

**A JOURNEY TO THE CENTER OF THE
SCHOLARLY COMMUNICATIONS UNIVERSE**

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ABSTRACT: Every universe has its own ecology, a set of relationships among the inhabitants of a given environment. The landscape of scholarly communications is no different; we have a variety of actors including researchers, librarians, publishers, and mediators who have established relationships. For the most part, these relationships have been mutually satisfactory in the era of print distribution. The advent of the era of electronic distribution has been both heralded and decried. However, taken in the context of these already well-established relationships, vendors perceive this era of electronic distribution as a catalyst and an opportunity, not a death sentence. We have developed both aggregated and gateway services. We can add value to our original functions by providing more information about information. We can streamline the library's function of selection and access, and we can focus the publisher's function of delivering information. In many ways, the era of electronic distribution does not demand that we change our roles, but rather that we change our business models, standards and relationships. But this is only the beginning of a new era, and there may be more opportunities and surprises as we revise these models.

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Every universe has its own ecosystem, a set of relationships among the inhabitants of a given community and with their environment. Each inhabitant of the community stands at the center of one of many different circles that constitute the varied relationships of the ecosystem. For the most part, the relationships among the inhabitants of the scholarly communications universe have been mutually satisfactory in the era of print distribution. There are certainly some significant areas of conflict, but there are no outright predatory relationships. The advent of the era of electronic distribution has been both heralded and decried. Electronic distribution of information has given us the possibility of reaching a wider audience with deeper information access, and it has given us the agitation of machines that don't operate as expected, the need for skills that are not part of our original professional toolbox, and legal solicitude without sufficient background.

However, taken in the context of our already well-established relationships, many of us perceive this era of electronic distribution as a catalyst and an opportunity, not a death sentence. In many ways, the era of electronic distribution does not demand that we change our roles, but rather that we change our business models, standards and relationships. But this is only the beginning of a new era, and there may be more opportunities and surprises as we revise these models.

The landscape of scholarly communications has a variety of actors including researchers, publishers, librarians, and intermediaries who have established relationships that sustain the scholarly communications universe. Our researchers reside at the center of one circle; they have interactions with both librarians and publishers. Librarians help them find and evaluate information while publishers help them produce and distribute their own research more broadly. Publishers are the focal point of a sphere that gathers in potential research, mediates the evaluation of that research, and delivers it back outward again to libraries, to intermediaries and to scholars. Librarians are the nucleus of an orbit that evaluates and selects among the publisher offerings using a variety of intermediaries to help sort, organize and provide scalable access to these selections and helps match the end user together with the resource. The intermediaries in this universe serve many different functions and all have their own circles: we have abstracting and indexing services; we have bibliographic networks and utilities; we have integrated library system suppliers, and we have serial subscription agencies.

I represent an organization that provides serial subscription and management information services, and like other inhabitants of the scholarly communications universe, we have our own circle of relationships for which we are the center. Traditionally, the role of the serials vendor with respect to library and publishing clients is three-fold. First, vendors gather information. We have a great deal of information about our publisher clients. We know who publishes specific journals. We know how much these journals cost. We know whom to contact if a problem arises with a subscription. We also have information about our library clients. We know where to send journals and we know where to send the bills for the journals.

Second, vendors provide information about information. In other words, we give context to information by organizing it in relation to other information. For example, to help our publishing clients, we know how many subscriptions our library clients have to any particular journal, and we have a history of those subscriptions. For our library clients, we know how many journals are ordered, from which funds, and for how long. And like all good librarians, we know how to find out what we don't already know.

Information is good, and information in context is better. However, what is even better than information and context is the ability to do something with these organized data. All of this information about information supports our third purpose or function. This third major function with regard to both our library and publishing clients is the delivery of services that makes serials management scalable. For our library clients, we have developed systems and services that allow them to order titles, direct those titles to the

appropriate library branch or person or fund, and claim issues of any journal for a variety of reasons. For our publishing clients, we have developed systems to gather in updated information about titles already in our database and new information about titles to be added to our database, and to deliver out billing and shipping information. In support of all of these services, we also interact with another group of intermediaries. For example, subscription agents collaborate with integrated library system vendors to find ways to arrange the information we have about a particular library client's holdings in a format that can be transferred and imported into the client's OPAC.

