

Canadian Social Science and Humanities Online Journal Publishing, the Synergies Project, and the Creation and Representation of Knowledge

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Abstract: This paper opens three topics of discussion. After providing some social context, it describes the Synergies project, a Canadian university library/journal partnership designed to allow small Canadian social science and humanities journals to publish online. It then describes the capacities of one and the capacities and development of a second software package that are basic to the success of the project. It concludes with a description of how online publishing changes the nature of representation and thus knowledge.

Background: The Structure of Scholarly Journal Publishing in Canada

Publishing is subsidized in Canada—book publishing, magazine publishing and scholarly journal publishing. Why? Because Canadians see publishing in much the same way as they do film, sound recording and broadcasting. All are cultural industries that are necessary for the maintenance and development of Canadian society. Canadians believe that our artists and writers should have a chance to display their creativity and Canadian audiences should have an opportunity to view, read, hear and otherwise interact with those works. (Lorimer and Duxbury, 1994; Raboy, Marc, Ivan Bernier, Florian Sauvageau, and Dave Atkinson, 1994; Grant and Wood, 2004) Similarly, Canadians believe that it is important for Canadian researchers to have access to both the entire body of research generated by scholars around the world and, as an identifiable subset, the contributions Canadians are making to knowledge. As team research and centres of excellence become the norm, to maximize public benefit, new scholars must know what research is going on in Canada, who the participants are in the Canadian research community, what questions they ask, where they work, and so on.

Were subsidies not in place, few Canadian social science and humanities (SSH) journals would exist: the market is simply not big enough to support such publications. Without such journals, Canadian research would become far less visible. The reason for decreased visibility has nothing to do with the inherent value of the research. Rather the momentum of market forces—the creation of production centres, distribution mechanisms, and expectations of consumers and readers—would lead to foreign domination (see Grant and Wood, 2004). And foreign domination would make the knowledge system appear more monocultural. Canadian research trends, if not Canadian researchers themselves, would be muted.

The cosmopolitan perspective that many Canadians have can be cast as follows. In the same way that many now place a value on biodiversity, an equal case to be made for diversity in research. Diversity demands distinctiveness. In the multiplication of distinctiveness is plurality. And in plurality there is survival value, whether it be biological or social.

Two journal support programs exist in Canada to ensure that Canadian research has a good chance of being published and in so doing to help preserve diversity. In support of scientific journal publishing, the National Research Council (NRC) publishes and distributes 15 journals <pubs.nrc-cnrc.gc.ca/>. The journals the NRC owns are openly accessible (without charge) to anyone with a dot-ca address (.ca). Our concern here is with a second program. On the social sciences and humanities side of journal publishing, Canada's research funding agency, the Social Sciences and Humanities Research Council (SSHRC) provides subsidies to not-for-profit entities of up to \$30,000 for each journal that is judged academically sound, is financially well managed, and has a minimum paid print circulation of 200. This subsidy program supports over 150 journals and has an annual net cost of \$2.1 million. Subsidy levels are based on income, mainly from subscriptions. Journals must submit their financial records and must not carry a surplus of more than one year's publishing costs.

The subsidies to SSH journals allow a variety of journals to exist that otherwise would not. The costs of producing a journal with income from between 200 and 400 subscribers—the former being the low eligibility limit for support, the latter being a fairly typical subscription number—would make individual subscriptions prohibitive. Secondly, journals with higher circulations are able to keep their subscription price low, and they do so, since, to maintain eligibility, the journal may not have a surplus greater than its expenses for one year. In a survey I conducted of Canadian SSH journals in 2002, the average subscription price for an individual researcher was \$40 and for an institution it was \$74 (Lorimer and Lindsay, 2003).

The major drawback of providing support to journals based on a combination of revenues, circulation numbers, and low working surpluses is that they have little ability to accumulate earnings and invest them in staff training or such developments as mounting and maintaining an online version of the journal. Many journals fear a drop in subscriptions if rates are increased and the administration of the subsidies often allows for little beyond covering publication costs. In addition, even though it might serve the research community far better to have an online version with its easier and more flexible access—from a connected laptop any time of the day and any date of the year—and its expanded media palette of colour, moving or still images, sound, and other forms of representation, the initial costs are greater than the potential added revenues.

In the context of a) a desire for an identifiable Canadian presence in SSH research; b) many small but valuable subsidized journals; and, c) the increasing value of online publishing in terms of dissemination and representation, two initiatives were inaugurated over the past decade. The first, the Synergies project, took the form of a proposal that will see journals (and other information producers) partner with Canadian universities to enable journals to publish online reliably and inexpensively. The second was the development of management and publishing software underpinning the hosting and publication services to be provided by the universities. The significance of these two initiatives and the projected dominance of online publishing in the not-too-distant future, is nothing less than a transformation in the nature of knowledge.

