Adrienne Lindsay contacted the journals and completed some of the questionnaires on the telephone. A great deal of time was spent tracking down journals and their editors, more than might be expected given that the main task of these journals is to accept research articles from persons not known to the journal. In an effort to gain a high rate of response, timely reminders by phone and e-mail were made. Each journal was contacted by telephone and/or by e-mail at least three times.

Results of the survey
Eighty-three Canadian social science and humanities (SSH) journals responded to the survey, of which 67 were English-language journals and 16 were French-language publications, for a response rate of 37.5%. A full slate of publishing questions (60) and four major financial questions were asked of respondents. Respondents represented a wide range of disciplines and fields of study (more than 60), with an approximate ratio of two-thirds social sciences and one-third humanities. Additional compiled journal attributes were as follows:

- Fifty-one percent were owned by a scholarly association, while 30% were owned by a university press. The remaining 21% were owned independently.
- The average number of issues and pages published annually was 2.93 and 421.5 respectively.
- The average number of subscribers was 561. The three top categories of subscribers were
  - foreign institutions (175);
  - Canadian individuals (173); and
  - Canadian institutions (92).
- Average subscription fees were $41 for Canadian individuals and $74 for institutions, with slightly higher fees for foreign subscribers.
- Seventy-two percent of responding journals were available in print only; 22% in print and online, and 5% online only.

Online readiness and attitudes
To gain an understanding of how ready journals might be to go online, how aware they were of online publishing realities, and their attitudes to online publishing, the following information was collected through prepared questions:

1. Fully 73% of journals are already online (with at least a homepage) or are ready to build an online presence once resources are in place. Twenty-four percent indicated that they were not committed to going online at this time.
2. Respondents were asked to identify the critical issues that their journal needed to address in going online. Responses were scored by rank order and by the number of times mentioned. The two most predominant issues (with scores of 363 and 230) were financial feasibility and staff workload/expertise. The next four concerns were maintaining subscriptions (score = 60); the
ability to archive online (54); security (51); and inability to fully assess options (51).

3. The top four online features that journals considered to be useful (which were again scored by rank order and by mention) were searchability, links, colour, and increased types of content.

Current practices relevant to online publishing and their perceived advantages were also examined.

1. Eighty-five percent did not currently use keywords in publishing articles.
2. Eighty-two percent reported that they held all rights to the articles published in their journals.
3. The average lag time between article receipt and publication was reported to be just less than eight months.
4. Half the journals (51%) saw themselves maintaining their current publishing schedule once they were publishing online.
5. Sixty percent noted that they did not anticipate expanding the number of articles published once they began to publish online, but that they did expect to expand types of content.
6. Fully 82% of those who responded (68 of 83) indicated that they had their own website and 69% indicated that it was updated with each issue. Most had a homepage with tables of contents, some of which included abstracts.
7. When queried about online usage measures, nearly 70% did not answer or did not understand the question.
8. Significantly, 36 of the 83 responding journals indicated that the full text of their journal was available online, and of those, 64% (23) made it available in HTML and 42% (16) in PDF.
9. Eighty-nine percent of journals produce their final editorial product in Word or WordPerfect. Surprisingly, 10 journals surveyed send camera-ready or hard copy.
10. Fifty-four percent noted that they would definitely not be interested in publishing pre-prints (research published prior to peer review) and 14% indicated that they would.

Financial information

Because this survey was conducted within the context of a project to achieve economies of effort and expense through the collective efforts of university libraries and journals, information on journal revenues and expenditures was sought. For the 56 journals that responded with revenue information, 51% of overall revenues came from subscriptions; the remainder came from grants, donations, and other sales. Revenue percentages were allocated according to the following categories:

- 21% of revenue came from foreign institutions;
• 17% from Canadian individuals;
• nine percent from Canadian institutions;
• three percent from foreign individual subscribers;
• 37% of revenue from grants and donations; and
• 13% came from other sales.

On the expense side of the ledger, with 61 journals responding, allocation of expenses was as follows:
• editorial expenses accounted for 22% of all expenses;
• prepress activities for seven percent;
• paper, printing, and binding for 26%;
• postage and handling for seven percent;
• subscription fulfillment for five percent;
• marketing, promotion, and publicity for three percent; and
• other, including administration and overhead (this would include peer review), for 30%.

Financial analysis
In preparation for a discussion of the financial feasibility of Canadian SSH journals moving to online publishing, a detailed analysis of the revenues and expenditures of journals is presented in Table 1 and Table 2. The financial analysis begins with an examination of the expenses and revenue of online journal publishing within the context of developing a feasible plan for moving Canada’s SSH journals to an online publishing format. It assumes that grants and donations would remain at their current levels. It also assumes that publishing activity both in amount and type remains fairly constant, that is to say, it allows for some, but not a great deal of experimentation and expansion into new features. It examines the following:
• current print revenue (Table 1) and expenses (Table 2, where items in bold would be reduced in an online publishing environment);
• the restructuring of revenue and expenses that would occur from a full embrace of online publishing and a national (Canadian) site-licence, and the revenue that would be needed for journals to survive (Table 3);
• the net savings within libraries of a move to online access (as a result of the elimination of the need to handle print publications and the enhancement of online access);
• how the foreign market would be served and at what cost, with emphasis on foreign institutional subscriptions;
• the need for three types of interest-balancing among key stakeholders (researchers, journals, and libraries) so that there is a net gain to information dissemination; and
• the importance of considering the social dynamics in the technological, professional, and institutional transformation inherent in any transition to the online world.
Annual Revenues
Journal revenue comes from three sources: subscriptions, other sales (including rights, permissions, and single-copy sales), and grants and donations. Within earned revenue (revenue aside from grants and donations) for print journals, the dominant categories of income are, in rank order, foreign institutions, other sales, Canadian individuals, and Canadian institutions. Canadian individuals are an important source of income because many journals (43.75%) are included as part of a membership in a professional association.

