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Innovating in the Creative and Knowledge Industries:
Not an Open or Closed Case

Gale Moore, Knowledge Media Design Institute (KMDI) and University of Toronto, Canada • Leslie Chan,
University of Toronto—Scarborough and Knowledge Media Design Institute, Canada

Abstract
The proliferation and circulation of digital information goods, or digital content in the age of the global Internet, is seen by many as fostering creativity and stimulating innovation in ways not possible in the industrial era. For the traditional distributors of content—the media and entertainment industry, book, journal and newspaper publishers—however, this potential for mass participation and the ability to find or receive information, to interact, to contribute, or to participate without need for the traditional mediators marks an end to business as usual. But, we argue this does not mark an end to business. Openness to collaboration and sharing, and access to all manner of digital content challenge deeply held beliefs about the nature of property and social relations of production. At the same time, they present an opportunity to innovate business processes and to create new services and models for the production, distribution, and consumption of knowledge and other creative artifacts. The authors will present a number of emerging business models and processes, drawing on examples from the creative and publishing industries in particular. Openness, we argue, is a broad strategic framework that fosters new possibilities for economic sustainability, cross-media development, public funding, and above all, innovation in this dynamic and growing sector of the global economy.

ESTABLISHING THE CONTEXT

A cluster of ideas and practices informed by the ethos of sharing and collaboration and enabled by increasingly global access to the Internet is changing in fundamental ways the nature of productive activity across the economy. The creative economy is already experiencing both the benefits and the challenges of the emerging new social relationships of production. In this paper, we will consider in some detail a specific area of the creative economy—scientific academic journal publishing—where the debates among the partners in this complex global environment—scholars, funders, librarians, publishers, universities, and governments—have been ongoing for at least a decade and where innovative and sustainable models are beginning to emerge.

First, it is necessary to situate the current debates on the ways in which the productive activity of the economy is changing, and to recognize that this has not arisen sui generis. Contemporary debates on the innovative potential of the cluster of ideas that include collaboration, globalization, and the Internet are the current end product of a long movement across the spectrum of debate and prediction about the nature of social and economic change in what have been referred to as “the advanced industrial economics”
or more recently as the Knowledge Economy/Society (KE/S).\(^2\)

Daniel Bell in his now classic work *The Coming of Post Industrial Society* (1973) was the first to identify systematically a constellation of changes taking place in the advanced economies, a shift that would move reliance from labour and capital to information and knowledge as the crucial variables. Moreover, Bell argued this was a transformation to a new social formation—post-industrial society.\(^3\) Theorists debated the merits of the proposal, in particular the notion of discontinuity, suggesting modifications and new names that they claimed more accurately characterized the motive force of change.\(^6\)

By the late 1970s, the academic community and other settled largely on the information society, a term later preferred by Bell himself. Computers and information technology (IT) now figured prominently in the cluster of innovations understood to be driving change, and with the convergence of information and communications technologies, this became ICT: information and communications technology.\(^4\)

Not surprisingly, the impact on the economy was being considered. In 1985, the Science Council of Canada issued a background study, *The Uneasy Eighties: The Transition to an Information Society*. The unbundling of hardware and software in the 1960s\(^8\) would lead to the proprietary software industry, an industry that expanded rapidly in the 1970s and especially in the 1980s with the arrival of the personal computer.\(^5\)

Recognizing the growing centrality of software in all aspects of society, Richard Stallman, more than three decades ago, voiced concern that proprietary software denied fundamental freedoms,\(^7\) and argued that people should be free to use software in all the ways that are socially useful. For Stallman and others, this was a matter of liberty, not price. The elaboration of these ideas by those in the Free and Open Source Software (FOSS) community are an important part of the contemporary framing of the debate, as they bring to the fore issues of ownership and intellectual property rights.\(^8\) Finally, the Internet,\(^9\) the remarkable infrastructure on which so much economic activity now depends, is based on a set of open protocols. The World Wide Web, combined with browsers such as Firefox, Safari, or Internet Explorer\(^10\) gave access to an explosion of content to millions of non-technical users around the globe.\(^11\)

It is this network of connectivity that is enabling the emergence of new organizational forms and social relationships of production; a form of production made visible by the success of open source software development, which is both collaborative and distributed. The Networked Information Economy as Benkler\(^12\) has called it, with its new forms of

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7 These include the right to use, study, copy, modify, and re-distribute computer programs. [http://www.gnu.org/philosophy/]

8 Intellectual property (IP) is a legal term that includes patents, trademarks, and copyright. Each of these confers exclusive rights of ownership for a specified period of time.

