A Rationale for the Redesign of Scholarly Information Exchange

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The disintermediation that will inevitably result from the increased electronic publication of specialized scholarly information affords an excellent opportunity for one of the traditional intermediaries (e.g., libraries, publishers) to assume responsibilities previously held by other intermediaries. Members of the academy should use this opportunity to take back the responsibility for a significant portion of the specialized scholarly publishing that has, in the traditional environment, been placed in the hands of external publishers. The most imposing impediment to such a reappropriation by the academy derives from the inability of institutions to cooperate with each other. If new attitudes could be created within the academy to circumvent that obstruction, then an academy-based process of scholarly information exchange would finally be feasible. One effective model for such a new form of scholarly publishing would be to establish separate domains, or designated channels, for individual disciplines.

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It has been more than a decade since Thompson (1988) issued his energetic call for academic librarians to consider the possibility of displacing and assuming the role of specialized scholarly publishers (see also Rogers and Hurt 1989). Since that time, there has been a variety of efforts to increase the participation of libraries in scholarly publishing, probably the most visible and successful being Stanford's High Wire Press (http://highwire.stanford.edu/intro.dtl) and the ARL SPARC Project (www.arl.org/sparc; see also Frazier 1998). Still, we must admit that the most significant challenge to scholarly trade publishing in the 1990s has come not from libraries but rather from the scholars themselves in the form of Ginsparg's server for preprints of articles on high-energy physics and related subjects (http://xxx.lanl.gov/; see also Ginsparg 1998). This innovation has demonstrated beyond a doubt that the formal exchange of specialized scholarly information can thrive outside of traditional publishing channels.

The Ginsparg server at Los Alamos is in some ways a practical manifestation of a theory that some scholars—most notably and effectively Stevan Harnad—have been advocating for much of the decade: the view that computer-mediated communication can and should be used to make specialized scholarly information, properly refereed, freely available via the Internet (Okerson 1995). This "subversive" position assumes that most scholarly communication will shift to electronic form in the relatively near future—which is a very reasonable expectation. Although different disciplines will, to be sure, move to electronic publishing at different rates, the bibliographic and economic advantages of online communication far outweigh the liabilities. While some paper and microform publishing will no doubt continue for some time, mainly for archival purposes, there can be little doubt that most of the action of scholarly information exchange will migrate to online form in the short-term future. (For a current review of the key issues in scholarly electronic publishing, see Buckley 1999.)

Whether or not the academic library community is prepared to play a truly formative role in the reenvisioning and redesign of scholarly information exchange depends not only upon whether academic librarians have the will to take concerted action, but also upon their having a clear and unified position as to what is ultimately in the best interest of scholarship and higher education. It will be my purpose in this essay to consider, in mainly abstract terms, why the academy must move to reappropriate (i.e., take back from external publishers) at least some responsibility for specialized scholarly publishing, why the academy has been so slow to accept this responsibility, how an academy-controlled system for specialized scholarly publishing might be designed, and what function the academic library should be prepared to assume in that process.

The Future of Intermediation

The transfer of information across space and time entails intermediation. Someone, some agency, some mechanism must conduct the information from sender to receiver, from writer to reader. For scholarly information exchange, the two principal intermediaries are publishers (mainly working with writers) and libraries (mainly assisting readers). There are obviously many other intermediaries—editors, printers, programmers, vendors—who are indispensable for the formal transfer of scholarly information in the traditional environment. As we move increasingly online, however, the need for such traditional intermediation will surely diminish—if for no other reason than that some of the work traditionally performed by intermediaries can be automated and managed by writers and readers for themselves. Our sense is that the metaphorical space between the writer and the reader will contract, and that there will be less room online for the range of intermediaries now needed in the traditional environment. The realization that some disintermediation is inevitable in the new environment is already engendering considerable competition for Lebensraum in the intermediary space. Intermediaries are eyeing each other suspiciously, recognizing that opportunities for traditional intermediation will decline and that survival may depend upon the ability of one intermediary to assume responsibilities that have traditionally belonged to others.