Table 1: Print revenues (n=56)

<table>
<thead>
<tr>
<th>Annual Revenue</th>
<th>Range ($)</th>
<th>Average ($)</th>
<th>Total Revenue ($)</th>
<th>% of Total Subscription Revenue</th>
<th>% of Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian individual</td>
<td>200 – 72,007</td>
<td>10,668</td>
<td>597,434</td>
<td>33.96</td>
<td>17.15</td>
</tr>
<tr>
<td>Canadian institutional</td>
<td>73 – 19,126</td>
<td>5,593</td>
<td>313,211</td>
<td>17.80</td>
<td>8.99</td>
</tr>
<tr>
<td>Foreign individual</td>
<td>39 – 23,843</td>
<td>2,087</td>
<td>116,893</td>
<td>6.64</td>
<td>3.36</td>
</tr>
<tr>
<td>Foreign institutional</td>
<td>80 – 111,046</td>
<td>13,069</td>
<td>731,885</td>
<td>41.60</td>
<td>21.01</td>
</tr>
<tr>
<td>Total subscription revenue</td>
<td>31,418</td>
<td>1,759,424</td>
<td>100.00</td>
<td>50.51</td>
<td></td>
</tr>
<tr>
<td>Other sales</td>
<td>150 – 47,760</td>
<td>7,908</td>
<td>442,877</td>
<td>12.71</td>
<td></td>
</tr>
<tr>
<td>Total grants and donations</td>
<td>2,000 – 121,634</td>
<td>22,876</td>
<td>1,281,098</td>
<td>36.78</td>
<td></td>
</tr>
<tr>
<td>Total revenues</td>
<td>7,190 – 239,494</td>
<td>62,203</td>
<td>3,483,400</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Annual Expenses
There was a wide range in expenses, in part as a result of the difference in frequency of publication, number of pages published, and number of journal subscribers. Generally editorial, administration and overhead, and printing, paper, and binding carried the biggest costs.

Maintaining net revenue to journals
Were journals to go online without access restrictions (in Canada), we can assume that individual Canadian subscriptions and thus revenue from that source would diminish almost to zero: Why pay for what is free? We can also assume that there would be a substantial reduction in other sales (estimated at 80% of Canadian sales or $5,061 on average per journal). Because journals depend in part on subscription revenue to finance their operations, this income must be replaced. Let us assume, in our initial look at the situation, that this subscription income would be replaced by means of a Canadian national site-licence and that the cost of that licence would be borne by Canada’s research libraries. For the purposes of this analysis, we will also assume that grants and donations would remain at their current levels.

All data are presented in Table 3. The total needed income from a national site-licence to replace current subscription income for the average journal would be $21,322. Were the cost of that licence to be shared equally among the 64
members of the Canadian National Site-Licensing Project (CNSLP), a consortium of libraries that came together to do a group purchase of science journals, or any other 64 libraries, the average CNSLP member would pay $333 per journal. This is certainly higher than the average print subscription ($74). But such a cost would replace all Canadian institutional subscriptions and all Canadian individual subscriptions (which account for 66% of Canadian subscription income), and it would make up for an anticipated 64% loss of other sales.

Reducing the financial burden on libraries

While $333 per subscription is higher than the current average price of $74, it is not completely out of keeping with international prices. Nevertheless, there are ways to spread this cost. If libraries were to purchase a national site-licence to allow every person and institution direct access, a number of other libraries and other institutions might wish to share the responsibility of providing this resource to all Canadians (i.e., all users with Canadian IP addresses). For example, if Canada’s 34 large urban public libraries (represented by the Council of Administrators of Large Urban Public Libraries [CALUPL])\(^5\) or any other 34 institutions were to join with CNSLP members in providing journal access, per-library charges would drop to $218 per journal.

The data cited above in Table 3 are initial calculations. In a move to online publishing, libraries could save costs in space and collection maintenance; acquisitions, including fees paid to wholesalers; order and materials processing; and the binding of back issues. While figures for each of these elements are difficult to acquire, the matter can be approached from other available data. In terms of first-year costs, Simon Fraser University Library has undertaken an analysis of the one-time processing and service costs of a print journal in the year that it arrives. The