One note of further background is needed to provide a context for the development of the

Synergies project. The serials pricing crisis has been a top priority for research libraries for more than two decades (see, for example, the website of the Association of Research Libraries especially SPARC activities and the Canadian Association of Research Libraries, as well as Lorimer, Gilbert and Patrick, 1997). In effect, libraries have been fighting an uphill struggle against overcharging by commercial and some large association publishers. This overcharging has interfered with the dissemination of knowledge to all who might benefit from it. In a sense, such overcharging violates the public trust that society places on educational institutions and researchers to develop knowledge in the pursuit of the public good.

What many tend to gloss over is that while the serials pricing crisis was very real and demanded addressing, it existed in only one sector of journal publishing, scientific, medical and technical (STM) journals. Overpricing began with Robert Maxwell's journal publishing activities immediately following World War II (see Bower, 1988) and continues to the present day. Only near the close of the 20th century did overpricing begin to spread to SSH journal publishing and its spread has been slow. As of early 2007 overpricing is, by no means, universal. The often typical situation scenario for SSH journal publishing is a serial publication that is deliberately underpriced to encourage dissemination and that depends on volunteerism, low staff wages, a lack of management oversight, no staff training, and little marketing (see Lorimer, Lynch and Provençal, 2006). From a library perspective such a regime is beneficial rather than problematic—the journals are inexpensive to acquire. However, as noted above, it is an open question whether such a regime serves the knowledge dissemination interests of the SSH research community, or society as a whole.

At the same time, as journals become established, slowly but surely commercial publishers have been making them offers that are difficult to refuse. The company offers to take over the publication of the journal, thus ridding academics of the non-academic (publishing) responsibilities of the journal, and to bring its marketing power to bear in helping the journal gain an international audience. Once a contract is signed, the publisher doubles or triples the price within a few years which, when combined with increased marketing, brings increased revenues to the journal even after the publisher has made a healthy profit on its management fees. The process is not unlike bringing an invention to market or exploiting a patent. Money invested in a worthwhile product begets money. Yet in the end, it retards or restricts the dissemination of knowledge contributing measurably to the creation of information haves and have-nots among researchers around the world.

The Synergies project developed out of this general and particular social context. Those of us familiar with the serials pricing crisis could see no reason why it would not spread eventually to SSH journals once the scholarly community realized that, independent of the value of the knowledge they carried, SSH journals were a necessary component for the demonstration of professional research excellence. Those on the library side sensed an opportunity to avoid a repetition of STM journal overpricing in the SSH sector. Those on the journal side saw the potential access to the server systems and technical staff of libraries—with little added cost to the libraries—given the needed resources they were having to put in place to deliver online science journals to researchers. Such access represented a feasible means to initiate online publishing. In short, from our various

points of view, it appeared possible for a library (or more generally a university) / journal partnership to be created that would serve a) the short-term interests of journals accessing a stable online publishing infrastructure; b) the long term interests of libraries in avoiding excessive profit taking by the private sector; and c) the overall interests the scholarly community has in maximizing the dissemination of knowledge.

The Synergies Project and Online Publishing of Scholarly Journals

The Synergies project was designed by a planning group with the above viewpoints in mind. It was somewhat visionary for at least three reasons. It encouraged libraries to rethink their role in the delivery of content by becoming involved at an earlier stage of the publishing process. It also represented a path around the tendency of social scientists and humanists not to be technologically inclined. In addition, through the aggregation of journals around a common delivery system, it encouraged consideration of publishing strategy, a common missing element in the operation of the vast majority of Canadian SSH journals (see Lorimer and Lindsay, 2003; Lorimer, Lynch and Provençal, 2006). (A publishing strategy would include, for example, how a journal might attract good papers on a continuing basis; whether a journal should specialize to gain world-wide recognition; how a journal might more effectively market itself; how subscription levels might be built, and so forth.)

The Synergies project brought together several librarians with systems expertise from Simon Fraser University, the University of New Brunswick and the University of Toronto; a Director of Information Resources responsible for the library; a two- and then three-person team who were involved in the online journal publishing initiative in Quebec (Project Erudit, www.erudit.org), and me, then a past president and now president for a second term of CALJ (the Canadian Association of Learned Journals) and director of Canada's only graduate professional publishing program. Added later to the planning team were an observer from the Canadian Association of Research Libraries (CARL) and also one from SSHRC (the funding agency for SSH journals).

