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## ICIS 2008 Panel Report: Open Access Publishing to Nurture the Sprouts of Knowledge and the Future of Information Systems Research

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## Abstract

The advent of the Internet and the subsequent adoption of Open Access schemata are changing the nature of the scholarly discourse. In response, we seek to stimulate a debate about the role and desired forms of Open Access publishing in the context of the Information System (IS) discipline. We explore the potential contribution of an Open Access perspective on publishing IS-related research and also discuss the roles of traditional journals and their prospects in the contexts of our observations. In particular, we focus on the new possibilities of publishing work-in-progress and its potential benefit for knowledge dissemination including the prospects of turning today's limited scholarly exchange into mass collaboration. We illustrate our vision with a working prototype of an Open Access disciplinary repository entitled Sprouts (<http://sprouts.aisnet.org>). Our aim is to inspire new thinking about the role of Open Access publishing, the potential of its application to disciplinary repositories of emergent work, its anticipated repercussions on our work practices, and its long-term implication for the impact of IS scholarship and the well-being of our community at large. We call for participation and further action in realizing a global repository of IS research in progress. This paper builds on a panel on Open Access that was presented at the 2008 International Conference on Information Systems (ICIS), held in Paris, France, in December 2008.

**KEYWORDS:** Open Access, scholarly publishing, working papers, ePrints, online repositories, academic journals, Sprouts, mass collaboration

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## I. BACKGROUND AND ASPIRATIONS

All academic enterprises rely on effective dissemination and exchange of information. Knowledge sharing is a critical element that enables a community of scholars to come to grips with the inherent ambiguity and complexity of their domain at the boundaries of knowledge. It also facilitates the buildup of a cohesive knowledge base that reinforces their collective influence and institutional norms of conduct around knowledge production.

Following a long tradition in which books served as the main vehicle for knowledge distribution, in the past 50 years it appears that scholarly journals have taken the lead. Nonetheless, in spite of the success of journals as the preferred medium of scholarly knowledge delivery in many fields, their proliferation vis-à-vis the range of associated resources required to maintain their livelihood is becoming unsustainable for libraries as well as for the communities of scholars at large [Guedon 2001]. In view of the economics of publishing, it becomes apparent that the prevailing system ought to be changed and that the powerful capabilities of electronic networks can provide a viable remedy [Elliott 1997].

Much of the discussion so far has been focused on the economics of knowledge production, the conflict of interests among the various stakeholders, and on who should bear the cost of publishing and distributing scholarly knowledge [European Commission 2006; Houghton et al. 2006]. However, by positioning the traditional journals and Open Access publications as two opposing alternatives in a zero-sum game, the debate has stimulated unnecessary and counterproductive tension between advocates of traditional journals and proponents of Open Access publications. Nonetheless, irrespective of economic considerations and consequent shaping of action, the advent of the Internet and the subsequent adoption of Open Access<sup>1</sup> publishing schemes are fundamentally changing the nature of our scholarly discourse [Björk 2007].

We would like to steer the discussion in another direction following Harnad [1999], Kling [2004], and others, who enthusiastically envisioned and evangelized the Internet as a means of knowledge sharing in which scholars would exchange early drafts of research papers prior to publishing in peer-reviewed journals. The subject of this exchange, early drafts of research papers, requires further clarification. Generally, printed scholarly outputs can be split into two main categories: manuscripts that have been or are about to be published in a traditional refereed journal and all the rest, which includes any scholarly output that is not “yet” or never will reach traditional peer-reviewed journals due to content or genre. For lack of a common label for the latter category, we refer to them broadly as *work in progress* in the most inclusive way to describe relatively embryonic forms of research writing including, among others, conference and workshop proceedings, institutional working papers, technical reports, self-archived work, early drafts, and simply ideas and findings that have not yet been placed within an existing literature. (These kinds of publications are often referred to collectively as the “grey literature.”) Whereas refereed journals are more likely to follow a subscription-based business model, in most instances, outlets of work in progress are more likely to be open access and rely on pro bono exchanges.

This essay explores the opportunities and implications of effective sharing of early drafts and comparable work in progress, targeting a wide-ranging and globally distributed community of scholars with an emphasis on the IS research community. We take a systemic view of the ecosystem of publishing at large and focus on the nebulous subset of working papers and similar evolving work. We submit that peer-reviewed papers are just the tip of the iceberg of scholarly pursuit and that providing open access to embryonic and evolving work would be beneficial to scholars. For example, such open access can offer the IS research community new, nascent ideas as well as detail-rich materials—too cumbersome for use in articles for journals—which may be used in building richer theoretical arguments. Open access can also enable global exchange and provide scholars who live in dominant cultures with exposure to other perspectives. Open access can also facilitate informal and timely debate and commentary regarding work in progress, prior to, or maybe even in lieu of, a closed review process. Finally, Open Access can help scholars in identifying potential collaborators who are outside their personal social networks.