<table>
<thead>
<tr>
<th>Print Expenses</th>
<th>Range ($)</th>
<th>Average ($)</th>
<th>Total Expenses ($)</th>
<th>% of Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editorial (line and copyediting, proofreading)</td>
<td>300 – 73,322</td>
<td>12,256</td>
<td>747,656</td>
<td>21.65</td>
</tr>
<tr>
<td>Prepress</td>
<td>70 – 39,999</td>
<td>4,207</td>
<td>256,642</td>
<td>7.43</td>
</tr>
<tr>
<td>Printing, paper, and binding</td>
<td>2,256 – 49,650</td>
<td>14,523</td>
<td>885,906</td>
<td>25.65</td>
</tr>
<tr>
<td>Postage and handling</td>
<td>250 – 18,894</td>
<td>3,885</td>
<td>237,020</td>
<td>6.86</td>
</tr>
<tr>
<td>Subscription fulfillment</td>
<td>1,162 – 27,356</td>
<td>2,704</td>
<td>164,964</td>
<td>4.78</td>
</tr>
<tr>
<td>Marketing, promotion, and publicity</td>
<td>50 – 29,800</td>
<td>1,814</td>
<td>110,694</td>
<td>3.20</td>
</tr>
<tr>
<td>Other, including administration and overhead (please specify)*</td>
<td>66 – 106,127</td>
<td>17,231</td>
<td>1,051,107</td>
<td>30.43</td>
</tr>
<tr>
<td>Total print expenses</td>
<td>56,622</td>
<td>3,453,991</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

\(^*\)“Other” answers included administration and overhead costs, amortized costs, rent, editorial planning, board meetings, phone, equipment, computer hardware/software, telecommunications, and transportation for board members to attend meetings.
<table>
<thead>
<tr>
<th></th>
<th>CNSLP-based calculations (Cdn. data)</th>
<th>CNSLP &amp; CALUPL-based calculations (Cdn. data)</th>
<th>Foreign 100 libraries (Foreign data)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Current avg. earned Cdn. subscription revenue per journal</td>
<td>$16,261</td>
<td>$16,261</td>
<td>$15,156</td>
</tr>
<tr>
<td><strong>B</strong> Current Canadian “other sales”</td>
<td>$6,326</td>
<td>$6,326</td>
<td>$6,326</td>
</tr>
<tr>
<td><strong>C</strong> Lost “other sales” after conversion online</td>
<td>$5,061</td>
<td>$5,061</td>
<td>$1,265</td>
</tr>
<tr>
<td><strong>D</strong> Needed licence revenue per journal (A + C)</td>
<td>$21,322</td>
<td>$21,322</td>
<td>$16,421</td>
</tr>
<tr>
<td><strong>E</strong> Needed licence revenue per library per journal before savings</td>
<td>/64</td>
<td>/98</td>
<td>/100</td>
</tr>
<tr>
<td></td>
<td>$333</td>
<td>$218</td>
<td>$164</td>
</tr>
<tr>
<td><strong>F</strong> Library savings per journal after conversion to online</td>
<td>$162.20</td>
<td>$162.20</td>
<td>162.20</td>
</tr>
<tr>
<td><strong>G</strong> Library savings per journal after complete conversion (adding workstations)</td>
<td>$121.50</td>
<td>$121.50</td>
<td>121.50</td>
</tr>
<tr>
<td><strong>H</strong> Savings resulting from zero print production</td>
<td>$10,286</td>
<td>$10,286</td>
<td>$9,204</td>
</tr>
<tr>
<td><strong>I</strong> Revenue to be replaced (D – H)</td>
<td>$11,037</td>
<td>$11,037</td>
<td>$7,217</td>
</tr>
</tbody>
</table>

**Online Costs**

<table>
<thead>
<tr>
<th></th>
<th>CNSLP-based calculations (Cdn. data)</th>
<th>CNSLP &amp; CALUPL-based calculations (Cdn. data)</th>
<th>Foreign 100 libraries (Foreign data)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>J</strong> Increased file preparation and website maintenance by journals</td>
<td>$1,100</td>
<td>$1,100</td>
<td>$1,100</td>
</tr>
<tr>
<td><strong>K</strong> Online publishing services</td>
<td>$1,250</td>
<td>$1,250</td>
<td>$1,250</td>
</tr>
<tr>
<td><strong>L</strong> Online journal-based management (usage stats, features, etc.)</td>
<td>$750</td>
<td>$750</td>
<td>$750</td>
</tr>
<tr>
<td><strong>M</strong> Increased hardware and software costs</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td><strong>N</strong> Needed licence revenue per journal (I+J+K+L+M)</td>
<td>$14,637</td>
<td>$14,637</td>
<td>$10,817</td>
</tr>
<tr>
<td><strong>O</strong> Avg. subscription cost</td>
<td>/64</td>
<td>/98</td>
<td>/100</td>
</tr>
<tr>
<td></td>
<td>$229</td>
<td>$149</td>
<td>$108</td>
</tr>
<tr>
<td><strong>P</strong> Increase over current avg. subscription ($74.15)</td>
<td>$154</td>
<td>$75</td>
<td>$34</td>
</tr>
<tr>
<td><strong>Q</strong> Increased costs per library subscription per journal (P – G)</td>
<td>$33</td>
<td>($46)</td>
<td>($87)</td>
</tr>
<tr>
<td><strong>R</strong> Cost of 100-journal package (O x 100)</td>
<td>$22,870</td>
<td>$14,935</td>
<td>$10,817</td>
</tr>
<tr>
<td><strong>S</strong> Cost of 150-journal package (O x 150)</td>
<td>$34,304</td>
<td>$22,403</td>
<td>$16,226</td>
</tr>
<tr>
<td><strong>T</strong> Cost of 200-journal package (O x 200)</td>
<td>$45,739</td>
<td>$29,870</td>
<td>$21,635</td>
</tr>
</tbody>
</table>
library estimated such first-year costs to be just under $75 per volume (Baldwin, 2003).