The central goal of the project was as outlined above: to combine the organization resources of and intellectual energy surrounding existing journals with the systems infrastructure being developed within the forward thinking libraries involved to provide the wherewithal for online journal publishing. Given the scale of the journal publishing in Canada, we reasoned that a distributed database of journal content could be created that would allow a user to readily search all journals either in French or English and receive results in both languages from all journals and hence any discipline. Clearly, single discipline searches would also be possible, and constrained searches by year of publication, keywords, or methodology would also be needed.

However, from the beginning, there was a larger agenda. It was to include more than simple journal content enhanced by the expanded media palette the online environment. The planning group reasoned that Synergies and its content would receive greater attention and usage if a wider range of documents were to be included. In particular, we saw a value in theses and dissertations being made available, also preprints (taking into account the example of Paul Ginsparg's Los Alamos-based preprint server <arXiv.org>, and Stevan Harnad's ideas on self-archiving), and the data sets that formed the foundation of certain articles. When we began, institutional repositories (IRs) had yet to

become popular but as they developed we worked to provide a conceptual and technical linking between Synergies and IRs.

The proposed relationship between the journals and the libraries was innovative and is quite different from the normal relationship between journals and aggregators of digital versions of journal content. Normally aggregators are commercial publishing organizations that package digital content from various serials to sell as a package into secondary markets, at least that is the common pitch they use in their initial approach to journals. In fact, aggregators sell into any potential market. This presents journals with a problem, given that it is not uncommon for a journal to receive in the order of 20 percent of the revenue an aggregator receives for its contribution to the aggregator's package. The journal may find, as the Canadian Journal of Communication (CJC) did, that one of its aggregators had sold to a university in its primary market thereby depriving the journal of needed and deserved subscription revenue. In one case, Canada's largest and wealthiest university was using a Proquest aggregation that included the CJC to cover off the needs of its faculty and students, including those who worked at the McLuhan Centre, a centre named after the world's most famous media theorist—formerly a faculty member at the university. In another case, having finished setting up its distance education courses in communication, which required a fair number of permissions from the CJC to reprint articles in course packs, Canada's distance education university cancelled its subscription in favour of access through an aggregator's package (the situation was later rectified in a following negotiation).

The Synergies model turns the normal aggregator's model on its head. The universities involved, either through their library systems division or their computing services division, will set up the infrastructure and provide publishing services for a fee. The journals would supply the content in some cases entirely running their own sites, and, if subscription-based journals, will receive subscription income directly out of which they will pay hosting fees. Open access journals will similarly pay hosting fees and earn their income through direct institutional support or submission fees. One note of clarification: Whereas the journals will be partnering with the systems division of a library, the serials acquisition of the same library will be purchasing their subscriptions from the journal. Thus the library may be both a seller of services and a purchaser of the resulting content.

Of course, once the system is set up and running, it may become obvious to both the management of Synergies and the journals that the aggregation of effort could result in benefits all round. That is to say, journals may benefit from an assembled team of trained publishing professionals rather than relying on their own abilities to hire managing editors, copy editors, proofers, layout professionals, and subscription managers.

Each of the five universities involved, and those who may later join Synergies as publication services providers, will be free to decide what services they will offer journals. Simon Fraser will concentrate on the development of a do-it-yourself publishing software (Open Journal Systems [OJS]) to be used by four of the five universities involved. The University of Calgary will concentrate on preservation; the University of Toronto on integration of Synergies with institutional repository software (a derivative of D-Space developed at MIT), the University of Montreal on analytical tools to be used in querying the database, and the University of New Brunswick on the integration of Erudit

technology (see below) and OJS.

I cannot report on the plans of the other universities, but Simon Fraser plans to combine the systems expertise and resources it has with the publishing expertise of the Canadian Centre for Studies in Publishing and its offshoot, CCSP Press. Thus, as well as providing online hosting services, we will offer a menu of publishing services including design, editorial management, production and printing management including copy-editing, metadata markup and proofing, mailing and handling, subscriptions management, financial management, monitoring and evaluation, and domestic and international marketing

Synergies will also strive to work closely with a buyer's consortium that has also received funding recently from the same source as Synergies (the Canada Foundation for Innovation [CFI], Platform Grants program).² The consortium is the Canadian Research Knowledge Network (CRKN). It is modeled on a previous project called the Canadian National Site-Licensing Project (CNSLP) in which Canada's research libraries formed a national buyers' consortium to purchase STM journals in bulk for all members. CRKN will do the same sort of job for a wider range of libraries with SSH journals. Synergies will work with CRKN to structure its demand for online journals in a way that will encourage journals to participate in a Synergies-related aggregation to be sold to CRKN and other consortia as an aggregation for mutual benefit all round.