<sup>1</sup> Building on the widely cited definition of Budapest Open Access Initiative (2002), we use Open Access to describe freely available work that anyone with Internet access can “read, download, copy, distribute, print, search, or link”, with the stipulation that authors retain control over the integrity of their work and have the right to be properly acknowledged and cited (Drott 2006). For further information about Open Access, see Suber (2007) or Budapest Open Access Initiative (2002).

Next, following an introduction to Open Access, we explore the prospects of Open Access disciplinary repositories of work in progress and describe Sprouts<sup>2</sup> an example of such repository that aims to organize the nebulous subset of early drafts and work in progress in the Information Systems field. The repository draws on the publishing model of "arXiv"—the pioneering e-prints disciplinary repository, in which more than half a million manuscripts have been deposited since the early 1990s.<sup>3</sup> An Open Access disciplinary repository (as opposed to local institutional repositories) can enable effective scholarly exchange within the global IS community. It can also support the multiple languages of its members, help identify potential collaborators outside one's immediate network, provide a range of enhanced textual and visual search capabilities, serve as a common portal of archived work and create a source of fresh ideas.

We conclude with further discussion of new capabilities afforded by second-generation Internet technologies that can turn Open Access publishing, and particularly Open Access disciplinary repositories, into dynamic hubs of mass collaboration. Subsequently, we discuss the roles of traditional journals and their prospects in the contexts of our observations.

## II. INTRODUCTION TO OPEN ACCESS

Information technology and in particular the advent of the Internet has profoundly changed the process of scientific publishing, which nowadays is a globally interconnected network of independently owned but interdependent information systems [Björk 2008]. In just a few years, scientific journal publishing has migrated from paper-based publishing to predominantly electronic publishing, although the business models (i.e., subscriptions to titles schemes) have remained relatively unchanged. This comprehensive system includes publishing platforms with support for the review and publishing processes, indexing systems like the ISI Web of Science, aggregators like EBSCO, local library portal systems, e-print repositories run on systems like D-space and Search engines, like Google and Google Scholar.

Open Access is a particular class of scientific publishing, where the research publications in full are freely available on the Internet, for anybody to read, copy, and distribute further. Open Access can be supported by a number of different revenue models, ranging from open collaboration models based on voluntary work with no formal budgets to commercial publishing ventures funded by author charges of up to US\$3,000 for a published article.

There are several Open Access definitions, essentially variations on the same theme. The most common conceptualization was framed by the Budapest Open Access Initiative [2002], which states as follows: "By 'open access' to this literature, we mean its free availability on the public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited."

The Budapest Open Access Initiative outlined two alternative routes for sourcing Open Access peer reviewed journal articles: a *Gold Route*—an inclusive scenario in which journals are Open Access and thereby all papers are Open Access by default; or alternatively, a *Green Route*—a less-comprehensive scenario in which authors continue to publish in subscription-based journals but are also allowed to make electronic Open Access copies of the manuscripts and make them available in either institutional or subject-specific repositories. The copyright agreements between authors and journals, which control Green Route arrangements, may impose a range of restrictions concerning the version posted, moratorium period, and the like.<sup>4</sup>

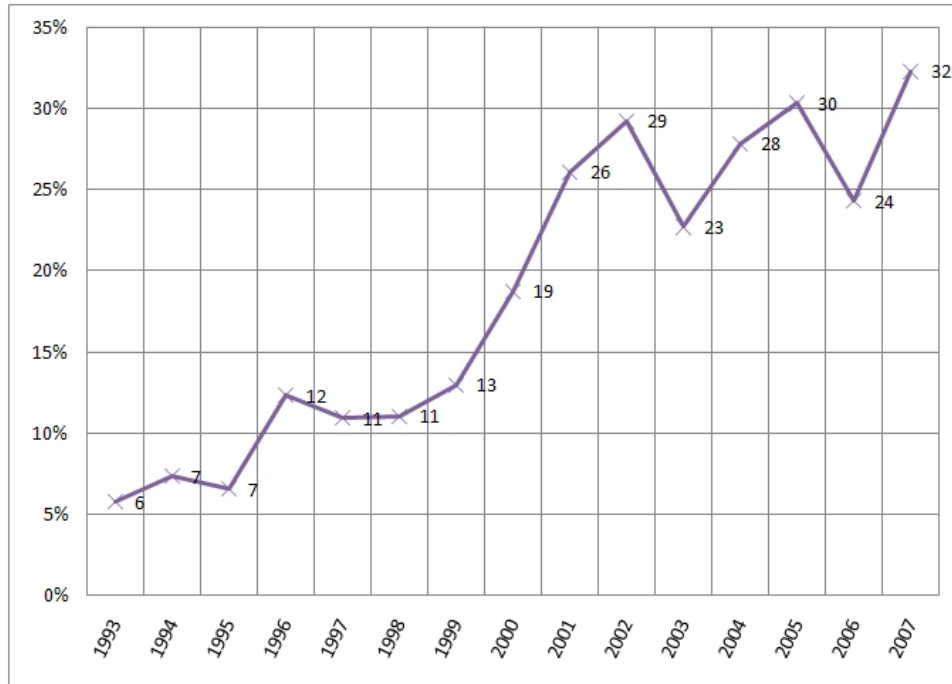
The vast majority of Open Access journals are run on shoestring budgets by special interest groups of researchers, resembling Open Source projects. There are also some professional publishing companies operating mainly in biomedicine, including the Public Library of Science, which publishes a few very highly regarded Open Access journals, and BioMed Central, which was acquired in 2008 by Springer Science, one the largest publishers of scientific journals. Figure-1 shows the share of Open Access journals of all new journals founded in a particular year. After a rapid growth until 2001, the Open Access share of new journals has stabilized around a range of 25 percent