The unavoidable and inexorable decline in the need for traditional intermediation does not mean, however, that intermediation *per se* will be generally less important for information exchange in the new environment. Quite the contrary. While it is true, as already noted, that information technology will empower writers and readers to do some things for themselves that intermediaries did for them in the traditional environment, it is also equally likely that intermediaries will provide some services for writers and readers

in online circumstances that writers and readers now provide for themselves in the traditional environment. The more we move online, in fact, the *more* intermediation (admittedly of a very different kind than in the traditional environment) will likely be needed to transfer information from writers to readers. (For a parallel example in banking, see Allen 1997.) We might label this syndrome *hyperintermediation*. Much of this new service will admittedly be transparent to the user and will take the form of technology and network maintenance, but some of the new intermediation will be highly visible and will derive from the special quality of digital information, which consists of both a content—the database—and a highly flexible modality, let us call it the software, which provides access to and manipulation of the content.

That flexible modality is one of the key differences between traditional and online information exchange: it enhances but also necessarily complicates the exchange process. One obviously does not open an electronic publication as simply as one opens a book. The whole concept of "opening" changes—different databases necessarily "open" differently—and there may be several ways to access or apply a single database, depending upon what one wants to do with it. While more can be done therefore with information in digital form, more intermediary assistance will likely be needed to do it. All intermediaries in the new environment, including libraries, will compete with each other to provide that new assistance.

The distinction between the content and the modality, the database and the software, is one that demands much more consideration. All information services can in a way be reduced to those two elements: (1) building and maintaining the database, and (2) providing the ability to find and manipulate what has been built and maintained. Libraries supply the same or similar services in the traditional environment—collection development and preservation on the one hand, organization (cataloging) and access assistance on the other—and to some extent, society no doubt expects libraries to continue to provide those same services, after much currently needed information shifts online. But will librarians—or, more to the point, *should* librarians—take up that responsibility in support of scholarly information exchange?

Disintermediation is not merely an inevitability of the new environment and a challenge to traditional intermediaries, it is also an unprecedented opportunity to reconfigure information services. From the standpoint of academic libraries, such disintermediation can be used as a tool to improve information exchange by promoting the redesign and streamlining of the process by which scholarly information moves from writer to reader. This effort will entail in part working to reduce or eliminate those aspects of the traditional process that have severely hampered such exchange.

Because one of the most significant impediments to scholarly information exchange in the traditional environment has been the outsourcing of some major segments of scholarly publishing to for-profit publishers (Association of Research Libraries 1998), the academy needs to use disintermediation as a tool to reappropriate responsibility for formal scholarly communication that in the past has been the exclusive domain of scholarly publishers. Such reappropriation is in effect a form of vertical integration—the assumption of responsibility by one producer for multiple stages of the production process—that displaces other producers previously responsible for those other stages. In this case, it will be a matter of one intermediary exploiting the process of disintermediation to displace and assume the function of other intermediaries.

But which intermediaries will (and should) do the displacing, and which will be displaced? We must not be so naive as to expect that librarians will naturally or automatically prevail in this inevitable contest. Publishers—or at least those wise enough to realize that no intermediary is likely to survive the transition to the new environment intact—are doubtless also examining the same process from their own perspective. At the moment, publishers depend upon libraries for the effective dissemination of their products. Such dependence need not last much longer, however, and as soon as publishers see opportunities to maintain or increase revenue by selling directly to users rather than through libraries (or as soon as libraries become more trouble than they are worth to publishers for whatever reason), publishers will initiate such direct services. This direct selling would work particularly well in the academic community. The chances that publishers would be willing, as Gherman (1999) has recently advocated, to relinquish their ownership of scholarship and serve as editorial bureaus are therefore very remote. Publishers will necessarily and understandably work to increase their role in scholarly information exchange.