9 An official Canada response to the transformative potential of the Internet can be reviewed in publications of the Information Highway Advisory Committee (IHAC). The final report of IHAC entitled *Preparing Canada for a Digital World* was released in September 1997.


11 Access requires access to computer technology and infrastructure, but even more importantly access to skills and learning to make access useful. This idea cannot be developed in this paper, but there is a growing literature on the topic. The current debate about the One Laptop per Child program is a specific example of the debate around international development and ICTs.

social dynamics, modes of production, and dissemination, is transforming the industrial economy.

According to Benkler, large-scale collaboration, non-market commons-based peer production, and user-driven innovations are generating new classes of creative industries. The digital information goods\textsuperscript{13} that are a significant product of this sector are different in fundamental ways from the material goods produced in the industrial society. Digital information goods are both non-rival, that is, not consumed nor diminished by use, and non-excludable, meaning that is available to all as the marginal cost of additional copies is close to zero. The “replicability” of digital goods and the near-zero marginal cost of reproduction challenges the traditional economic models based on scarcity. However, it is the scale of this global network and the potential for participation this enables that is new today. \textit{Time Magazine’s} Person of the Year in 2006 was “You”\textsuperscript{14} —the mirror on the cover a recognition of the shift. The significance and impact of this particular constellation of change is immediately evident in the creative industries.

If the turn to the digital and the Internet challenge the status quo in significant ways, being open pushes this further. To be open can mean many things; it does not necessarily imply free. Openness here is understood as openness to collaboration and to sharing. In the same spirit, openness implies the possibility of access—the ability to find or receive information, to interact, to contribute, and to participate. Openness, we argue, is a key driver of innovation. As a broad strategic framework, it fosters new possibilities for economic sustainability, cross-media development, public funding, and above all, innovation in this dynamic and growing sector of the global knowledge economy.

There is little doubt that the ability to collaborate and share over the global Internet is challenging deeply held beliefs about the nature of property and social relations of production, but at the same time there is an opportunity to innovate business processes and to create new services and models for the production, distribution, and consumption of digital information goods and other cultural artifacts. Multiple forms will undoubtedly emerge; a few will succeed and many fail, but it is no longer business as usual.

\section{The Turn to Digital}

With the context established, we now focus on the specific objective of this paper, namely to consider how the turn to the digital has impacted the development of arts and culture goods and services, and to illustrate through a number of examples how the relationship between access to cultural goods and services, and openness, in particular open access, is driving innovation in this sector. For the traditional distributors of content—the media and entertainment industry, book, journal, and newspaper publishers—the potential for mass participation and the ability to find or receive information, to interact, to contribute, or to participate without the need for the traditional mediators has been seen to mark an end to business.

There is plenty of evidence that disintermediation, or more colloquially removing the “middlemen,” is taking place and often on a massive scale. However, it is not the end of business but it is perhaps the end of business as usual.

We are looking specifically at scholarly and scientific journal publishing, a sector that is not generally recognized as part of the “creative economy” due to the esoteric nature of the content published. However, academic publishing is an area that is undergoing tremendous changes as scholars increasingly recognize that new forms of production and dissemination are possible in the networked information economy.\textsuperscript{15}

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\textsuperscript{13} Software is one example, but the outputs of the creative industries also are in this category.
\textsuperscript{14} http://www.time.com/time/magazine/item/0,16641,20061225,00.html.
\end{footnotesize}
In the “traditional” value chain, scholars conduct research, write papers, and submit them to scholarly journals. Each article is sent out for peer review, and for those receiving a favourable review, a number of value-added services associated with dissemination and promotion are subsequently applied. In lieu of payment, authors gain reputation from the rank of the journal and potentially from other scholars who read and cite their work. These in turn may translate into tenure and promotion and/or an increased rate of success in grant competitions.