<sup>2</sup> <http://sprouts.aisnet.org>

<sup>3</sup> arXiv is e-print service in the fields of physics, mathematics, non-linear science, computer science, quantitative biology and statistics. It is available at <http://arxiv.org/>

<sup>4</sup> See further information on publisher copyright policies & self-archiving in Sherpa/Romeo: <http://www.sherpa.ac.uk/romeo/>

to 30 percent. In February 2009, there were 3,849 journals of various sorts registered in the Directory of Open Access Journals (DOAJ).<sup>5</sup>



**Figure 1. The Share of Open Access Journals of All New Peer Reviewed Journals Founded in a Particular Year (Calculation Based on Data from Ulrich’s Periodicals Directory)**

Most of the existing Open Access journals were conceived originally as Open Access journals. So far, only in rare cases have existing subscription-based journals changed their revenue model from subscription to Open Access funded by author charges (e.g., *Nucleic Acids Research* by Oxford University Press.) Clearly, with no economic incentive, publishers may change the current business model only in response to massive external pressure. For example, in the area of high-energy physics, a number of the largest nuclear research institutes in the world, including CERN, have put together the SCOAP3 consortium, which aims to force the five major high-energy physics journals to switch to the Open Access model [CERN 2007]. The consortium pledged to pay the author charges for authors from participating institutions and also promised to subsidize authors from developing countries.

It is estimated that 4.6 percent of the 1.35 million peer reviewed articles published in 2006 were fully available as Open Access from their respective publishing date, and that an additional 3.5 percent were available after a delay of usually 12 months [Björk et al 2008]. Moreover, about 11.3 percent of the non-Open Access articles were available as electronic copies of author manuscripts on author web pages, institutional repositories or subject-based repositories. Altogether, out of the 2006 crop of journal articles, about 20 percent are currently available in full as Open Access.

### III. THE PROSPECTS OF DISCIPLINARY REPOSITORIES OF WORK IN PROGRESS

World explorers like Marco Polo and Vasco da Gama did not build roads or harbors. They marked narrow paths and sailed in uncharted water focusing on fast-paced movement, exploration, discovery, and reporting back home as soon as possible. In their arena of world exploration and discovery, insightful information and its speedy delivery had a priority over the level of details. Agility — that is, sensing the new environment and rapidly responding to new findings — was the prime motivation.

Today, at the forefront of knowledge, we take a different approach. We move slowly and carefully, as if traversing an imaginary mine field. We carefully attempt to avoid errors and aim to balance rigor and relevance. Yet, in spite of the

<sup>5</sup> See: <http://www.doaj.org/>

efforts, we often sacrifice relevance for the sake of rigor. Nobody likes to sacrifice rigor, but we all accept it as necessary collateral damage for the sake of the “truth.” That is the norm, at least in the IS research community.

This paper is not about the long-standing debate between rigor and relevance. We do not deny the value of scholarly rigor, but we also do not embrace it as the ultimate and only value of our work. We submit that as a community of scholars, we need to provide boundary spanners more literary outlets where they can reveal and test their ideas; outlets at the fringe where anyone can spark a professional conversation with no need to undergo a multi-year revision cycle, just a simple face-validity assessment.

Imagine how much time can be saved for each deficient paper that remains at the working paper phase and never gets into the review cycle of premier journals. Now multiply this time by about 90 percent of the papers in the review cycle. It is sad that editors of premier journals are proud to have high rejection rates and that we perceive this as an indicator of high quality; while no sensible manager is proud if the quality control of a line rejects more than 1 percent, we are happy to accept only 10 percent. That is very costly and not sustainable for a community at large. We must find a way to reduce the load on premier journals and to construct additional, less demanding outlets for initial exposure of the less developed papers.