Odlyzko (1999) has argued skillfully that, in the competition for survival between publishers and librarians, it will be the publishers who prevail. They will do this by convincing the academy that the unnecessary costs of moving information from writer to reader are not those of publishing but rather those of libraries:

> What keeps the publishers' situation from being hopeless is the tremendous inertia of the scholarly community, which impedes the transition to free or inexpensive electronic journals. Another factor in the publishers' favor is that there are other unnecessary costs that can be squeezed, namely those of the libraries. Moreover, the unnecessary library costs are far greater than those of publishers, which creates an opportunity for the latter to exploit and thereby to retain their positions. (Odlyzko 1999, 3)

Odlyzko, like many scholars and academic administrators, apparently sees the library mainly as a big box of books, and the library's budget as being devoted primarily to tending them. If publication moves entirely online, the cost of maintaining a paper collection, which is to say (from this perspective) the cost of running the library, can be eliminated, or at least substantially reduced, and the savings can go to the publishers—or can be divided between the publishers and the institutional administration.

Many research librarians may well naively assume that this will never happen—that as long as they continue to provide (*mutatis mutandis* in the new environment) the same excellent services they always have, their presence on campus will be needed and sustained. This is, of course, absurd. If the academic institutional administration could be convinced that it would be economically advantageous to outsource library services to publishers or other information entrepreneurs, then institutions would likely move—with some justification—to eliminate libraries altogether (beyond presumably a vestigial warehousing function). Institutions might take such action, not realizing the implications of outsourcing many library services, because librarians have never succeeded in explaining those implications effectively. Or, more problematically, institutions could conceivably take such a step, if the academic community were to conclude that the economic advantages of substantially disintermediating academic libraries outweigh the pedagogical and research liabilities. Librarians must move now therefore to understand and confront both of these prospects.

The Rationale for Libraries in the New Environment
Technology and Ideology

We have noted that, in the traditional environment, intermediaries are distinguished from each other for the most part by their place in the production process, i.e., their role in the transfer of information from the writer to the reader. Publishers work with writers, editors, printers, and distributors, in order to bring the work of the writer to market. Librarians work with readers and vendors, in order to ensure that needed information is rapidly available to local users. While we can perhaps anticipate that some aspects of this division of labor will continue as we move increasingly online, it is nevertheless the case that the new technology and the resulting hyperintermediation afford a single intermediary or intermediary group the ability to assume responsibility for ever broader ranges of the transfer process.

As efforts at such vertical integration increase, and all intermediaries—librarians, publishers, booksellers, and others—scramble to assume an ever more comprehensive role in moving information from writers to readers, they will all

likely begin to adopt similar processes and to make use of the same basic technology. This means that many, if not most, intermediaries may ultimately become for a time in the course of the transition technologically similar—perhaps even indistinguishable: they may well all be competing, including librarians, to offer the same general set of services. What will then, under such circumstances, distinguish one intermediary from another? It will be not merely the services provided and their costs, for these may all be very similar, but rather the values that drive and inform that provision of those services—in short, the service ideology. Librarians have a very special service ideology, and as librarians now begin their journey into the new online environment with all of its complexities and uncertainties, they must take care to bring with them above all else that defining ideological perspective.

It is for this reason that we are now entering such a critically significant juncture in the history of scholarship. While publishers and librarians may in the new environment compete and end up offering similar or identical services, the long-term evolution and nature of information services will depend finally upon the intermediary ideology that ultimately prevails. In the case of academic information services, the fundamental ideological question is quite simply whether specialized academic information should be understood as a commodity, intended primarily for (and judged in each case by the extent to which it succeeds in generating) revenue—or whether access to scholarly information is a social good that must be freely available. The defining quality of modern academic (and public) libraries is not that they provide access to certain types of information using particular service methods, but rather that such access, facilitated by such methods, is available to the individual without significant financial charge and is supported for the most part by public or collective funding. What characterizes the modern library is above all else its assumption that access to information, like access to other key social goods and services, is a right of all citizens and not a privilege of the few. It is that cardinal assumption, that ideological position, rather than any technical or bibliographical skills or facilities, that separates librarians from most other information service providers, including especially many publishers of specialized scholarly information. If there were no ideological differences between publishers and librarians, then there would be in fact very little sense in trying to continue to distinguish them in the new environment.