When writing the first draft of this paper, my sense was that Synergies would eventually emerge in function, or in name and function. Given the need for Canadian research libraries to make Canadian SSH journals available to Canadian SSH researchers, the project seemed inevitable. Given that the journals showed no signs of organizing themselves and searching for the needed resources—in spite of my presidential prodding; given that SSHRC in its journal-funding capacity knew that Canadian SSH research must be online to be part of the international SSH research discourse and had supported the formation of Synergies; sooner or later, through allocations of library budgets or direct funds from CFI, I predicted it would be funded. After all, I noted, if the journals merely doubled their subscription rates—which would make them approximately the same price as international journals in the same fields—the needed \$3 to \$4 million would be in place within two to three years, most of it coming from library budgets in and outside Canada. Luckily, for often research funding does seem like a matter of luck, Synergies' second application to CFI was successful.

Its funding success was based in part on the maturation of two Canadian technologies the existence of which I have managed to write around so far in this paper. Providing journal hosting services requires journal publishing software. That software comes in two forms in the Synergies project, each with its own strengths. The first piece of software was developed as part of Erudit. The second software package is an open source journal publishing technology, Open Journal Systems, part of a larger software suite developed as part of John Willinsky's Public Knowledge Project at the University of British Columbia. Its institutional home is now Simon Fraser University Library <pkp.sfu.ca>.

Canada's and Synergies' Two Online Publishing Technologies

The purpose of Erudit and, following it, Synergies, was and is to provide professional

infrastructure for the promotion and dissemination of scholarly documents, an infrastructure that is a credible and viable alternative to those of the commercial publishers. Its uptake, at least by Quebec journals, was encouraged by a February 2000 report to Quebec's SSH research funding agency, *Fonds pour la formation des chercheurs et l'aide à la recherche* (FCAR) which recommended restricting funding to online journals. After consultation with the journals community, it was decided that some flexibility was needed and FCAR decided to differentiate between online production and online dissemination (see www.erudit.org/documentation/rapport/index.htm).

Journals were left to decide how they would handle the receipt and processing of manuscripts. Érudit became the designated dissemination platform and received a beginning grant of about \$100,000 from FCAR (which, in 2002, changed its name to *Fonds québécois pour la recherche sur la société et la culture* [FQRSC]). It also received, and continues to receive, institutional support from three Quebec universities, Université de Montréal, Laval and Université du Québec à Montréal, as well as FQRSC.

Each journal was eligible to receive up to \$8,000 per year for digital production encompassing the production of XML files, their transformation into Érudit's article DTD or schema, the production of the online display (HTML and PDF), dissemination of the content, non-exclusively, by Érudit and the preparation of metadata for Érudit, partners platforms, bibliographic databases and specialized search engines. Once files are prepared, journals undertake a final review and approval before Érudit puts the issues online.

Customarily, journals contract with Érudit to do this work. Érudit also creates Cascading Style Sheets (CSS); offers hosting and security services as well as subscription management for journals who have subscription revenues and long-term conservation of digital files. Érudit partners with which it is interoperable include Persee (www.persee.fr) and soon Cairn (www.cairn.info), bibliographic databases (e.g., MedLine, OCLC, Repère, Francis, Pascal, ABC-Clio) and aggregators (e.g., Alouette Canada, Google Scholar, etc.). Further, it is working to bring on other services such as RSS, and references in EndNote, RefWorks.

While Érudit concentrates on dissemination, as part of the Synergies initiative, it will be possible for journals to use manuscript handling software such as OJS to receive, process and prepare manuscripts for transfer to Érudit for markup and dissemination.

While the planning group was busy with Synergies, a University of British Columbia education professor, John Willinsky, began to pursue a different tack in his Public Knowledge Project. Willinsky was convinced from his tenure as a journal editor that the Internet was a great vehicle for the much wider, even public dissemination of all forms of knowledge and hence public education. His initial inquiries into the cost of publishing a journal online were met with outlandishly high and inconsistent estimates (see Willinsky, 2005). He thus set out to show that the cost was low reasoning that a low cost could lead to journals that were openly access to everyone in society. He hired computing students, one in particular, Kevin Jamieson, who was able to create exactly what Willinsky had in mind at a very modest cost. Basically, it was a web-based manuscript control and publishing system designed for open access journals with automated email functions to

carry a journal editor through from the online receipt of the manuscript to the final online publication. Willinsky created a set of pre-written but customizable emails to deal with each stage of the process, plus a manner of tracking manuscripts so that files and revisions were tracked. While the software had no means of restricting access, it did not shut the door on others adding that functionality—the code was the well known PHP and it was accessible to any programmer who might wish to modify it. He called his software Open Journal Systems (OJS).