In the old era of print distribution, subscription agents, publishing clients, library clients and all supporting intermediaries knew our roles with all that these roles entailed. We knew what information was available, what information was needed, in what format, and for what purposes. In addition, we all had systems or access to systems that allowed us to use this information to get our respective jobs done. From the center of the vendor's circle, we could gather in information from publishers, and they knew exactly what information they needed to give us. We could also deliver back the precise set of data our publishing clients needed from us. From the center of the vendor's circle we could also deliver outward all the information library clients needed to make decisions related to serials management, and library clients knew what information they needed to share with us. We also had very well defined guidelines for dealing with intermediaries. We knew what our fellow intermediaries, the abstracting and indexing services, the integrated library systems providers, and the like, aimed to do and where we shared common interests.

Beyond understanding the ecology of this universe and our respective places in it, we were also careful to avoid overlapping or conflicting activities. Libraries didn't really publish journals; publishers didn't really manage subscriptions on a large scale, and abstracting services didn't really deliver journals. Within the discipline of ecology, interspecies interaction can be categorized in one of four ways. Mutualism implies a symbiotic relationship in which both species in the community benefit from their interaction. Amensalism implies an indirect mechanism or behavior that disallows or limits interspecies interaction. Commensalism refers to a relationship that allows both species to coexist next to each other. Competition and predation is defined as a relationship in which one or both species actively attack the other (Milne and Milne, 1971). In the old scholarly communications universe, there was no long term interspecies competition and predation. Without competition, an ecological community in a fixed environment can remain fairly stable and consistent. The good news is that this stability allows us to develop standards and to set expectations for all of our roles. The bad news is that it limits our ability to become more complex and sophisticated and more diverse.

But that was all in the past. The present is an era of electronic distribution, and this new method of delivering information has changed our environment, destabilizing our ecology. Specifically, what has changed is our ability to distribute more broadly and more quickly the same information that was formerly represented in printed journals. We can also distribute audio, video and software application files in combination with text

and graphics. In addition, current technology allows us to index more deeply than was previously possible. And this secondary source indexing can now be seamlessly linked to the primary source material. Both the primary and secondary source materials can be seamlessly linked to the databases of subscription agents and the catalogs of libraries. And all of this can be delivered to the end user desktop by means of what has become very commonplace and standard software that is freely available to everyone with an Internet connection.

From an ecological perspective, a new environmental resource has been given to all of us, and this is cause for serious consideration. In fact, one reason that this is problematic is that the new technology is theoretically available to and useful to each of the inhabitants of our universe. Libraries could become publishers; publishers could manage subscriptions, and vendors could collect and organize materials for delivery to end-users. However, I believe that before we can tackle new possibilities, we need to regain our old stability in this newly configured environment. This stability is essential to our existence and our evolution. In his poem, "The Second Coming," W. B. Yeats wrote, "Things fall apart; the center cannot hold; Mere anarchy is loosed upon the world" (Yeats 1924). Early in this era of electronic distribution, subscription agents were excluded from the process. As an example, e-journal programs at professional library conferences almost never included a vendor representative. The reality is that without the subscription agent as intermediary, publishers and librarians alone could not achieve a parallel scalable solution for delivering electronic journals to libraries and their end-users. If we, the inhabitants of the scholarly communications universe, do not remember our circles, our places in this universe, our centers will not hold!

From my perspective as a serials subscription agent, there are some crucial tasks that must be accomplished in the present. Subscription agents must choose to be format-blind in the delivery of information and services. By this I mean that we must include in our circle of tasks, and in the information we gather, all manner of serials regardless of how they are delivered to the subscribing client. Within my organization, colleagues frequently remind each other of this mantra: "We don't answer the phone by saying, "Blackwell's Information Services for print subscriptions only."

Presently, we do include some information in our databases about electronic versions of print journals and about independently published electronic journals. And we are working to gather more of this kind of information. To do this, our first order of business was to define what constitutes an e-journal. For Blackwell's, three components are necessary to define something as an e-journal that should be entered into our database. First, the material must be full featured. By full featured, we mean that the e-journal must include complete text and graphics. If the material is an electronic iteration of a printed journal, it must replicate the entire original printed journal with the possible exception of advertising. Using this definition, we have already eliminated web-based materials that include only partial contents, or table of contents, with or without abstracts, or journal marketing sites. The second element of Blackwell's definition is that the journal must have some kind of continuous service. This is not meant to address the question of

archiving electronic materials but rather to eliminate those titles which only have access to the current issue and only for a brief period of time. Finally, the title must have some subscription prerequisite that needs to be managed. This element effectively eliminates those titles that are freely available to anyone who happens upon them without subscription, registration or payment of any kind.