The e-business revolution was initiated and carried out by new business models and technologies that enabled disintermediation and shorter value chains. We propose adopting the same approach for embryonic scholarly publishing: a shorter path from authors to readership, with low-scale review; no stern gatekeepers, no long review cycles, fewer hours spent by reviewers, editors, and revising authors, and no more costly dissemination of printed material. Ideas should be developed in an iterative fashion. We always recommend seminar and conference presentations before submission to a journal. A repository of work in progress is one more step along that way.

We would like to stress that papers in such repositories are not intended to be on a par with those published in premier journals. Their purpose is to make key insights available expeditiously in an accessible public forum and at minimal opportunity cost to the community. Good ideas will be further developed in the traditional rigorous fashion, and the fads will vanish into dust. From the perspective of a community of scholars, the overall quality will not suffer; it will actually go up as ideas become available faster and reach a broader audience for review and debate.

### Repository Design Principles

Approaching scholarly publishing from a social perspective and emphasizing its communicative role, Kling and McKim [1999] suggest that an effective outlet of academic manuscripts should demonstrate the following characteristics: publicity, trustworthiness, and accessibility. An Open Access disciplinary repository of work in progress seems to be a natural publishing venue that satisfies these criteria:

*Publicity:* A centralized repository provides one portal for all articles with enhanced search capabilities as well as customized information feed using subscription email lists, RSS feeds and similar means of on-demand information dissemination.

*Trustworthiness:* All articles are subjected to a quality assurance process that accepts only contributions that pass muster by an editorial review entrusted to maintain a minimum quality standard.

*Accessibility:* Open access, permanent unique Web address, and proper indexing ensure free and stable access to all documents.

In all, a disciplinary repository of work in progress should provide a fast-turnaround outlet for authentic research and work in progress and should be readily available based on the principles of Open Access. The following are 10 principles that characterize the desired environment of such a repository:

1. *Publishing is a conversation:* Publishing is a form of epistolary conversation among community members. We submit, respond, appreciate, challenge, discuss and reflect through writing manuscripts.
2. *Everyone is welcome:* In principle, like any public conversation, academic publishing and its results should be open for anyone who chooses to participate.
3. *Every voice counts:* Diversity and pluralism of opinions is a source of innovation and an indicator of a healthy community.

4. *Civil conversation, not a sermon (about the “truth”)*: Anything that is appropriate in a town-hall meeting or a departmental seminar should meet the basic standard for publishing. We let time separate the wheat from the chaff.
5. *Relevance and speed of delivery surpass rigor*: We accept that no manuscript is ever perfect. We emphasize speedy delivery of interesting papers that have the potential to fuel the conversation and invigorate our thinking.
6. *Positive lens*: In every paper, there are some interesting ideas or at least a kernel of a worthy point. Readers are encouraged to find, appreciate and build on these ideas instead of continually seeking discrepancies, gaps, and errors.
7. *Open access*: Anyone, member or not, should have free access to read and use our papers in a not-for-profit environment.
8. *Communal act and service*: Publishing is a communal act—everyone should be involved in writing and assessing as a community service.
9. *Nurturing the next generation*: Editors and reviewers are expected to nurture the less-experienced authors.
10. *Credit is given where credit is due*: Ideas do not come out of thin air. If papers are the fruits we bear, we should recognize duly and explicitly our debt to those who contributed the seeds, fertilize and nurtured them. This includes other authors, mentors, reviewers, readers, students, friends and patrons who in turn shape our thinking and make our writing possible.

### An Illustration: Sprouts Working Papers on Information Systems

Building on the grand vision of an Open Access disciplinary-based work in progress repository, *Sprouts: Working Papers on Information Systems* (Sprouts)<sup>6</sup> has been developed as a fast-turn-around outlet for work in progress carried out primarily by scholars of the information systems field and members of AIS, the Association for Information Systems. *Sprouts* is envisioned as a worldwide community-based outlet that can replace or supplement fragmented, existing, institution-based repositories of the various departments, research groups and universities. *Sprouts* supports multiple languages and is open to any individual or research group.

*Sprouts* is devoted to all types of research carried out by members of the IS community. It is open to a broad, theoretically based view of information and systems that encompasses human, social and technical aspects. It is guided by the conviction that information technologies form an essential driver in creating a better world and enabling people and organizations to achieve their missions and thrive. The repository is also open for interdisciplinary work that broadens the base of scholarship in organization studies, management, design, and information systems through linkages with the full breadth of the arts and sciences. *Sprouts* is geared for any interesting theory driven or theory building work in the context of information environments, systems and organizations, with no limitation of size, genre, or method. Innovative and challenging work and research genres are especially encouraged.