In 1997, I completed my second term as editor of the *Canadian Journal of Communication* and became its publisher. A close colleague, Richard Smith, was electronic editor in charge of our online activities. In 2002, given that OJS had a complete software-based online manuscript handling and publishing system, at Smith's urging the CJC adopted OJS. However, because the CJC was a subscription-based journal and we had developed our own system OJS for the layout of the journal, both for the print and the online version, we set out to add functionality to OJS that would transfer our innovations to this new system and allow other subscription-based journals to use Willinsky's software. That specific functionality included the following:

1. A moving access restriction or embargo of a designated time period where only subscribers have access to the most recent year's articles;
2. A set of news items that are visible on the home page;
3. Live links from the home page to our subscription rates as well as to the submissions page;
4. An automated thesis abstract publishing function that allows a student to submit an abstract, which generates and email to his or her supervisor, who then sends an email confirmation that the thesis is indeed real and has been passed and the abstract is correct. Once both email notifications are received it takes about 30 seconds to activate the file and the abstract is published.
5. Three RSS feeds for syndicating journal content.
6. A means for handling sound and image files.
7. A means for converting Microsoft Word files into Framemaker files that then allow us to output both PDFs for the printer and HTML files for the web.
8. A cost effective means, in cooperation with SFU library for digitizing back issues so that we are online with all content back to volume 1 number 1 in 1974.

In late fall 2005, through the joint efforts of programmers and others associated with John Willinsky, the SFU Library and SFU's Canadian Centre for Studies in Publishing, OJS 2.0 was released. This second release represents a more elegant configuration of the software, allowing easier plug-in development of desired functions. OJS 2.1, now also released, also integrates our functionality with that of the original OJS providing a powerful tool for journals around the world. And, indeed, the software has been taken up. At the beginning of 2006 it appears that more than 1,000 journals around the world are using OJS.

So what, exactly, does OJS offer the journal world? This summary relies strongly on Willinsky's more detailed description (2005).³

1. First of all it is easy to set up. A person can download the software either from the pkp.sfu.ca. OJS can be installed on a local web server, enabling the journal to

be locally controlled while operating within a distributed system. Once installed, any number of journals can be created on the server, and the journal manager or editor simply follows directions in setting up a journal—name, look of the home page, URL, sponsors, editorial board, submission guidelines—all the standard information a journal would need in announcing itself to the world.

2. OJS offers journal editors all the features that may be required by the editorial guidelines of different disciplines, providing assistance for those who may have had little experience with journal publishing. Through the Setup process, editors are able to configure each journal according to its needs, including submission requirements, journal sections, and steps of the review process.

3. The OJS publishing workflow follows that of a traditional journal, based on the online submission and management of all content. Articles are submitted online directly by authors, and then move on to the review process; if accepted, the submissions are then passed on to editing and publishing, with automatic records kept of each step. The process is managed with an automated email system: prepared emails containing the submission information are distributed to the people who need to be contacted at each step (i.e., reviewers, editors, or proofreaders), notifying them of the task.

4. The journal website acts as an editorial office, organizing and tracking the submissions while allowing all users to access the articles anywhere and at any time. The convenience of this automated system saves time and increases efficiency, reducing administrative and publishing costs associated with journal publishing, as well as the cost of maintaining a physical office space.

5. Journals can be published in all formats, and the system allows publishing as standard issues with 10-12 articles each, or in a continuous publishing format, where each article is published as soon as it is ready for publication – an approach that is becoming more frequently employed among online journals.

6. OJS also provides comprehensive indexing of all submitted content, achieved by the author providing the indexing information at the time of submission; this acts as a faster and more efficient alternative to both expensive professional indexing services and the traditional submission mailing process.

7. The system offers readers two options for accessing journal content, depending on which access model is chosen by the journal manager. Subscription-based journals require readers to subscribe in order to access articles, while open-access journals can be accessed by registered users without a subscription. Journals may also be subscription-based with the option of providing open access after a period of time from the initial publication. Registered readers are notified of the publication of each issue by email and can have the option of commenting on the articles, enabling an interaction and an exchange of ideas between themselves and the authors.

8. In order to further enhance readers' experience with online content, OJS also

contains a set of Reading Tools that are included in each journal, providing readers with a range of options. A set of tools for each particular article indicates whether or not the article is peer reviewed, and includes a link to the article's metadata, an option to email the author, and a look-up tool for locating any word in the article in a free online dictionary. Another set of links allows readers to find items related to the article, including other works by the author, research studies, media reports, and discussion forums. Though such tools present the risk of distracting or overwhelming the reader, preliminary study suggests that the access to such information enhances the reading experience and provides a stronger sense of the content's value and contribution to the research process.