In an attempt to estimate the costs of providing access to back issues (i.e., subsequent-year costs), the average operating revenue (exclusive of materials purchase and not including capital costs) for the 27 members of the Canadian Association of Research Libraries (CARL) can be divided by the total holdings of those same 27 libraries. That cost is $4.36 per volume. Inclusive of acquisitions it is $7.22 per volume (CARL/ABRC, 2000-2001). If one assumes that, on average, a library holds 20 years of any print-journal title (a conservative assumption), then the annual servicing cost by libraries for a print journal is $87 beyond first-year costs. This provides an overall print-journal servicing cost of $162 (over and above the subscription price).

Were online journals to replace print journals (and back issues sold off), while some new costs would arise—providing some new workstations, allowing for increased connectivity—an estimated reduction to servicing costs would be 75% or $122. Note that such savings are greater than the average subscription price of a Canadian SSH journal. The remaining $41 would be allocated to items such as servers, client workstations, and connectivity. Most importantly, additional servicing costs for each new journal would be negligible—no space, no handling, just a one-time access-set-up function. And, of course, it is difficult to assign a dollar value to the provision of easier access to the workstations of individuals.

**Reducing journal publication and dissemination costs**

Setting aside the rather significant savings on the library side ($122 per journal per year), on the journal side of the equation, if an online national site-licence
service for Canada and an online subscription service to institutions in foreign markets could be negotiated, considerable savings could be achieved. Even better, if an agreement could be reached with various national associations of research libraries, especially in such countries as the U.S., the EU, Australia, New Zealand, China, and Japan, dissemination costs could be reduced further.

From the data collected in this survey, we know that the average journal spends 37.29% of its overall expenses on paper, printing, and binding (PP&B), postage and handling (P&H), and subscription fulfillment. We can assume that each journal would lose some economies of scale in subscription fulfillment, so 60% of subscription fulfillment costs would remain for the (50%) foreign market. As Table 2 indicates, print costs (encompassed by the three categories mentioned above) amount to an average of $19,490 per journal. For the purposes of a fair calculation of savings, half the printing and handling costs plus 40% of the subscription fulfillment costs can be allocated to the Canadian market. The other half of the printing and handling costs and 60% of subscription fulfillment costs can be allocated to the foreign market. This means that for each journal, the savings in serving the Canadian market would be $10,286, and the savings in serving the foreign market would be $9,204. Together the initial savings (before new costs) amount to $19,490 or 34% of current print-based expenditures. Because Canadian subscription revenue accounts for approximately half (51.76%) of total subscription revenue (foreign subscriptions account for 48.24%), it seems justifiable to allocate half of all savings to the Canadian market and half to the foreign market.

On the other hand, a move to online publishing would result in increased costs for journals in file preparation after transition costs, including the costs of software and training. There are several issues. Not only must journals prepare files for display on the Internet, but they must also conform to international standards to create metatags to allow searchability. A generous estimate of the cost per issue for file preparation, derived from our experience at the Canadian Journal of Communication, is approximately $800 (the CJC publishes between 145 and 160 pages per issue, four times per year—a little above the average number of pages and issues). If these pages were prepared for print only, or, alternatively, for online only, costs would be reduced to $500 per issue. Thus, online content-preparation costs alone would be approximately $2,000 per year. Website maintenance comes in at about $1,000 per year. We can assume, therefore, that journal-based online content preparation and site maintenance (which could be contracted out if necessary) would be $3,000 per journal.

Publication costs change as a result of moving from print to online publishing. Once hardware and software are set aside, ongoing costs can be estimated in the following way. Current charges for online hosting are as low as $1,500 per title per year: this is what the Canada Institute for Scientific and Technical Information (CISTI) charges for a basic hosting service in which the journal takes complete responsibility for site maintenance and provision of files. Projet Érudit takes a wide variety of files and transforms them as necessary to make them avail-
able online; it charges within the range of $2,000 and $5,000 per journal per year for this service. Érudit’s fee range appears to be sufficient to allow it to deal with difficult content. ICAAP (the International Consortium for the Advancement of Academic Publishing) charges approximately the same fees. If we take into account economies of scale, and if the provision of files (such as Rich Text Format or those within a particular template) is the responsibility of journals, annual costs might be kept as low as $2,500 per journal.

Operating in an online environment leads to other extra costs. The most obvious of these are hardware and software costs. Taking into account software upgrades and amortization of equipment, we can assume that, after transition, such costs can be estimated to be $1,000 per year. In a project such as Synergies, responsibility for portal- and database-related responsibilities (i.e., maintaining server access, security, developing system and database features) would be handled centrally.

Journals need to be in a position to develop and offer distinctive features such as automated thesis-abstract mounting, information services for their target users, and programmed live links to online booksellers, and to consider new page-design features such as the side display of footnotes. Provision would also need to be made for the entry of new journals and/or the expansion of existing ones. (We have not attempted to impute a value for this function.) Journals need decision-making power in determining the level and types of services they wish to offer. In overview, because online publishing is evolving, both journals and publishing services such as Synergies need to be in a position to pool funds and continuously develop enhanced user functions. Based on our experience, it would appear reasonable to set aside $700 per annum for these functions.