Although *Sprouts* does not preclude locally based venues such as working paper series or self-archived conference proceedings, it eliminates the need to maintain and support homegrown outlets and makes them redundant. Furthermore, significantly enhanced versions of the papers can be submitted later to journals or conferences provided that the normal requirements of originality are not violated.<sup>7</sup>

In its fully developed release, *Sprouts* is likely to yield substantial value and community-wide benefits at minimal investments. The intended benefits are in three main areas: enhanced access to emergent research and work in progress, improved quality assurance of such work, and the likely development of new forms of collaboration. Table-1 provides further details about these anticipated benefits.

<sup>6</sup> Sprouts is available as a resource for the AIS community at <http://sprouts.aisnet.org>

<sup>7</sup> Meeting the originality requirements should not be a concern given the unavoidable transformation of the final manuscript following a revision in response to editorial comments. A postscript or note referring readers to a newer version published elsewhere can be added.





**Table 1. Anticipated Benefits of Open Access Disciplinary Work In Progress Repository**

**Access and Availability**

- One-stop community portal for working papers, proceedings and other work in progress
- Allowing quantitative and qualitative data sets to be available for access by all
- Multi-language support to enable global participation
- Stable permanent address for each article
- Uniform and clean user interface with multiple viewpoints
- Standardized metadata to enable enhanced search and indexing
- Customized auto notification of particular new articles available
- A periodical digest e-mail with all new additions community-wide

**Quality Assurance**

- Branding opportunities, e.g., university affiliation, workshop proceeding
- Statistics of views and downloads per article, organization, country and the like
- Readers' comments

**New Forms of Collaboration**

- Visual representation of semantic links to identify implicit relationships among articles
- Facilitate growth of networks around shared interests
- Mass collaboration

**IV. ENVISIONING A FUTURE WHERE WE “EAT OUR OWN DOG FOOD”: HOW TO SUPPORT COLLECTIVE WISDOM OF THE IS CROWD**

The original vision underlying Open Access [Budapest Open Access Initiative 2002] was focused on removing the barriers of knowledge dissemination. The advent of second-generation Internet technologies afforded new capabilities that can turn Open Access publishing, and particularly Open Access disciplinary repositories, into dynamic hubs of mass collaboration.

Mass collaboration describes a phenomenon in which people who do not know each other collaborate to create a set of artifacts that are used in diverse and unplanned ways. Popular management books [e.g., Surowiecki 2005; Tapscott and Williams 2006] describe a wealth of business examples of mass collaboration in action both by individual companies (e.g., Goldcorp, Inc<sup>8</sup>.) as well as by collectives not associated with any individual company (e.g., InnoCentive<sup>9</sup>). Common among these examples is that they rely on “Web 2.0” technologies (e.g., social networking, interactive media, and wikis) and Open Access to encourage diverse opinions oriented toward a common issue.

Open Access publishing, as described earlier, is not mass collaboration; it only allows open access of published papers — be they published in an online forum or through secretive off-line processes. In this paper, we argue that Open Access publishing needs to go further and embrace the basic tenets of mass collaboration. Just as mass

<sup>8</sup> <http://www.goldcorp.com/>  
<sup>9</sup> <http://www.innocentive.com/>

collaboration has made it possible for millions of users to benefit from Wikipedia,<sup>10</sup> Second Life,<sup>11</sup> Flickr,<sup>12</sup> YouTube,<sup>13</sup> and the Human Genome Project,<sup>14</sup> we submit that mass collaboration can foster the engagement of the IS community in research, as well as foster interest in Information Systems in the broader community. Following, we describe a few of the key tenets of mass collaboration, and how they might apply to IS publishing.

**Tenet #1: Bottom-up Passion.** Mass collaboration succeeds in business when people are passionate about an issue, and that issue is one that benefits from an organic growth in a broader community. For example, communities of practices [e.g., Wenger, McDermott, and Snyder 2002] within an organization succeed when members share issues for which they share passionate interest — whether the passion is focused on troubleshooting problems with complex printers, solving paint adherence problems that occur in wet weather, or identifying financial products that excite young adults. Within the larger network of Internet users, passion drives editors to improve Wikipedia articles, post their educational documentaries to YouTube, or share innovative ideas on InnoCentive. Since passion comes from the ideas and phenomenon rather than the artifact produced, this tenet suggests that Open Access publishing should be organized around ideas and phenomenon, not articles.

**Tenet #2: Self-Serve Co-Generation.** Mass collaboration recognizes that ideas benefit when everyone generates and integrates. Small seeds are planted, not lengthy monologues or articles. Top-down centralized organized structures (such as for how an article should be written, or in which journal an article should “fit”) are replaced with tagging, folksonomies, community-based structuring and restructuring, and hyperlinks between different aspects of an issue. The content that is posted is intentionally incomplete, to await others’ contributions, rather than ratified behind-the-scenes by a review team. Content is self-served, that is, those who are interested in an idea contribute to its development and shaping. Ideas that do not attract interest die on the vine. For Open Access publishing, then, this suggests that instead of (or in addition to) working papers repositories, what is needed is Open Access wikis that encourage collaboration on content rather than a write-review cycle.