Technology and Organization in the Service of Nothing Less than the Nature and Representation of Knowledge and its Dissemination

As I noted in the introduction to this paper, Synergies was created in the pursuit of publishing opportunities for Canadian scholars, not as an indistinguishable part of a world body of research, but as a distinctive contributing element from an identifiable community to the world body of research. Synergies was also created to forestall unnecessarily high profit taking by the private sector for adding small amounts of value to publicly funded research undertaken in public institutions by publicly paid employees. Synergies was also stimulated in its creation by the possibility of easier, increased access to a wider audience at a lower cost—lower in the sense that if all an online journal did was to take what is currently published in print and replace it with an online version, money could be saved, somewhere in the neighbourhood of 20 percent (Lorimer and Lindsay, 2003). In fact, however, online publishing with its negligible added costs per user challenges the whole subscription-based organization of print publishing. The possibility of open access to all is very practicable and it is an obvious next step for SSH journals, given that open access is already in place for science journals, (e.g., Biomed Central < www.biomedcentral.com/>, see also Willinsky 2005). As well, to some extent Synergies and the creation of OJS and Erudit's online publishing software was propelled the sometimes vague understanding that online publishing puts technology in place that has the capacity to, and will gradually, change the representation, and hence the nature, of knowledge. I will illustrate.

Knowing of his work on Orson Welles which culminated in *The Medium and the Magician: Orson Welles, the Radio Years, 1934-1952* the *Canadian Journal of Communication* commissioned Paul Heyer to write (for peer review and hopefully publication) an article on "War of the Worlds" complete with sound excerpts. (Heyer, 2005). The resulting article, the second most downloaded article on the CJC site, markedly transforms the nature of the argument Heyer is able to bring forward, especially for those who may never have heard the radio program. Consider these excerpts:

Excerpt 1

Welles, who normally introduced his radio plays in a relaxed and chatty style laced with humour, here intoned his prologue more ominously, almost in the manner of an incantation.

(In Audio Clip #4 we hear Welles' introduction, which would be followed by the

unconventional program format.)

Insert Live link to audio clip #4 here

Excerpt 2

The radio drama then opens with a brief weather update, after which we are taken to the Meridian Room of the Park Plaza Hotel in New York City where Ramon Raquello (Welles' musical collaborator, Bernard Herrmann) leads his orchestra in a program of dance music. The first song, "La Comparisita," is soon interrupted by a special bulletin from the fictitious Intercontinental Radio News reporting a series of hydrogen gas explosions on the planet Mars, which appear to be headed toward Earth. The information is delivered without urgency, by the voice and in the style of the previous weather bulletin.

(In Audio Clip #5 we hear the announcer describing this occurrence in the same manner a weather disturbance on Earth might be reported.)

Insert Live link to audio clip #4 here

Note how the audio clips transform an interpretation that the reader would have to take on faith into one that is buttressed by evidence and yet made open for the reader to reinterpret. (You must listen to them to understand how they illustrate this point.) This opens the possibility for, say, linguists to discuss in greater depth with actual examples the manner in which implicit meanings are expressed.

Visuals can be equally as effective as sound. In some of my own work I was faced with the challenge of representing the organization of the Canadian magazine publishing. I had data that indicated that national magazines were headquartered in the office districts of Toronto and Montreal, Canada's largest English-speaking and French-speaking cities respectively; that the headquarters of cultural magazines were much widely dispersed; and that the author contributors to magazines were to be found in the vicinity of major cities but in semi rural areas. In an attempt to create a memorable image of these differences, I created three maps based on the forward sorting areas (the first three symbols of Canada's six-symbol postal code). Map 1 reflects an open national competition for professional awards. Not surprisingly the largest magazines dominate in winning awards. Map 2 is derived from a comprehensive program designed to assist most, if not all, members of the industry to make a transition to increased competition from foreign magazines as a result of the resolution of a trade dispute. (The advertising market was further opened to foreign magazines.) Map 3 depicts the professional addresses of the main body of writers (Periodical Writers Association of Canada) who provide written content on a contractual basis to magazines. The maps follow.

Insert Maps 1, 2, and 3 about here.

No doubt, in examining these maps, many readers would have the same experience as I did which was to note the decreasing density of each population in the high rent areas of the cities. Following that, looking outside those areas I saw other points of density and began immediately ask questions such as: Why there? What else is this close to? Why such a heavy concentration in this location? One of the answers is that writers cluster near library facilities that are often part of small town universities.

These additional sound and image media are not just bells and whistles. The enriched palette that digital representation makes possible is the beginning of a fundamental change in the representation of knowledge and ideas.