Thus, the net savings in serving the Canadian market after replacement online costs are allowed for are $6,686 or 15.19%, calculated as follows: print savings ($10,286) minus half of website maintenance and increased file preparation costs ($3,000/2), minus half of online publishing services ($2,500/2), minus half of hardware and software costs ($1,000/2), minus half of feature development at the journal level ($700/2).

Three assumptions and a foundation for transition
There are three significant assumptions in the above analysis. To put the matter in numbers, first, based on the changes in costs for both libraries and journals, if the 64 CNSLP libraries or any other 64 libraries were to shoulder the whole burden of providing access, the average subscription plus servicing cost would be $270 ($229 + $41) per journal, as compared with the current subscription plus servicing costs of $236 ($74 + $162), yielding a net cost increase of $33. Were costs and savings to be calculated on a foundation of 98 libraries (rather than the 64 CNSLP members), a journal subscription for the average library would be $190 ($149 + $41), in comparison with the current figure of $236, producing a net saving of $46. Were only 72 libraries to be involved, the amount paid by each would remain the same.
On average, Canadian SSH journals are now earning $5,593 per year in Canadian institutional subscription revenue. The average subscription rate is $74 and, although the number of institutional subscribers comes from a different and larger body of data (the 83 respondents to the publishing questions, rather than the 56 that provided revenue data), the average number of Canadian institutional subscriptions is 92, that is to say, a greater number than is needed to make a cost-neutral transition to online publishing. The average journal needs $14,637 in revenue from Canadian sources. The cost-neutral transition for libraries would net journals, on average, $18,704 (calculated as the average cost-neutral Canadian institutional subscription fee [$203] times the average number of Canadian institutional subscribers [92]). In other words, libraries could cover all the journals’ needed subscription revenue from savings in service costs. A last added factor sweetens the equation further. There are many colleges that are not members of CNSLP. Together with CALUPL members, it would not be unreasonable to assume that as many as 150 libraries could be persuaded to subscribe to a package of Canadian social science and humanities journals.

The rationale for believing that such a transition scenario is realistic is that the average number of institutional subscriptions is already 92. If we presume that those journals responding are a representative sample of all social science and humanities journals in Canada, there exists a more than adequate financial base for a transition to online publishing with no net drain on the public purse and no net loss of revenues to journals. Indeed, it would be reasonable to assume that in the absence of the capital and servicing costs associated with print journals, the number of subscribing libraries would increase. A caveat on this scenario is that, to attain the savings specified, libraries would have to divest themselves of their print archives of these journals. There would probably be a reluctance among many in the library community to divest themselves accordingly, but given that such archives would be failsafe collections (and only for issues published in print form) rather than lending copies, there certainly could be a designation process by which Canadian libraries could spread responsibility for maintaining journal archives. This would co-decrease print holdings in each library dramatically. The only other constraint on the model put forward is that it would have greater viability if the journals involved were to serve foreign markets online rather than in print, insofar as the added costs of online publishing, $7,200 in total, could then be shared by the foreign and Canadian markets at $3,600 each. Before considering the foreign market, a summary is in order.

In overview, allowing for some slippage in the calculations, and provided that foreign revenues could be maintained, the above analysis suggests that by combining the savings of libraries and journals, if 72 libraries or other institutions were to commit to purchasing the group of journals that responded to our survey at a per-journal cost of $203 (which is $36 less than current per-journal expenditures), then that group of journals could maintain the same level of Canadian revenues (relative to costs) as it does currently. Any number of institutional subscribers in excess of 72 would bring added revenue, which could be used to
increase currently low wages, invest in marketing or journal development, fund the circulation of journals to countries with developing economies, reduce reliance on grants and donations, or reduce subscription fees. Moreover, at a subscription base of over 72 institutions, there would be sufficient revenues to make journals available to all Canadians at no charge.

Serving the foreign market
There are several ways of serving the foreign market, some of which would maximize the dissemination of knowledge contained in Canada’s SSH journals:

1. Journals could continue acting individually to sell subscriptions to single libraries, either directly or through subscription agents. The difference would be that they would sell online subscriptions, rather than print ones.

2. Journals could form a consortium or sign a contract with a common agency to attempt to make a single sale through a country’s national organization of research libraries. This might involve various options or packages of journals.

3. Journals could make common cause and sell to consortia of research and other libraries.

4. Given sufficient revenue from both Canadian and foreign sales, journals could be made available at no cost to countries with low per-capita incomes.

Many libraries currently subscribe to journals through a subscription agent to whom, most often, they pay a premium. The main reason they do so is to reduce the overhead costs of handling individual subscriptions. For large institutions, subscribing to individual journals is costly in terms of staff time and other transaction costs, such as cheque-drawing fees. In effect, the subscription agents act as informal aggregators as well as sales agents. This matter could be handled differently. A selling agency for Canadian SSH journals could be set up to handle sales to major markets, that is, the U.S., Australia, New Zealand, the U.K., France, and the rest of the EU. The formation of such an agency would be especially propitious if attempts were made to sell to national research-library organizations or other library consortia. It might be best if this agency were at arm’s length from both the Synergies project (should it receive funding) and the journals themselves. Such a separation would keep the interests of individual journals and Synergies centres at bay and allow the construction of packages and deals that would provide the greatest benefit to the greatest number.