**Tenet #3: Waves not Meetings.** In mass collaboration, people need to be allowed to come and go. People from outside the profession should be encouraged to engage — albeit briefly. Engaging participants requires a community custodianship model [Wagner and Majchrzak 2007] with layers of participation: some in the community play the role of evangelist, some are “adders,” some are restructurers, and some are the lurkers/readers who inspire the adders to contribute. The community needs to engage in the monitoring of the content against norms of proper posting (e.g., pornography might be viewed as inappropriate no matter what the content of the article). Technology could be used to foster the monitoring through registration: for example, monitoring of contributions, rankings of contributions, and the ability to track individuals who are dysfunctional for the community’s development. Thus, for Open Access publishing, more than open access is required: norms should be shaped and people should be encouraged to adopt a variety of roles as needed by the community.

**Tenet #4: Emergence through Planned Serendipity.** Mass collaborations are established to bring people together in unexpected ways. For example, IBM displays social networks that help people to locate who might be close to their interests on a topic, maps are often disaggregated into layers that can be combined in different ways for different purposes, process engineers mash up different analytic tools with different data components to solve on-the-spot process problems. Open Access publishing should encourage emergence, not simply in search, but in creation. Offering ways of disaggregating articles into components is a first step in this direction.

In sum, mass collaboration may provide a model for the future of publishing in general, a future that could potentially foster closer collaborations among the diverse membership within the IS academic profession, as well as engagement of non-academics in the research process.

## V. WHITHER JOURNALS?

Change is in the air. Clearly, the Internet and the proliferation of Open Access publishing are changing our work practices as well as the nature of our scholarly discourse. We are in the midst of a profound change in the socio-technical system of scholarly communication driven by the affordances of the Internet, and this transition will impact the journal in particular. Journals have been important historically to scholarly communication because they enable authors to disseminate their work to an audience and to receive recognition for it (in addition to other functions that we cover later). In this section, we discuss how new scholarly practices based on the affordances of the Internet are

<sup>10</sup> <http://www.wikipedia.org/>

<sup>11</sup> <http://secondlife.com/>

<sup>12</sup> <http://www.flickr.com/>

<sup>13</sup> <http://www.youtube.com/>

<sup>14</sup> [http://www.ornl.gov/sci/techresources/Human\\_Genome/home.shtml](http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml)

making these historical functions less relevant, some may argue obsolete, and speculate on the future function of journals in competition with other forms of scholarly communication.

To understand whither journals, we first must understand whence they came. In the early days of science, scholarly communication was personal, e.g., in the form of letters from peer to peer, thus enabling a primary function of disseminating research findings. However, such practices do not scale well as the number of researchers increase. Results were also presented to meetings of scientists, which over time became more formal. For example, ongoing informal meetings led to the founding in 1660 of the Royal Society of London. In 1665, the Royal Society began publishing collections of letters received, such as one in 1675 from Isaac Newton proposing a new theory of light. (Note though that the first issue of the Transactions also included an article reporting on a “very odd monstrous calf.”) These compilations of letters eventually evolved into the journals we have today. Journals thus served as an intermediary between researchers—serving the function of disseminating results to interested readers and offering economies of scale in distributing paper copies. In addition, over time, journals have served as gatekeepers, imposing quality standards for publication.

Journals can be roughly sorted by breadth of coverage. A few journals cover a wide range of topics for a very broad audience (e.g., *Science* or *Nature*), while others cover particular fields for a more limited audience (e.g., *MIS Quarterly* or *Information Systems Research* for researchers in field of information systems or *Academy of Management Review* for management); or for those in a specialized subfield (e.g., *Information, Technology & People* and dozens of others in specific areas of information systems). By subscribing to a particular journal, a reader essentially selected a particular set of topics to follow. The growth in the field is mirrored by the increase in the number of journals and papers published. However, the increasing diversity of journals has created a problem for dissemination, as most individuals could afford a subscription to only a few journals—probably to the one or two main journals in their field and perhaps to one or two in their particular specialization. To access others meant a trip to the library, while articles in more specialized journals could require even more time to acquire via inter-library loan or perhaps a personal request to the authors. As a result, publishing in a broadly read journal was necessary for the work to find a broad audience; for reasons of economics and time, work that was not in one of the top journals was likely to be read much less widely. This impact can be seen in the rough correlation between the breadth of a journal and its prestige—the broadest (e.g., *Science* or *Nature*) are generally most prestigious, and journals that cover a broad field (e.g., *MIS Quarterly*) are generally more prestigious than more specialized journals.