My daughter provided me with a vivid example of the changing nature of representation which I am writing into a forthcoming book on book publishing the working title of which “The Bright and Shining Future of Book Publishing in Canada.” I relate the story thus:

In January 2006, my then 17-year-old daughter produced a multi-media DVD for a friend as a birthday present. It was composed of movies of her friends wishing their mutual friend the best and of their teams at various volleyball tournaments throughout the years. There were three slideshows, all of which showed friends and family. Each slideshow had music that could spark the same emotions that the girls had felt at the events because the songs all had a shared significance for the group. One of the slideshows was devoted to the school volleyball team’s trip to Hawaii. The music chosen was a variety of tunes that the girls had played constantly during the actual trip. The pictures and soundtrack of the DVD captured the dynamics of their relationship, the fun of the trip, and the personalities of the various best-wishing friends. It had an enjoyable soundtrack that brought back and will continue to bring back fond memories for its recipient. It was smoothly executed with fades, jump-cuts, superimpositions, part-definition and foregrounded and backgrounded audio.

This effort could be dismissed as kids playing with technology. However, think of the insight an anthropological observer of today or tomorrow could gain from such a multimedia documentary—the verbal and body language, the music choice, what the girls say of their friend, what indeed is foregrounded, the sequencing, the mixing of the media, and so forth. The DVD is truly a document rich with both direct and nuanced evidence of my daughter’s world.

In being an insightful documentary, the production brings forward further significance of even more direct relevance here. The production is the representation of reality by an active engagement with the media used. In that the various media my daughter employed are relatively inexpensive and do not requiring extensive professional training, she was able to use them to express or generate original meaning—explicit as well as implicit—just as we do with language and writing. With the availability of generally accessible media other than text capable of being used to generate original expression of meaning the world is entering an era of nothing less than a realignment of knowing and understanding.

A parallel point with regard to meaning generation has been made for gaming and it is a point I want to carry through to scholarly journals and their use an expanded media palette. In the April 2006 issue of *Wired* Magazine, Will Wright of *The Sims*—a very successful game technology—describes the gamer’s mindset. Wright claims that kids play computer games do so by jumping in and, through trial and error, come to terms with the game environment and its rules. He notes that the “gamer’s mindset...means

they'll treat the world as a place for creation, not consumption (p. 111)", in other words original meaning creation or generation. He is making an implicit comparison to television or movies in which media bombardment encourages viewer passivity. That passivity exists in contrast to what he describes of gamers but even more so to my daughter's presentation, to reading and writing, and indeed to a whole host of other meaning generating or system extending activities—playing in a band, hacking, fixing up and modifying cars, learning a profession, and so forth. To my mind, digital scholarly publishing is headed exactly in the same direction with respect to media beyond print. Scholarly publishing is just beginning to deploy a broad media palette for a significantly enriched representation of knowledge and hence the enhancement of the creation of meaning. We have seen sound and image. But there is much more. Here is some exemplary evidence.

Copyright is a new, open access scholarly journal and a new form of open access journal to be found at www.copyrightjournal.org/. The aim of this new form of journal is stated on the journal site as follows:

Copyright is structured to be a new type of journal, not just a place to publish ideas but a locus to generate them--vital in an area of academic interest largely composed of sub-disciplines of other fields. For instance, while the majority of articles will still be published in the traditional fashion, a novel, collaborative approach has been implemented as well. Potential authors can simply begin contributing to such an article while the system tracks the individuals' contributions. The article is then submitted through the normal review process and, if accepted, authorship is assigned based on the tracked contributions as the last step of the review process.

Notice how the journal has married the requirements of tenure and promotion in academe to the collaborative process. And while it states how it intends to manage this collaborative process, I believe managing collaboration to maximum benefit of all parties will be an ongoing invention in itself.

Understanding the technology used by the journal is important because to do so is to understand its nature and its limitations. The journal reports on the technologies:

Copyright uses three major systems to aid collaboration. OJS...is the journal system for peer-reviewed papers. [MediaWiki]...powers the Wiki used for collaborative papers. [Drupal]...powers the blog aggregators, enables projects, and runs personal blogs.

MediaWiki—essentially the engine behind Wikipedia—manages a collection of documents over time and multiple revisions of those documents, allowing multiple authors to contribute, edit, and revise one another's work. The software tracks each change to a document, producing a historical trace culminating in a final (or at least "current" version. In *Copyright*, MediaWiki allows for a mode of collaboration in which contributors can append or revise to produce a document that benefits from more than one author and allocated credit where it is due. In short, the nature of the collaboration is that various authors serially revise the same document. This means that changes are made

additively until someone becomes motivated (or disgusted) enough to take on the task of integrating all the additions into a new, more coherent document (a process called refactoring, named after the task of re-organizing and simplifying previously written code in software development).