Our second order of business is to understand what kinds of data we will need for the management of e-journals and what kinds of data are available. Information in this category includes such questions as these: How is this title related to a title with the same name published in a different medium? What is the subscription requirement for this title? Is it free for print subscribers? Are there additional charges for the electronic version? Are there separate charges if there is no print subscription? What are the restrictions on which users and how many users may access the title? Is there a license and what does the license permit and restrict? And where can I retrieve or view this title? All of the information that results from these questions must be codified and stored in databases that we've redesigned to accommodate this new medium. The end result will be a business system that includes all bibliographic and product details that will allow our library clients to identify a title, relate it to the same material in another medium, order the title, license it, and create an access mechanism of their choice. Just as librarians have worked at finding ways and places to define the salient points about e-journals in their MARC records, so have vendors had to make these changes and others to our database structure and content.

A third element of our electronic information initiative is training. In the same way that publishers must educate their staff to understand what kinds of new products they are distributing, and in the same way that librarians must learn how to locate, select, and access these new products, subscription agents must teach our staff what is involved in facilitating the ordering of these same products. To do this, we must train our internal staff to understand what e-journals are, to be conversant on the various pricing options, to locate, understand and be prepared to answer questions about the license, to gather the appropriate access information such as subscription identification number, IP addresses, or userid and password, and finally, to deliver the precise location information that will allow our clients to create access from the library collection. In order for all of us to communicate effectively, we all need to understand the terminology, the options, the possibilities and the additional components of this new form of distribution.

These tasks are all within the circle of the subscription agent, things that we can and do control ourselves. The next step is getting the actual information in from publishing clients, and this is less in our control. Initially, we found that publishers had bypassed us in delivering information about e-journals and had gone directly to librarians. In some cases, they even bypassed librarians also and went directly to end-users. For the most part, this is far less common than it used to be, but there are still many occasions when a publisher forgets long-standing and time-tested relationships that have served us all so well. More often, information is not problematic. What is difficult to get publishers to

understand is that all pieces of the access process are better executed if they include the subscription agent.

This information collection alone brings us a bit of stability, but still, there are unresolved issues. One of these unresolved issues is the lack of consistent pricing models. Currently, publishers are producing e-journals that are freely available with a print subscription, or separately priced, or priced as a combined package, or priced in a tiered package based on number of sites or number of users. In the era of print distribution, we had a partially parallel situation with pricing based on individual subscriptions and institutional subscriptions and pricing based on geographic elements. The difference between these two situations is that there were agreed upon standards in the print distribution era. There were limited choices and all members of the scholarly communications universe understood these choices. In this electronic distribution era, we have too many choices; these choices are applied inconsistently and change frequently. Publishers must come to a collective understanding of their revenue streams and the resulting pricing models. We cannot continue to handle each individual publisher's offerings on a case by case basis.

A second problem area that breeds instability is the matter of licensing. Many electronic journals have associated licensing agreements or terms and conditions. However, it is not unusual to find that a publisher has no licensing agreement in place. This alone is significant information to have. Proving the absence of a licensing agreement may take longer than proving its existence. Finding the license agreement in our current environment is also a very labor-intensive activity. And once found, the task is to identify the appropriate people who can read, understand and sign on behalf of the agreeing parties. Because this licensing agreement is an important piece of the process of bringing e-journals into a library collection, subscription agents must have a place in this operation. Yet here again, we have so many different methods of completing the licensing process and no standards. Two years ago, I tracked the licensing process for a client ordering approximately twenty e-journals from seven different publishers. The range of attitudes ran the gamut from one publisher assuming that the subscription agent would be responsible for all licensing related issues including enforcement to one publisher who refused to allow subscription agents to even see the license. As a community, we are slowly making progress in terms of identifying key elements of licenses as the ALA Principles for Licensing Electronic Resources have done and in terms of moving towards more standardized licenses as the UK National Electronic Site License Initiative has done. We need to continue to make progress towards greater licensing availability and more standardization. This is very clearly an area where collaborative development is necessary.