In many respects, therefore, the ideology of the library *is* the service. The only problem, of course, is that we live in an age in which choices are seldom viewed in primarily ideological terms. Even academic institutions, which should and do serve as a key source of ideological definition and debate, are obliged to base many of their essential decisions on a range of considerations beyond the purely ideological.

It is unlikely at the present time, therefore, that either society at large or the academy in particular will be persuaded to take a course of action on the basis of ideology alone. Is there then a more functional argument that could be used effectively to support the position that librarians should continue to operate and prevail in the new information environment?

Agency

All information service providers are agents of some kind. Ross (1973, 134) states: "We will say that an agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the other, designated the principal, in a particular domain of decision problems." In order to define or understand agency better, let us posit a universe of resource—the set of all extant resources at any point in time (see figure 1). Let us say that a resource is anything that will facilitate action. It is stored labor, raw material, power, potential, energy—the capacity to do work. It takes a great many forms. It can have exchange value, or it can have use value. It can be money. It can be information. It can be some kind of formative or base material. It can even be some person's, or some group's, attention. But what all resources have in common is their scarcity—for to be scarce (let us stipulate) is a quality of a resource.

Because resources are scarce, individuals or groups needing resources often contract with specialists for assistance in obtaining access to such resources. Those specialists then become the agents of those principals or clients for whom the resources are being obtained. Such agents are hired by clients, therefore, to compete with other agents representing other clients. Agents are expected to act always in the best interest of their clients, and their success is measured by the extent to which they succeed in supplying their clients with the resources that have been targeted. The only complication is the classic and natural tendency for agencies to prefer themselves to their clients: if it occasionally comes to a decision between doing something of value for the client and doing something of value for themselves, agents tend sometimes understandably and predictably to select the latter. One manifestation of this problem—let us call it the agency delusion—is the false assumption on the part of the agent that whatever is beneficial to the agent is necessarily beneficial to the client. No agent is immune to this delusion, no matter how pure its goals—and this includes librarians. The best we can do is to be aware of it and try to circumvent it in our decision making whenever possible.

Let us further posit a distinction between *primary* and *ancillary* resources, clientele and competitors. The primary resource is the one the client has contracted with the agent to obtain. An ancillary resource is one that is used (e.g., for
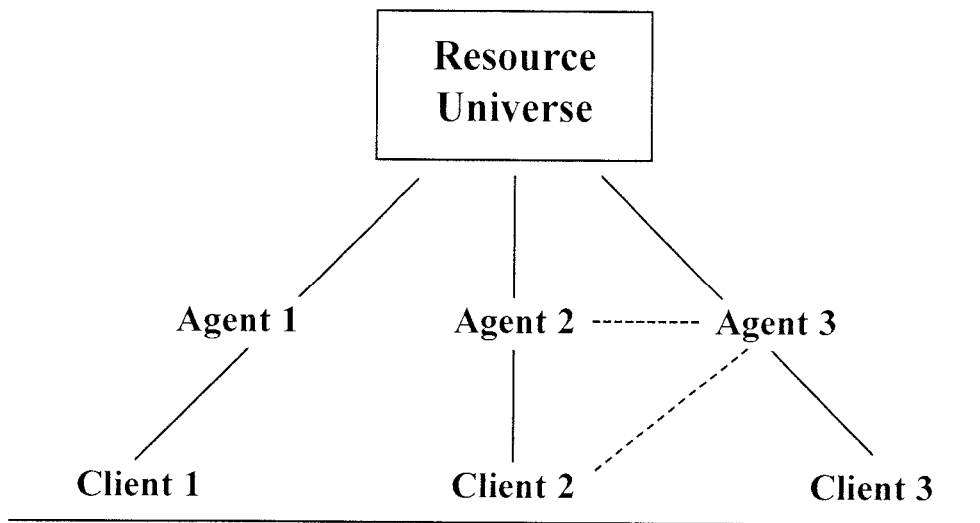
Resource Universe