Used complementarily, Drupal—a popular open-source content management system, typically used by workgroups and online communities—provides a different set of collaborative tools, this time keeping individual contributions separately organized, as blogs, forum postings, and so on.

By layering these tools (perhaps toolsets is a better word) atop the more conventional OJS model, *Copyright* establishes a multi-mode space for exploring a wide variety of collaborative knowledge-generating strategies.

One technology could enhance *Copyright's* collaborative process. It provides a means for collaborative authoring or editing on the web, but with a word processing-like interface. Bolding and italicizing require no coding but merely clicking on an icon. Files are tagged as part of this editing process and can be saved and exported in html, word, rtf, pdf and Open Document Format (odf) office. Currently no open source software completely fulfills this role but it is available without cost through recently acquired Google-owned software originally called Writely, now called Google Docs. (Other software such as Jotspot are lesser known but do a similar job.) In comparison with MediaWiki, Google Docs encourages a closed collaborative environment by the uploading author identifying those s/he wants to have access to it by entering the email addresses of others. It also allows downloading those same documents in a variety of formats, it accommodates colors, tables, links, images, and comments, allows multiple editing in real time and alerts the editors if they collide in their revisions. The author can make the document public, restrict its viewing, and withdraw it from view at any time. The author also can revise the document, and only when s/he is ready, republish it. Indeed, in the preparation of this document, after I had an initial draft ready, John Maxwell and I used Writely to generally consult and to work through this section of this paper and also to obtain comments from Stephen Osborne, the publisher of Canada's largest literary magazine, *Geist*. <geist.com>

As well as a word-processor-like user interface, Writely/Google Docs manages changes on a very fine-grained level, allowing near-simultaneous WYSIWYG editing within a document (that is on various section of a document) as opposed to MediaWiki in which people must learn to operate within a special editing mode which is somewhat removed from and, frankly, a step backwards from the document authoring conventions we have grown accustomed to over the past two decades.

In short, not only can the digital form accommodate other media and encourage their use as meaning generators, it can open up the scholarly enterprise especially to other processes, especially collaboration—as well as practically articulating the different stages of idea formation and research reporting— via blogs, wikis, and such emerging genres and forms. This expanded framework for knowledge representation is of major significance. Beyond merely providing a new, more efficient means of storage and distribution, it opens up scholarly communication to commentary and revision before and even after initial publication. It opens the creative process to collaboration that has

been heretofore improbable if not actually impossible. Given that we are only ten years into the basic technology and less for the technology discussed in the preceding paragraphs, this is just the beginning. It seems to me that we are clearly crossing a new frontier.

Overview and Conclusion

This article has not one but several purposes. First was to introduce the desirability of identifiable diversity in knowledge production, something to which Canadians and others from small countries are sensitive. Second was to introduce the Synergies project, a university/journal partnership in online publishing and to provide information about this Canadian initiative that is important in itself but also important for its helping to achieve identifiable diversity in knowledge production. Third was to point out that the project was dependent for its success on already developed software in one case developed in the research and journal publishing community and, in the other case by the university-based service provider. Finally, the article took note of the administrative efficiencies online publishing and the potential inherent in online publishing for the transformation of knowledge.

Endnotes

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2. A note of explanation with regard to CFI: The federal government created CFI in 1997 to compensate for years of starving universities in the name of reducing the federal deficit. This led to a fairly decayed university-based research infrastructure, especially for scientific research. Recognizing the problem, rather than transferring the funds to the provinces to spend on universities as they saw fit and for universities to do likewise, the federal government chose to make a direct investment in research by means of CFI. (There is no federal presence in education in Canada because the constitution makes education a provincial responsibility. By far the vast majority of university funding comes from the federal government transferred to the provinces. Trouble is, the federal government is powerless to stipulate how the provinces spend those funds on universities or in areas that are federal government priorities. Hence, by directing funds through CFI to research, the federal government could assure itself that its funds would indeed be spent on this targeted activity.)
3. Thanks to Kate Andropov for drafting this summary based on PKP-provided information.

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arXiv.org Paul Ginsparg's preprint server

pkp.sfu.ca Public Knowledge Project

pubs.nrc-cnrc.gc.ca National Research Council Journals

researchknowledge.ca Canadian Research Knowledge Network

www.arl.org/sparc/pubs/enews/oct06.html SPARC in ARL

www.biomedcentral.com Biomed Central

www.carl-abrc.ca/new/new-e.html Canadian Association of Research Libraries

www.cjc-online.ca Canadian Journal of Communication

www.copyrightjournal.org The new open access journal called Copyright

www.erudit.org The Erudit Project

www.erudit.org/documentation/rapport/index.htm The Quebec report recommending
conversion to online journals

www.innovation.ca Canada Foundation for Innovation