In effect, the publishers through the journals take on the role of “reputation manager,” and universities have outsourced this important responsibility to publishing entities, be they commercial or non-profit publishers. Furthermore, authors are generally required to sign over exclusive rights to publishers for their material. With exclusive rights, publishers are then able to sell these works back to the community—the very people who created them. Individuals and institutions pay to subscribe to the journals, and institutions pay again to license the materials to make them accessible online to those within their “walls.” Research libraries thus bear the brunt of the cost of access, often to their own faculty’s output; a fact of which faculty can easily be unaware.

The traditional model was a highly profitable model for the commercial scientific publishers for many years. However, by the 1990s a “serials crisis” occurred, as libraries could not keep up with the growing numbers of journals and rapidly increasing subscription prices. The sad irony was that even the richest research institutions could not afford to purchase the scholarly materials their faculty required, and the scholars themselves were blocked from online access to their own publications unless their institutions had paid the licensing fees.

In the print era when the costs of journal publishing and distribution were high, a conventional scarcity model may have been appropriate. But in the networked environment where content is abundant and where the primary producers of the content are themselves the consumers, the practice of giving exclusive rights to publishers and paying for content often created with public funds no longer makes sense. Moreover, “more appropriate forms of economic analysis highlight the critical role that accessibility to information plays in the process of innovation.”

One response to the dilemma of restrictive access in the era of abundance was the Budapest Open Access Initiative, drafted by a group of scholars and publishers meeting in Budapest in 2001. The statement crystallized a series of long-standing concerns in the scientific academic community and galvanized a highly distributed movement into developing an increasingly coherent set of strategies aimed at making publicly funded research worldwide openly accessible online, free of price and permission barriers. Unlike the notion of the “content commons,” which encompasses all creative contents, the primary target of the Open Access Movement is the scholarly and scientific literature. The twin strategies for making open access possible are the production of open access (OA) journals (i.e., journals that do not charge readers for access but fund the cost of production and peer review through other sources), and OA institutional and subject repositories such as TSpace at the

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16 In the traditional journal publishing model, it is the journal not the article that is ranked.

17 The majority of publishers of scholarly journals are the learned societies, such as the American Institute of Physics, and commercial publishers, such as Elsevier, Taylor and Francis, or Wiley. It was a small number of commercial publishers that controlled large numbers of expensive titles that contributed most to this crisis.


19 This includes not only subscription fees, which can be in the tens of thousands of dollars for a single title such as Brain Research, but also licensing fees to provide access online.


University of Toronto\textsuperscript{22} or arXiv\textsuperscript{23} which provide access to pre-prints and post-prints of papers already accepted or published in peer-reviewed journals.\textsuperscript{24}

The declining costs of computing power and storage, coupled with the availability of open source software such as the Open Journal System (OJS),\textsuperscript{25} has reduced the cost to scholars and others who wish to start an OA journal. In the social sciences and humanities where there are fewer resources available, this is an attractive option for a number of scholars, scholarly societies, and associations. According to the Directory of Open Access Journals (DOAR),\textsuperscript{26} there are now over 3,000 OA journals published around the world. Although this number represents only 10 per cent of the world’s estimated 20- to 25,000 peer-reviewed journals, there has been impressive growth of the number of OA journals in recent years.\textsuperscript{27} In addition, commercial journal publishers have responded to the challenge of making content “open” and today, over 75 per cent of commercial journals permit authors to self-archive their publications, although the content may be embargoed for a limited period of time; the concept of moving wall access. For example, for Elsevier journals it is currently six months before the article is openly accessible.

But who pays for open access, whether OA journals or OA repositories, since neither of them is cost free? And how could new services or businesses be built and sustained on this special class of content? It is to these questions of sustainability and business models that we now turn. Commons-based business models, that is, businesses that leverage off the notion of a distributed content commons are achievable. An exhaustive study of the business models employed by various OA journals has yet to be conducted, but a survey by Peter Suber\textsuperscript{28} suggests that journals rely on a variety of income models, including author pays, membership fees, subsidies, advertising revenue, donations, or some combination of these. Open content also enables the creation and production of new products and services as the potential of the digital realm is explored. In the following section, we will try to bring these ideas to life though a series of examples that illustrate a number of the sustainable models for open content that are currently in use.