Agent 1   Agent 2 ---------- Agent 3

Client 1   Client 2   Client 3

Figure 1. Agency

purposes of exchange) as part of the process in obtaining the primary resource. Money is therefore a frequent ancillary resource—although money can certainly also be, and often is, a primary resource. For librarians, information is the primary resource, while money is the ancillary resource; in the case of for-profit publishers, the opposite is true.

We should also distinguish between primary and ancillary clientele. Ancillary clientele often evolve as a result of agents contracting with each other. If, in figure 1, Agent 2 believes Agent 3 can provide access to some resources more effectively, then Agent 2 can contract with Agent 3 to provide access—through Agent 2—to Client 2. In that case, Client 3 remains Agent 3's primary client, while Client 2 becomes Agent 3's ancillary client. The danger for Agent 2 in such a process is, of course, disintermediation: Agent 3 might at some point move to provide resources directly to Client 2, without any longer involving Agent 2. In many respects, librarians are in the situation of Agent 2, contracting with Agent 3, the publisher, to provide users (Client 2) with access to needed scholarly resources.

Finally, there can also be primary and ancillary competitors. Primary competitors are those agents that are competing for essentially identical resources, in order to pass those resources to different (or in some cases conceivably even the same) clientele. Ancillary competitors are those agents that are competing only for similar resources. Ancillary competitors can therefore occasionally join forces temporarily, if such partnerships will enhance the capacity of each to compete with its primary competitor.

With this very simple model in mind, we can return to our original question: why should (academic) librarians, aside from ideological reasons, not simply step aside, as information moves increasingly online, and urge academic institu-

tions to outsource their information services? Are not businesses often more efficient than public institutions and their supporting information services? Are not academic librarians falling victim to the agent's delusion by insisting that their continued existence is in the best interest of scholarship and higher education? Would librarians serve students and scholars best by simply getting out of the way and turning over all information services to publisher-aggregators or other commercial information entrepreneurs?

No, of course not. To outsource most information resources to commercial agents would be a substantial, strategic error for the academy—mainly because of the distinction between primary and ancillary clientele. The primary clientele of academic libraries are local scholars and students. The primary clientele of publishers are their owners—often their shareholders. When it comes to making decisions between the two, publishers will inevitably, understandably, and justifiably make those decisions that are in the best interest of their primary clientele. We are used to this, of course, in the traditional environment—its chief manifestation being the so-called serials crisis; but the difficulty caused by this syndrome in the traditional environment, the extent to which it impedes scholars and students from being able to access the information they need for their work, is surely minor when compared to what we must expect to happen in an online environment. Those who own information control access to it. Information technology greatly enhances that control. If it is in the primary client's best interest for the publisher to use that control to restrict access to needed information as much as possible, in order to make such information scarce and to drive up its price, then that is exactly what will happen—and there is certainly no evidence in the behavior of specialized scholarly publishers in the traditional environment to lead us to believe that anything other than this will occur, when the majority of scholarly communication shifts online.

There is only one solution therefore to this problem, which we must keep repeating: it is the reappropriation of (at least a substantial portion of) specialized scholarly publishing by the academy. That there is really no other answer has been clear for many years. Despite a few notable but still limited attempts, however, success in achieving such reappropriation

continues to elude us. Why is it that academic librarians are having such difficulty promoting this crucial decision in the academy?

One reason for the delay is certainly the difficulty librarians have experienced in explaining the issues to working scholars, and it is those scholars who must ultimately endorse and effect such changes. Reappropriation will require, to be sure, deep-seated cultural adjustments within the academy—redefinitions, in effect, of what scholarship is, how it is done, how it is evaluated, and even what it means to be a scholar. The heavy dependence of the academy upon convention makes any such broad, cultural, or behavioral adjustment controversial and problematic.