But today, journals and journal articles are increasingly distributed electronically. And while a reader can still read a particular journal or even subscribe to it online (reproducing the traditional practice), more often, research includes a database search across multiple journals. Consequently, researchers can be informed by a much wider range of articles, and at least in terms of accessibility, there is no special advantage to publishing in top journals (as long as the journal is indexed). Further reducing the special role of journals, search engines such as Google Scholar and Citeseer index articles from a broad range of sources, including journals, conferences, workshops, paper repositories (e.g., *Sprouts*), and even personal Web pages. As a result, authors now have increasing choices for disseminating their ideas and research results. Indeed, the low cost of e-mail and Web publishing means that researchers can even return to self-publishing if they choose (e.g., maintaining a research blog with one's latest results). If or when the use of broader search engines becomes the norm, having a paper that can be readily found through an alternative outlet may be nearly as good as having it in a prestigious journal. It may even be better, if as is common, the journal limits distribution to a handful of subscribers. It is worth noting that on this point, the interests of authors and journals normally diverge: authors would generally like as many readers for their work as possible, while many journals limit access in order to command a revenue stream. On the other hand, papers in a non-indexed outlet are effectively invisible no matter how prestigious the publication.

A second function of journals is to provide recognition and reward for work. Indeed, in many universities, there is a practice of requiring a certain number of “A” publications for tenure. What makes a journal an “A”? There are many and various criteria that are built on: for instance, the quality of the review board, the number of articles received, or ratios between accepted and received manuscripts. However, the most widely used measures attempt to operationalize the impact on the scholarly community based on a count of citations received. For example, journals often tout their ISI impact factors, that is, the average number of citations per article from ISI indexed journals in the previous two years. However, reliance on the journal as a way to assess the impact (or quality) of individual papers is not a sound practice. It is an example of an ecological fallacy, that is, attributing the properties of a group to the individual members of the group (in this case, the average impact of a journal to the papers published in the journal). This logic is fallacious because it ignores the distribution, and there can be a large range in the impact (or quality) of articles within a journal (e.g., Newton versus the “monstrous calf”). Worse, the distribution of citation counts is highly skewed and most often follows power distribution (i.e., “long tail”). For example, according to the ISI statistics for *MIS Quarterly*, the journal published 484 articles in 1985–2004, and through December 2008 these articles had received a total of 25,777 citations from ISI indexed journals. The average is 53 cites, but the most cited paper, Fred

Davis's 1989 TAM article, received 1,487 cites, 28 times the average, or about 5 percent of the total. The top-20 cited articles received about one-fourth of the total citations. On the other hand, there is a long tail of articles that received fewer citations than the average for the journal, and a few that received none.

In other guises, the ecological fallacy is the basis for sexism or racism. We would never equate faculty members with their gender or race—so why equate their papers to the journal? To avoid this fallacy requires adopting an alternative evaluation practice of carefully examining the quality and impact of individual papers. One common approach to the latter is to count the number of citations of individual papers or of a researcher's entire corpus. The existence of searchable citation databases (e.g., ISI, Google Scholar or CiteSeer) makes this approach to evaluation more feasible, though it has numerous limitations: citations are highly dependent on the topic of study and type of paper. For example, a mainstream literature review paper is likely to get many more citations than a paper on a niche topic of interest. Furthermore, the process of citation counts is tedious and incomplete, and citations have a long lag due to publication cycles. The practices of citing are in fact socially constructed and often follow herd behaviors [Hansen et al. 2006]. In fact, in many instances, more than 80 percent of the citations of an article are merely perfunctory. These shortcomings make citation counts less useful for evaluating researchers, especially in the early phase of their careers, when they need it most sorely. Nevertheless, citation counts provide useful information about how a scholar's ideas are being received. And again, from the point of view of citation counts, it makes little difference in which journal the work appears, though higher-rated journals have reputation systems which guarantee a higher likelihood of receiving citations. As a thought experiment, consider which provides better evidence of scholarly accomplishment: a newly published article in a top journal with no citations, or a working paper that has received hundreds?

In summary, changes in the technological affordances of scholarly publishing are beginning to be matched by changes in research practices and in related practices around evaluation and rewards. Publishing in the right journal used to be critical for a piece of research to find its audience, but increasingly it is the audience who finds the work, regardless of the journal. And while a journal title is a convenient proxy for quality or impact, it is clear that it is only a proxy and not always a very reliable one.