OPEN ACCESS JOURNAL MODELS

AUTHOR PAYS

The author pays model, or the input pay model, is probably the most well-known and most hotly debated model in open access publishing. In this model, authors whose papers have been accepted by the journal after peer review are asked to pay an article-processing fee, which could range from US$1,500 to $5,000, depending on the publication. The not-for-profit publisher Public Library of Science\textsuperscript{29} uses this model, as does the commercial publisher BioMedCentral,\textsuperscript{30} which now publishes almost 200 journal titles across the biomedical sciences. The idea of page charges is not new; in fact, a number of the traditional commercial scientific publishers have had page charges in place for many years. In the sciences where research funding is generally higher, these charges have been looked on as the cost of getting an article in a journal, especially if it is a journal with a high-impact factor; that is, one ranked high in terms of reputation.

\textsuperscript{22} \url{https://tspace.library.utoronto.ca/index.jsp}.
\textsuperscript{23} \url{http://arxiv.org/}.
\textsuperscript{25} \url{http://ppl.sfu.ca/ojs/ojs}.
\textsuperscript{26} \url{http://www.opendoar.org/}.
\textsuperscript{27} \url{http://poeduroeconomics.blogspot.com/2007/12/dramatic-growth-of-open-access-2007.html}.
\textsuperscript{28} \url{http://www.arlham.edu/%7Epeters/fof/newsletter/11-02-07.html#test}.
\textsuperscript{29} \url{http://www.plos.org/journals/index.php}.
\textsuperscript{30} \url{http://www.biomedcentral.com}.
A variation on the author pays model is Hindawi,\(^{31}\) a new and rapidly growing publisher based in Cairo, Egypt, which has demonstrated how a profitable business can be built on open access regardless of geographic location. Instead of charging an article processing fee for accepted papers, Hindawi charges a fee to authors to submit papers. Because of the lower labour costs in Egypt, Hindawi is able to run a profitable business with a charge of approximately US$500 per article submitted.

In the social sciences and humanities, there is strong resistance to the idea of author payment, as most researchers in these disciplines are not funded at the level of their colleagues in the sciences.\(^{32}\) Theoretical Economics\(^{33}\) shows, however, that the submission fee model can work. In this case, the cost of submission is only C$75, and members of the Society for Economic Theory can submit one article per year for free. The journal is now in its second year and is thriving. The journal receives ample submissions and has a rapidly growing readership. The editorial board is populated with prominent economists in the field. Furthermore, by using OJS and being online only, they are able to reduce back-office costs as well as printing and distribution costs. Of course being open access, they do not have to pay for subscription management costs or for technologies to block access, which are often far more costly than the revenue generated from limited subscriptions. The point is that the journal is using a variety of mechanisms to achieve sustainability: the reputation of the editorial board, more rapid turnaround time from submission to publication—which can be as long as 30 months in other economics journals, the use of membership and submission fees, university support in terms of infrastructure, and most important, the contributed free labour of authors in the field. In addition to providing open access to all of the online journal content, Theoretical Economics sells a yearly printed volume of articles using print-on-demand technology.

Recently, the Canadian Journal of Sociology (CJS) has taken the decision to transform itself from a print and subscription-based journal to open access.\(^{34}\) CJS will charge a processing fee equivalent to the cost of subscription. This transition was prompted, in part, by the decision of the Social Sciences and Humanities Research Council to begin a new program to fund OA journals through its Aids to Scholarly Publishing Program,\(^{35}\) which in the past supported only subscription-based journals. The transition has also been prompted by the growing understanding among editors and authors that unless they want their publications to remain obscure, they need to ensure that their research output is as openly accessible as possible.

This is especially true for society-based journals and for journals published in Canada where the majority of the journals are not ranked in the first tier; in part, it could be argued due to the lack of access under the old business model.\(^{36}\)

**SUPPORT FROM FUNDING AGENCIES AND GOVERNMENT SUBSIDIES**

A growing number of private and government funding bodies and universities now recognize that investment in research is simply the first step in the research process. Without access to the scholarly outputs that result from the funding, their investment is not maximized.