Another reason for the academic library community's difficulty in leading the way toward reappropriation may be the naiveté that librarians occasionally exhibit with respect to publishing. Some librarians may tend to assume that the primary, if not only, purpose of publishing is information transfer—but there are in fact many reasons academic information is written and read, not all of which have directly to do with the topical information conveyed (see Rowland 1997).

Librarians may also overlook or underestimate the real role played by publishers. Contrary to what we may sometimes be inclined to think, the primary function of the scholarly publisher is not to provide access to content—that is not the value that publishers add and sell. We do not really pay for *what* is in their publications; what we pay for is rather *that* what is in their publications acquires a certain status and attracts a certain attention by virtue of its location in those publications. Attention, as noted above, is an important resource—and that capacity to draw attention is what is being sold and what we are buying. Drawing attention to a writing by virtue of its location in a particular journal or in a book published by a particular publisher is of enormous value both to the writer, because it brings prestige and notoriety, and to the reader, because it answers the reader's most important question: what to read, in what order. If therefore the academy in general and academic librarians in particular are truly interested in reappropriating some significant responsibility for specialized scholarly publishing, then the system created to replace the current publisher-based method must add the same or similar values for both writers and readers that publishers add now. Until methods are devised for adding such values, the goal of reappropriation will remain unfulfilled.

These then are a few reasons why librarians have not yet succeeded in bringing about the changes in the ownership of scholarly information that must take place if scholarship and higher education are to continue to flourish in an online environment. But even if such impediments were to be overcome—even if we could create an academy-based process of scholarly information exchange that provided

similar compensations to writers and similar services to readers as those offered by the current publisher-based process—is reappropriation of scholarly publishing by the academy a realistic and practical objective from the institutional perspective?

The Academy and the Politics of Implementation

The modern academy is, of course, many things—but certainly one of its key, defining dynamics is the tension or dichotomy between the institution and the scholarly disciplines. This dichotomy is most clearly manifested in the dual role of faculty as teachers, an institutional responsibility, and scholars, an activity undertaken normally within a discipline. While most scholars are certainly loyal to their institutions, it is probably the disciplines that generally have the higher status and attention. The discipline determines what the scholar does—and what he or she is: one is first and foremost a mathematician, an historian, a sociologist. The institution determines mainly *where* such scholarship is practiced.

On the other hand, there can be no question that the institution serves as the primary economic base for the whole academic enterprise. The individual institution markets a service: higher education. The compensation the institution receives, often from multiple sources, for that service normally exceeds the cost of providing it—and it is that surplus that forms a major part of the support for disciplinary research. From this purely economic perspective, therefore, the institution is always the base, and the disciplines are the superstructure (see figure 2).

What distinguishes institutions from disciplines? One of the basic qualities of the institution is its locale. It is situated in one or more physical, i.e., geographical, spaces where people come together. The discipline, on the other hand, is not local, but is rather topical—which is to say that it also resides in places, but those places are bibliographical rather than geographical. They are places in the literature—in bibliographical resources. To be a scholar in the discipline is to be recognized as one who knows such places, who defers to them as authorities, and who participates in their continued evolution. The institution, therefore, with its emphasis on instruction as primary service and its nature as a geographical location where people gather, can be viewed as a more subjective entity with a strong emphasis (even despite the advent of e-mail) on oral communication.

Orality provides a much more intense and active form of expression than graphic communication. It is far preferable for many forms of information exchange, especially instruction. The discipline, on the other hand, is primarily objective, in the sense that it is focused primarily upon the

	place	interaction	transfer	medium	focus
institution	local	subjective	instruction	oral	external
discipline	topical	objective	publication	graphic	object

Figure 2. Attributes of Institutions and Disciplines

topic that resides in a bibliographic place; and while disciplines certainly engage in some oral exchange, their primary means of formal communication is graphic, because graphic communication is most conducive to study, archiving, and "objective" analysis. Ong (1982, 46) writes: "Writing separates the knower from the known and thus sets up conditions for 'objectivity,' in the sense of personal disengagement or distancing."