Such changes in practice suggest new functions for journals. Journals will retain an important function as a brand of quality scholarship and assessments. A searcher confronted with a long list of articles resulting from a search is therefore likely to choose which article to read based on the journal title as well as the author, keywords, title and abstract. Therefore, articles in a journal with a strong reputation for publishing interesting work may be more likely to be read and thus to be further cited. Moreover, to establish and maintain a brand, journals will have to establish clear identities and compete for quality papers in their areas by serving well the needs of specific research communities. To this end, journals can provide added value with high quality and constructive reviews that offer opportunity for learning and development as well as advances in knowledge. Journals can also provide more unique and original contributions by advocating a review process that is focused on searching reasons to appreciate and subsequently accept a paper, as opposed to the pervading practice that often seeks reasons to decline it. In other words, editors and reviewers should focus on eliminating Type II errors, not Type I errors. Last but not least, journals can provide faster turnaround and have reasonably short queues for publication, as well as offer the possibility for broad dissemination of their content through indexing databases (e.g., ISI or Scopus) and providing forms of Open Access to their content.

Work in progress repositories can offer nearly instantaneous and unlimited dissemination of papers to readers, link among unconnected scholars, and help building new and instant ways of deliberating over substantive content. Therefore, as far as speed of delivery, breadth of access, community building, and accounting for the wisdom of crowds are concerned, journals cannot match such repositories. In contrast, journals can build on their competitive advantage in providing high quality reviews, editorial services, and the resulting high quality content. In other words, a journal can in principle publish better, more interesting and more influential papers because of the effort editors and reviewers put into improving the papers it accepts, thereby acting as facilitators of a formal research discourse rather than gatekeepers [Lyytinen et al 2007]. Finally, through special issues, journal editors can work to bring together interested communities of scholars around particular topics, thus facilitating the growth of the field. It is encouraging to see recognition of these new functions in the editorial statements of leading IS journals.

## VI. CONCLUSION

Aligned with the emerging changes in scholarly communication and knowledge dissemination, we have explored the potential and set a grand vision for the development and support of an Open Access disciplinary repository of work in progress that provides a fast-turnaround outlet for authentic research and work in progress carried out primarily by scholars of the information systems field. Such a repository is envisioned as a multi-lingual worldwide community-based outlet that can replace or supplement fragmented, existing, institution-based repositories of the various departments, research groups and universities.

At minimum, we hope to stimulate new thinking about the role of Open Access publishing, its immediate application, and its long-term implication for the IS discipline. Further deliberations can expend on questions such as: What should be the role of Open Access in IS research publishing? Where does the IS discipline stand? What are the emerging possibilities and opportunities? What do we aspire to in the long term? And what actions should we take today?

In conclusion, we would like to articulate two themes that have emerged over the development of this paper and the panel that preceded it that we find inspiring.

First, we see an opportunity to return to our roots—not just the roots of our IS discipline, but the roots of science itself. Imagining the handwritten letters that members of the first scientific societies distributed and read at meetings reminds us that Open Access publishing is a return to the hand-crafted and entrepreneurial roots of science. Open Access steps back from a situation in which the journal publishers do our marketing and distribution for us and toward a future in which we all become something of an entrepreneur, positioning our ideas and writings in a free market of ideas and taking more control of marketing ourselves [King and Lyytinen 2006].

As part of this traveling back to our roots, there is the delicious possibility that we can move away from an academic life in which we publish in closed access journals to obtain a certification for career advancement; we can move toward an academic life in which we publish in Open Access journals and engage in more widely distributed scholarly dialogues. We could find ourselves in a much more exciting world in which publishing is primarily living the life of the mind, instead of serving an apprenticeship until we have obtained our certification by creating a sufficient number of closed journal entries.

Second, Open Access publishing brings the possibility of engaging in scholarship through a process of mass collaboration. As discussed earlier, a move to Open Access would bring us together as co-generators of knowledge in an emergent process of social engagement. Mass collaboration could result in continuous waves of innovative ideas and important findings, rather than the punctuation provided by journal and conference schedules. This increasingly dynamic avant-garde environment would allow for more serendipity in our scholarship—creating a new space for making connections, seeing patterns, developing theories, and testing hypotheses.

These two themes of simultaneously returning to our roots and going forward to mass collaboration suggest some exciting possibilities for the career trajectories of today's young scholars. They suggest that young scholars might and should be freed from the restraints of closed journal certification with its sometimes artificial standards of quality, which often confuse form and substance. They suggest that young scholars might be able to follow their passions, without having the closed-journal certification process narrow their topics and methods until they have become conforming zombies. How many times have we heard the lament that a scholar has exciting ideas that they want to pursue, but the closed-journal arena requires that they address "safe" topics until they have earned the certification of tenure based on their number of mostly boring closed journal articles? And how many times have we seen those young scholars become old scholars without ever breaking out of the mold and engaging their true passion?

A vibrant open source research community could free scholars from the pressure to conform, that asks one to wait for a later date to pursue his or her passion. It would give scholars, young and old, the possibility to build their careers by following their passions. That is the inspiring image of the future and it is one worth pursuing—with passion.

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