In the proposed online publishing scenario, the average per-journal income required by journals from foreign sources would be $10,817. This figure takes into account the following (which can be seen in Table 3): $15,156 in subscription revenue, plus an allowance of $1,265 (.8 x .2 x $7,908) for lost other sales, less $9,204 in print savings, plus a 50% share of new online publishing expenses ($3,600). Were this amount to be divided among 100 foreign libraries/institutions, each would pay $110 in Canadian funds per journal. If we assume that servicing costs in foreign libraries would drop the same amount as in Canadian libraries ($121.50 per year per journal), there would be a net annual saving on the balance.
sheets of foreign libraries of $87 per journal. If savings are not taken into account, the amount would be a net increase of $30.

A review of Canadian SSH journals’ foreign income and subscriptions further solidifies the foundation for transition to online publishing. The average number of foreign institutional subscribers is 175. The current average foreign institutional subscription rate is $80. These figures ($80 x 174 = $14,000) suggest that the level of foreign revenue ($13,965) required for a transition to online publishing is already in place. (These data come not from Table 3 but from the basic publishing data gathered in an earlier section of the survey, where journals were requested to report their number of subscribers and subscription rates. That the same result is not obtained by dividing institutional subscription revenue by average subscription rate is based on the fact that only a subsection of those responding provided financial data. Thus one must be cautious in the use of these data.) The above caveat notwithstanding, it would appear that there is reason to believe that with gradual price increases (which would be more than compensated for by cost savings by libraries as they abandon their print collections), foreign income sufficient to the needs of journals would be available. A packaged group of journals and database access would probably measurably enhance sales.

With the domestic and foreign revenue base outlined above, it would be possible for many or all journals to make their content available to foreign countries with low per-capita incomes perhaps without charge. If extra income was required, Canada’s Department of Foreign and International Trade (DFAIT) could be approached with a suggestion that international-aid funds be used to provide Canadian SSH journals to countries with developing economies. Even $20 per title (named by the recipient country) would flow useful revenue into journal coffers. Such an initiative would be a great service to researchers in the developing world, and it would make Canadian research more visible around the world. It might also increase the interaction between foreign scholars and Canadian scholars. DFAIT might be interested especially in purchasing institutional site-licences for foreign institutions with Canadian Studies programs.

A reality check: Integrating the domestic and foreign markets
The reality of doing business introduces a complexity of other variables that cannot be dealt with fully in this paper. For example, in an online world, it makes better sense to charge subscribing institutions on the basis of the number of potential users, rather than employing a standard institutional subscription rate. Likewise, it makes little sense as a matter of policy to charge Canadian institutions more than their foreign counterparts, even though it may make sense on a foundation of a projected number of users or frequency of use. The point here is to derive an average institutional subscription rate that would allow journals to publish online. As the lower half of Table 4 indicates, the required average subscription revenue of an online journal would be $25,454. Assuming average institutional subscriptions would remain constant (92 Canadian, 175 foreign), the required average subscription rate, rounded up to the nearest dollar, would be $96. If all “other sales” were reduced to zero (it is doubtful that secondary aggregator
income and royalty income would reduce to zero) the required average subscription rate would increase to $102. And if all grants and donations were removed, the required average subscription rate would only increase to $187, which, in world terms, would be an affordable subscription rate.

**A balancing of interests**

In our discussion of library savings, the provision of both current and back issues was built into the equation. As the scholarly community moves to embrace online technology, a paradox emerges. From the point of view of researchers and libraries, both back and current issues have knowledge value. Research cannot restrict itself to a consideration of current literature. But from the point of view of journals, while the existence of back issues lends credibility to titles, almost all revenue is gained only from the sale of current issues. In the print world, relying on libraries to provide back-issue access was cost effective. In the online world, it is far easier, and probably far wiser in insuring survival, for journals to handle their own back-issues. From a journal perspective, it is important that a journal not give away its back issues only to find itself with inadequate operating revenue to continue publishing. Given these dynamics, it is probably in the interests of the journal community to restructure what it sells. Bundling current and back issues and selling yearly access to both (rather than selling one year’s subscription to current issues) places control firmly in the hands of the journals. As with copyright law, which is meant to balance the interests of creators and society, this situation seems to call for a balancing of interests among journals, libraries, researchers, and journal users.

**Journal publishing and usage as social practices**

The research literature on the social dynamics of technological change and technological transfer (Rogers, 1995) tells us unequivocally that the adoption of technology is intrinsically bound to professional practice and social institutions. In fact, the adoption of new technology is more a social than a technical phenomenon. From a social perspective, the significant groups to consider in a migration to online publishing are authors, journal users, libraries and their staffs, and journals and their staffs.

Journal users, that is, researchers and students, are increasingly looking online for published research. The transition has effectively taken place in science and is in process in many countries, as this journal issue points out. (See also ELPUB: http://elpub.scix.net/cgi-bin/works/Home). Even African journals have made the transition to online publication with African Journals OnLine (http://www.ajol.info), as Pippa Smart, Carole Pearce, and Nyertovwo Tonukari point out in this volume. The results of the Canadian survey discussed in this paper, completed by journal staff and editors, indicate that Canadian SSH journals are ready to make the transition. Authors, and the occasional journal editor, have loyalties to print and concerns with the credibility of publishing online (that hinge upon the acceptance of online publishing by tenure and promotion committees). However, these can be weighed against the increased number of users that virtually any
## Table 4: Comparative print and online revenues and expenditures