One further distinction that might be drawn between the institution and the discipline is what could be called focus. Because the institution is essentially a nonprofit business with a primary service (higher education) to market, its success depends upon its ability to focus a great deal of its attention outside of itself. This is not to deny that there is much internal action in the institution (the political competition for scarce resources inside any institution can certainly be consuming and contentious), but the successful institution must and does make many of its key decisions based upon an assessment of things outside of itself: its potential clientele, its funding sources and prospects, and especially its competitors. By contrast, the discipline is for better or worse much more internally focused. It looks mainly at itself. There is, to be sure, always a certain evolving interdisciplinarity, but the view of the topical place as authority, as starting point for all discussion and research, means that the discipline, unlike the institution, is concerned mainly with its own values and objectives.

Having noted some of the characteristics of this dichotomy between institution and disciplines, we must also concede that the inexorable transition from the traditional to the online environment is markedly changing at least some aspects of this defining distinction. Geographical location as a fundamental feature of the institution is certainly challenged by the increasing shift toward distance education—for this is a form of education bounded less by geographical location than by something more closely resembling topical or bibliographical space. The atmosphere or tone of distance education may therefore be rather more objective than subjective.

Another change, as formal disciplinary communication moves increasingly online, may well be a substantial decline in the disciplinary preference for graphic communication. If it is indeed true that oral, or audio-visual, communication is a richer and more potent method of conveying information,

then we should expect more use of audio-visual communication for serious scholarly publication. Graphic language, writing, evolved almost certainly because oral language could not be transferred across space and time. Information technology has now to a great extent solved that problem, so that we can transfer audio-visual or multimedia communication across space and time as easily as graphic language—providing it with equal potential for storing and analysis. This does not mean that graphic language will have no place in formal, scholarly communication, of course—only that its dominance will likely subside. This trend will certainly be hastened by advances in information technology, because we must assume that voice activated computers—that both hear and speak to the user—will soon become common. Typing is very likely a twentieth century skill (Akst 1998). Information services, moreover, will also need to respond to this new multimedia communication with appropriate metadata—and this means not only better metadata to describe multimedia objects, but also probably the creation of multimedia metadata.

Despite all of these probable changes, however, it is highly unlikely that the educational institution as geographical entity is in any real jeopardy, despite the increasing significance of distance learning. Education requires a geographical location for people to gather—not only for students to interact with scholars but also for students to interact with each other. Effective education is always in part a peer social experience—and the support of that experience is likely a primary future purpose of libraries as well. The future function of libraries as geographical places, in other words, will presumably not be so much to connect people with resources—subjects with objects—as is the case in the traditional environment, for that can be done virtually anywhere in a networked society. The main purpose of the library as geographical place may rather be to serve as a location for students to gather and to interact as groups with information objects.

The concept of "simultaneous users" will change, therefore, from individuals using the same database in separate places to individuals using the same database together in the same place and learning from each other. Perhaps the most important implication of such a scenario is that if this does indeed happen, the distinction between the library and the classroom must necessarily begin to blur. In some distance-learning situations, students will come together in a place—the library/classroom—to work with distant scholars and with interactive information objects, and we must expect that their ability to shift back and forth between these will be enhanced by the continued evolution of information technology.