Archival access to electronically distributed journals is another issue that jeopardizes our communal stability. In the era of print distribution, library subscriptions resulted in the purchase of an actual physical entity that could be owned. In the era of electronic distribution, some publishers claim that money paid as part of the subscription and licensing agreement entitles the subscriber to access services, but not property ownership. There is a very subtle question here. Has this agreement entitled a subscriber to the

service of accessing journals electronically, or has this agreement entitled a subscriber to the content available through the service? If the agreement pertains to the content itself, then it seems fair and reasonable that a subscriber should have access for eternity to the content delivered during the subscription period. And yet there are very few arrangements that have been put in place for this type of perpetual care. In a profession where the archival record is held in such high esteem, where access to our scholarly history is paramount, it is untenable to allow this issue to go unresolved. Although this is not a new issue, it is certainly the least attended of all the obstacles to our regaining stability.

The last issue I'd like to highlight is access. In the print distribution era, we put all of our journals on shelves in a building. We create bibliographic records that describe the journal and locate it within the collection. In the electronic distribution era, information about an e-journal could be available in several different places. Its actual location is not relevant, but the information about its location is extremely relevant. What we have in the current environment are two different models for organizing this kind of access information. We have the aggregated collection model that delivers to a subscribing library a predetermined group of titles. The most common example of this type of access is the collective titles of an individual publisher. This model may seem convenient from the publisher's perspective, but it is less functional from the perspective of the librarian or the end-user. Librarians don't deliver someone else's collection to their end-users, and end-users don't access journals by going to individual publisher silos. Often, the aggregated collection is the result of a deal that just can't be refused (Holleman 1998), but in the end, it is a disservice to librarians whose responsibilities include the meticulous selection of material appropriate to a specific group of end-users. More often what we see now is a gateway collection that pulls together specifically selected titles from a variety of sources and displays an access link from that one place. This gateway model actually comes closer to providing a true library collection. It is important to define where this gateway location exists. Is it the library OPAC or the library web site or a vendor-supplied gateway? Librarians must pay careful attention to this decision and implement their final choice where end-users will gravitate to gather information.

I am occasionally asked where we are going in the future. My silent response is usually that I hope we can just get through the present first. We need to regain our stable ecology. In so many aspects of the contemporary world, technology has given us incredible opportunities that entice us. But technology alone is not enough; it must be integrated into all aspects of our professional life. We need to agree on our roles, define our terms, build a sustainable business model and develop the appropriate standards. Each group in our ecological niche must focus some energy on learning, understanding and training outwards within our individual organizations. We need to pursue a pricing model and licensing terms that can be made standard, or at the very least, the most commonly occurring model. We must establish guidelines for archiving, and then we must build this archival access. And we must create the most expedient and appropriate mechanism for delivering all of this to our end-users.

But then, once we have caught up with the present technology, when we can pass electronic information around our circles and within our circles in a scalable way, we can certainly think about the future. The future is not about the electronic distribution of static information; it is about the collaborative development of, and access to dynamically generated information. The future will allow us to build a net space that is community focused. The Internet is a very crowded place with much to offer all of us and quite a bit that is not relevant to each of us in our professional lives. Our goal for the future should be to build focused communities within a much larger world. Just as our physical library collections are tailored to the needs of a specific group of end-users, so too must our electronic library collections be tailored.

The current thinking about what the future will look like begins with portals. A portal is a virtual gateway of sorts; it has been called an on-ramp or a place that users pass through on their way to other sites (Louderback 1998). Yahoo! Is a good example of a generic portal. The reason I suggested earlier that librarians must pay special attention to where you build their gateways is because your gateway will evolve into a virtual portal. It will be the on-ramp for your end-users, a starting place. A well-established and nurtured portal can then evolve into what current thinking calls a hub. Hubs will hold a more central position for your user community (Berst 1998). Surrounding your hub will be access not just to static electronic information and in depth, subject-specific indexing, but also collaborative workspace, data modeling tools, and autonomous intelligent agents that will allow community users to stay current and to do involved research. In the same manner that technology is not the crucial issue in our present era of electronic distribution, this will also be true in the future. Work is already in progress to redesign the generic chat room model and to share software applications among disparate users. Development of autonomous intelligent agents is ongoing. The issue for the world's scholarly communities is how we will build a scalable model to deliver and use these services. How will librarians justify to their larger organizations the cost of delivering these services? How will publishers define a revenue stream that will allow them to continue to produce the quality content at the core of our services? And how will intermediaries find a scalable way to broker both content and services for publishers and libraries alike?

Think, if you will, of a net space where marine scientists congregate to retrieve published information, research distinctively relevant topics, discuss this information with other marine scientists, interactively use data produced by others, keep abreast of current trends and developments, and collaboratively produce more research. This is a hub. This is your future, if only we can get through the present.

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