\(^{31}\) [http://www.hindawi.com/](http://www.hindawi.com/)

\(^{32}\) The structure of scholarly communication is not the same across disciplines, and some of the confusion has resulted from a failure to clarify and situate these discussions appropriately.

\(^{33}\) See [http://econtheory.org](http://econtheory.org). The founder and editor-in-chief of the journal is Martin Osborne, a Professor of Economics at the University of Toronto.

\(^{34}\) Kerin Haggerty's editorial "Change and Continuity at the Canadian Journal of Sociology / Cahiers canadiens de sociologie" CJS 32, 3 (2007): vii-xii.

\(^{35}\) [http://eurev.sshrc.ca/web/apply/program_descriptions/scholarly_journals_e.asp](http://eurev.sshrc.ca/web/apply/program_descriptions/scholarly_journals_e.asp)

either in terms of usage or impact.\textsuperscript{37} A number of recent studies have now confirmed that publications that are openly accessible are cited more often; a fact that translates into a greater return on investment—both in monetary and in social terms, for publicly funded research.

There is an urgent need at this time to rethink public funding for the production of knowledge and other forms of creative output. Are there ways to redistribute public funding that are more in line with the 21\textsuperscript{st}-century networked economy? How might the funds that are currently being spent sustaining proprietary interests flow back to the creative community? It is also time for the universities to rethink the nature and role of reputation management, a role that has effectively been outsourced to commercial publishers. What new opportunities in terms of creating new and improved metrics for evaluating scholarship, authority, and quality\textsuperscript{38} might emerge out of the linkage of an open-content commons and social networking tools? What new insights might be generated when massive volumes of openly available texts are subjected to the rich computational and potential of emerging tools?\textsuperscript{39} Above all, how do we ensure that new models of scholarly communication based on open access and open content can be sustained over the long term?

\textbf{NEW GOODS AND SERVICES}

Perhaps the greatest potential to support open content comes from the new services that could be provided, many as yet unimagined. One recent large-scale experiment aimed at answering these questions is SCOAP3: Sponsoring Consortium for Open Access Publishing in Particle Physics\textsuperscript{40} headed by CERN, the world’s largest high-energy physics laboratory and also birthplace of the World Wide Web. In the SCOAP3 model, libraries federate to cover the costs of the organization of the peer-review service through a redirection of a portion of their subscription budget to a new process rather than implicitly supporting peer-review via journal subscriptions, as happens in the current system. SCOAP3 will negotiate the price of peer-review services through a tendering process with major publishers. Then, instead of selling subscriptions, publishers would be paid for their peer-review service and make the electronic content of their journals free to read or open. The effect is to decouple content from credentialling, and the result from a business perspective is the need for a peer-review service. In short, publishers will be contracted for their reputation management service, rather than content as the latter is openly available. In theory at least, this should help resolve what Roger Clarke noted is “a fundamental tension [that] exists between openness and closedness of content” (2007, 60).\textsuperscript{41} Publishers would not need to guard “content” with an exclusive copyright clause, but would instead provide the kind of value-added service that is very much needed in an environment of abundance.

Other ways in which revenue might be generated include repackaging digital content to produce thematic volumes. The regular issues of most journals consist of a series of articles in which the specific contents of the issue have more to do with production schedules than subject matter (e.g., when the articles were received and when they returned from the peer review). Special issues on a theme are precisely that—special—and take longer to produce, as the individual articles must be coordinated and available at the same time. Freed from the need for a paper issue, individual articles can now stand on their own and groupings or issues tailored or customized.

There is also a market for complementary services such as high-quality reproduction or information visualization services that require specialized skill and equipment. Information visualization is increasingly important in the sciences, and may eventually be even


\textsuperscript{40} http://www.scoop3.org/.

more important in the humanities and social sciences. The introduction of video and other media into scholarly communication is in its infancy, but this can be expected to increase and represents new business opportunities going forward. There are also ample opportunities for scholarly societies that are open to exploring the linkage between membership and publishing support, both through "journals" as well as new services, including electronic archives, deep indexing, tagging, summarizing, contextualizing, and automatic linking.

By creating scholarly authority on top of conventional publications, they can provide added value to published materials. These kind of services are likely to attract the scholars of the digital generation who would be willing to pay, not for the content, but for the "conversation." While it is still too early to assess the outcomes of many of these experiments, the notion that there can be sustainable business models to support opening access to content is increasingly accepted.