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Print</th>
<th></th>
<th>Online</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average ($)</td>
<td>Corrected Average ($)</td>
<td>% of Total Expenses</td>
<td>Average ($)</td>
</tr>
<tr>
<td>Editorial (line and copyediting, proofreading)</td>
<td>12,256</td>
<td>13,464</td>
<td>21.65</td>
<td>12,256</td>
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<td>Prepress</td>
<td>4,207</td>
<td>4,622</td>
<td>7.43</td>
<td>6,407</td>
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<td>Printing, paper, and binding</td>
<td>14,523</td>
<td>15,954</td>
<td>25.65</td>
<td>-</td>
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<tr>
<td>Postage and handling</td>
<td>3,885</td>
<td>4,268</td>
<td>6.86</td>
<td>-</td>
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<tr>
<td>Subscription fulfilment</td>
<td>2,704</td>
<td>2,971</td>
<td>4.78</td>
<td>1,622</td>
</tr>
<tr>
<td>Marketing, promotion, and publicity</td>
<td>1,814</td>
<td>1,993</td>
<td>3.20</td>
<td>1,814</td>
</tr>
<tr>
<td>Online publishing services</td>
<td></td>
<td>2,500</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Journal-based management, revenue, features, marketing, etc.</td>
<td>1,500</td>
<td>1,689</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hardware/software</td>
<td>1,000</td>
<td>1,126</td>
<td>2</td>
<td></td>
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<tr>
<td>Other, including administration and overhead (please specify)</td>
<td>17,231</td>
<td>18,929</td>
<td>30.43</td>
<td>17,231</td>
</tr>
<tr>
<td>Total expenses</td>
<td>56,622</td>
<td>62,201</td>
<td>100.00</td>
<td>44,330</td>
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</table>

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Average</th>
<th>% of Total Revenue*</th>
<th>Total Revenue</th>
<th>% of Total Subscription Revenue*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total for individual, Canadian</td>
<td>10,668</td>
<td>17</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total for institutional, Canadian</td>
<td>5,593</td>
<td>9</td>
<td>14,637</td>
<td>29</td>
</tr>
<tr>
<td>Total for individual, foreign</td>
<td>2,087</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total for institutional, foreign</td>
<td>13,069</td>
<td>21</td>
<td>10,817</td>
<td>22</td>
</tr>
<tr>
<td>Total subscription revenue</td>
<td>31,418</td>
<td>51</td>
<td>25,454</td>
<td>51</td>
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<tr>
<td>Other sales</td>
<td>7,908</td>
<td>13</td>
<td>1,582</td>
<td>3</td>
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<tr>
<td>Total grants and donations</td>
<td>22,876</td>
<td>37</td>
<td>22,876</td>
<td>46</td>
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<tr>
<td>Total revenue</td>
<td>62,203</td>
<td>100</td>
<td>49,912</td>
<td>100</td>
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</tbody>
</table>

*Corrected to bring expenses in line with revenues, so that comparisons can be more readily made.
journal can attract simply by making its content available online, which is a very positive element in terms of both knowledge dissemination and building credibility for the author as a scholar. This is not to say that the entire producing and consuming community is ready to embrace online publishing solely and wholeheartedly. Nonetheless, it would appear that the good will is there. These matters are best addressed through the migration of existing journals to the online environment, rather than the creation of new titles and the gradual decay of existing titles. The positive elements discussed above notwithstanding, the knowledge necessary on the part of journal staff for effective online publishing is insufficient. This insufficiency can be addressed through professional development containing two components: skills and understanding.

Basic skills such as the ability to handle acquisitions online are necessary if full advantage is to be taken of online technology. It is important for journals to ensure proper markup, keywords, and website features, and for journal staff to be able to handle these tasks. These are not complex skills, but they require some training. Operating in an online world also requires up-to-date technology—hardware, software, and computer access. Equally important is the second element: understanding what happens to an article in the database and how it is transformed for presentation in the online environment. Professional development would enable journal staff not only to benefit from understanding the dynamics of searching and databases; they would also gain competence, confidence, and probably greater enthusiasm, which would lay a foundation for embracing technological change.

In the presence of favourable attitudes toward online publishing, a smooth transition to an online environment can be facilitated by marketing the positive elements of online publishing. For example, creating user profiles and mailing out (on a periodic basis) new articles within a user's self-identified research interests would help. The creation of continuously updated bibliographies on certain subjects would also illustrate the potential of the new environment. The automatic e-mailing of any commentary on a researcher's work would also help users understand the dynamics of this new environment. In addition, given the potential of an expanded audience in the online environment, an opportunity exists to explain scholarly research to a wider readership. An article and its abstract could be accompanied by a précis and implications section adapted for a general (non-scholarly) audience. Free media access to such material would help transfer research-based knowledge to the larger community.

In the end, it is probably important to bring the discussion back to the reality of the individual journal, a reality that researchers, journal staff, and libraries understand. Table 4 presents the data collected in this study within the framework of a single journal, publishing in print and publishing online. Comparative costs and revenue and their sources are presented. These figures can serve as a guideline for journals in making the transition to the online world. They can offer benchmarks for journals to measure themselves against as they enter the uncer-
tainties of this transition. As the reader will see, the reality looks both familiar and, as a less expensive operation, promising indeed.