Up to this point, our focus has been primarily on scholarly scientific journals. Before concluding, we want to comment briefly on the publication of scholarly books. Here too change is taking place. Three examples from academic presses follow.

ANU E Press: The Australian National University Electronic Press produces fully peer-reviewed works. From its website, we learn that the decision to establish ANU E Press was based on several factors. First, a recognition of the urgent need to find an effective mechanism for disseminating high-quality ANU scholarship that lacks a ready commercial market. Second, a determination to eliminate barriers inherent in existing models of scholarly communication. Third, an acceptance that the operational overheads of the conventional academic press are no longer affordable. Fourth, a realization that emergent electronic press technologies offer a feasible alternative to the conventional academic press in terms of cost and available infrastructure.

Rice University Press is exploring new models of peer-reviewed digital scholarship for the 21st century. It has launched as a non-profit organization the first fully digital academic press in the United States. Connexions is an open source e-publishing platform "for collaboratively developing, freely sharing, and rapidly publishing scholarly content on the Web," which "provides not only a solution for scholars — particularly those in the humanities — who are limited by the dearth of university presses, but also a venue for publishing multimedia essays, articles, books and scholarly narratives."

The same model has already proven highly successful for Wikitravel, one of the most visited travel websites online, with thousands of travellers contributing over 30,000 travel guides in 18 languages over the last five years. Recently, Wikitravel has begun to produce a print-on-demand travel guide using Lulu, an Internet press started by Red Hat’s founder, Canadian Bob Young.

Lastly, an example of an academic publisher that has linked proprietary and open content models is Yale University Press, which published Yochai Benkler’s The Wealth of Networks: How Social Production Transforms Markets and Freedom (2006). The press released a hardcover and paperback edition of the work; Benkler launched WikiNotes, “an invitation to collaborate on building a learning and research environment.”

42 This includes podcasts, webcasts, etc. SuVu is one example. http://www.suvu.org/.
43 The future is conversational: when there’s more good stuff that you know about that one click away or closer than you will ever click on, it’s not enough to know that some book is good. The least substitutable good in the internet era is the personal relationship. Conversation, not content, is king. Science fiction writer, Gary Doobov, Locus Online, 2006. http://www.locusmag.com/2006/08/Issues/07/DoobovCommentary.html.
45 Not-for-profit organizations are an often overlooked aspect of the creative economy as they create jobs and opportunities and innovative ways. Wikipedia and the Wikipedia Foundation are prime examples.
46 http://crc.org/.
51 http://www.redhat.com/thc/.
CONCLUSION

We have looked at a small and esoteric sector of the creative economy. A recent report from UNCTAD shows that the creative industries are emerging as one of the world’s most dynamic sectors. “International trade in creative goods and services surged to US$4.5 billion in 2005 from US$2.3 billion in 1996 and between 2000 and 2005 trade grew at an unprecedented average rate of 8.7%.” Furthermore, it is not only the developed world that is seen to be the beneficiary: “[T]he creative economy holds potential for developing countries to transform untapped creative resources into growth.”

Looking at some of the successes of the new models, it is becoming clear that economic growth and revenue generations will come increasingly, not from the sale of content, but from the development and harvesting of value-added services and “generatives”; intangibles such as reputation, immediacy, or personalization that sit on top of content. Openness and collaboration are driving innovation in the time of the global Internet. In this sense, openness is compatible and indeed conducive to the development of new business models. This requires imagination and creative rethinking on the part of all stakeholders, from the content producers, to the funders, and the intermediaries. Disintermediation need not imply the end of business, but rather the end to business as usual.

53 TheAccessPrinciple by John Willinsky, published by MIT Press in 2006. In this case, the entire book can be downloaded for free, although MIT continues to sell hard copies. The National Academy of Sciences Press and the International Development Research Centre (IDRC) have been making full text of many of their books available online for free and this has not hurt their print sales, which are typically not high in the first place.

54 Personal communication to Leslie Chan from Michael Jensen, the Director of Publishing Technologies at the NACS Press, and from the former publishing director at HARC.