**Some conclusions and a proposed way forward**

It is important to recall that in speaking of scholarly journals, we are speaking of access to knowledge, and that there is a cultural, political, social, and economic value to accessibility of knowledge. Placing journals online allows information to be accessed, not just by scholars and students, but also, potentially, by all interested Canadians and people around the world (depending on how foreign markets are served). The online environment restructures access to research, bringing it to the desktops of users, rather than confining it to the far reaches of a vast building at some distance from one’s home or office, where one might, or might not, find the time to locate the volume, issue, and article for which one is searching. Added to these advantages is the ease of selection and reproduction of text once an article is downloaded.

As the first section of this paper and all the articles in this volume indicate, online technology has engendered a great deal of innovative activity in scholarly journal publishing. With some cognizance of this activity, the majority of Canadian SSH journals are interested in the online environment and willing to take advantage of it. However, because these same journals are, for the most part, scholar-controlled single-title journal publishers whose first concern is the creation of an official record of research certified through peer review, and because they are also, for the most part, not-for-profit enterprises, they are inclined to await the emergence of a support program and a clear indication that the permanent and accepted scholarly record is an online record.

Synergies (or any other journal consortium) is a first step, and it would be capable of creating a robust infrastructure. If funded, the technology would be in place in a variety of centres across Canada to publish journals online and to allow them to maintain control of their content and, if they wish, define their presence in the scholarly community. However, Synergies is the first of four steps needed to take Canadian SSH journals into the online world. The other three needed elements follow.

A necessary second step is this: A co-operative arrangement would have to evolve whereby the scholarly (and associated) communities allocate and accept necessary roles among scholars as researchers and authors, journals, universities, SSHRC, and libraries, and define a financial partnership in a transition to a sustainable model for online publishing and access. While the roles for journals and libraries have been emphasized in this paper it should not be forgotten that SSHRC, universities, and scholars also play key roles. In addition, the roles for journals and savings described in this paper do not constitute the only possible partnership. Moreover, the financial analysis provided is meant to provide sufficient information to understand the approximate costs of online journal publishing in comparison with print. Many librarians are dubious of the cost details presented on their side of the ledger and question the burden they are being asked to bear in the absence of others restructuring their roles. This said, for online jour-
In order for journals to come into existence and to sustain themselves, the scholarly community, with lead roles being played by SSHRC, journals, and libraries, must form a partnership. Once they do, all will benefit.

The third step is this: For online availability to take over from print as the scholarly record, two issues must be addressed. First is the completeness of the record, otherwise known as legacy content; second is the permanence of that record. With regard to completeness, it would seem that SSHRC might take the lead in making funds available that would lever funds from other sources, such as learned societies, to digitize the back issues of journals. Our calculations are that the bill would average well under $10,000 per journal. Even $2 million ($10,000 x 200 journals) for digitizing the official record of SSH research in Canada does not seem excessive. Permanence can be addressed through the co-operation of the journal community with university libraries and the National Library and Archives, the latter of which could play a leading role with a system such as that developed by LOCKSS.

The final and fourth step is training. A technologically sophisticated society depends on the full gamut of technological engagement—the requisite machines and protocols, the technology developers who understand and can further develop the technology as needed, the technicians who understand particular applications and can keep them running, and the social institutions that nurture both the maintenance and development of the needed hardware, software, and human resources. For online publishing to be fully embraced, the scholarly journal community must understand the nature of online publishing not only in terms of the elements of production, but also in terms of how an online presence can become as intrinsic to the activities of a researcher as a print journal. To put the matter in different terms, an online journal cannot be a direct translation of a print journal, only published online; it must be reinvented on its own strengths—easy and wide accessibility, an expanded media palette, interactivity, enriched content (e.g., datasets), the ability to a multidisciplinary database of information that can be searched in many and various ways, and so forth. Once journal staff come to think of such characteristics as intrinsic to journal publishing, they will begin to see how to encourage users to make maximum use of journal content. But it all must begin with a modicum of training.

Notes

1. This paper is a summary and re-working of a report of research conducted with the assistance of The Social Sciences and Humanities Research Council and the Canada Magazine Fund. The full report can be found at http://www.beamp.bc.ca or http://www.ccsap.sfu.ca/research.

2. Later in this paper we touch on the possibility of maintaining individual subscriptions by providing reader services. While such initiatives are important, for the purposes of this analysis it is wise, we believe, to assume that individual subscriptions will diminish to zero. It is also the case, we believe, that reader services are best provided by a consortium of journals, rather than a single journal.

3. A site-licence is a licence purchased by an entity that allows access by members of the group it represents. A university might purchase a site-licence for all students and faculty. A national site-licence would provide access to all Canadians.
4. It is true that other libraries (for example, those within colleges, government, law offices, corporations, and institutions) subscribe to some scholarly journals. To keep the model simple and to err on the side of conservatism, we have considered only research libraries (and not other types of libraries that might also purchase such a licence) in this initial analysis.

5. Using CALUPL as an example represents a conservative estimate of the number of libraries that would be willing to contribute to the creation of a national site-licence. According to the National Library Core Statistics Program, in 1999 there were 193 academic libraries in Canada—83 university libraries and 110 college libraries. Such figures suggest that the market is sufficiently large in Canada that 98 (or 100) subscriptions would not be unreasonable.

6. It is true that per-unit printing costs would rise if print runs were halved, but with changes in short-run print technology, it is difficult to estimate how much those increased costs would be.

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