Will the outward focus of institutions (and the inward focus of disciplines) be altered by the electronic revolution? Probably not. Institutions remain fundamentally economic entities, so that their continued success requires an external focus. It is precisely this unavoidably outward perspective, however, which has perhaps the most serious implications for the long-term future of scholarship and higher education and their supporting information services. Institutions are externally focused in part because they recognize correctly that they are in competition with each other—for students, faculty, funding, prestige. Institutions use many of their available resources to engage in such competition and their libraries are certainly one of their most visible and comparable resources. It is essential that we recognize, however, that some actions or positions taken by the institution—which make complete sense for purposes of interinstitutional competition—can be antithetical and even detrimental to the broader mission of the academy, scholarship, and higher education. This problem is in fact one institutional manifestation of the agency delusion: it is the occasional assumption by the institution that anything that benefits the institution also benefits its scholars and students and even the academy as a whole. But that is not always the case.

One of the most striking, recent examples of this contradiction from the library perspective can be found in the adoption of new integrated library management systems by academic libraries around the country. There are a number of such systems commercially available—and there are at least six different commercial systems at this particular time that two or more prominent ARL libraries have purchased and installed.

The problem, of course, is that the market for such large library management systems is relatively small, even if expanded internationally—probably too small, in fact, to support so many different commercial systems. If that is indeed the case, then there can be no doubt that some of these systems may well soon go out of business, and the institutions that have invested in them may well lose millions of dollars. Librarians at each research library know, therefore, that the survival of the system that has been chosen depends in effect on the demise of other systems selected elsewhere. But why is this happening? To use large research libraries as an example, let us suppose that each ARL library ends up spending on average $2 million to implement its new system fully.

If that assumption is correct, it means that all ARL libraries together may well end up spending nearly a quarter of a billion dollars. One cannot help thinking what a fine library management system ARL libraries, working together, could have built for that amount. Such a system, designed jointly by all of the ARL libraries, would not be subject to the extreme vicissitudes of the marketplace, as all commercial systems are now and will continue to be in

future. And for that kind of money, the system could have been designed with sufficient flexibility that each institution could have undertaken the substantial customization needed to fit its particular local requirements. There are no doubt many reasons why research libraries have not pooled their resources to design a single, optimal system, but surely the most fundamental reason is that research libraries cannot in fact cooperate to any meaningful extent, because the institutions those libraries represent are engaged in a profound competition with one another, and libraries are key components of that competitive process.

Returning to figure 1 above, we must now acknowledge that, from an institutional standpoint, it is academic institutions that are the primary competitors. The primary competition is not between the academic institution and the commercial service provider, but rather, between one academic institution and another. Commercial information service providers function at most as ancillary competitors. What this means is that institutions, rather than partnering with each other in order to counter the detrimental practices of some external service providers such as specialized commercial scholarly publishers, are instead choosing in effect to partner with such external providers, in order to compete more effectively with each other. It is this institutional competition, therefore, that likely forms the single most significant impediment to the reappropriation of scholarly publishing by the academy.

One of the most pressing questions facing academic librarians at this time is how to relate to such a situation ideologically. If it is indeed ideology that will in future distinguish libraries from other services, such as commercial publishing, and if one of the library's most basic ideological tenets is the position that access to information should be a right and not a privilege, and if academic institutions use such access as a tool for competition with each other, then how should academic librarians respond?

Certainly librarians should not be opposed generally to interinstitutional competition—for to try to eliminate such competition would surely tear the very fabric of the academy and would ultimately result in a severe decline in the potential for disciplinary research. But we must at the same time somehow urge that the damage deriving from such a culture be acknowledged and that some restrictions be placed on the objects of interinstitutional competition.

If some forms of competition are ultimately injurious to scholarship and higher education, as is the case in the competition for access to scholarly information, then librarians must be prepared (if they are ideologically committed) to do whatever is necessary to create a structure in which information access is not counted as a tool in the competitive struggle among institutions. We must aim to create an academic culture in which the availability of needed information is guaranteed—so that interinstitutional competition

centers not, as it does now, on access to information, but rather exclusively upon the use to which such equitably accessible information is put. In order to promote action that will achieve this objective, the academy must move to redesign the process by which scholarly information is exchanged.

An Example of One Rational Process: The Designated Channel

Suppose we had the opportunity to design from scratch the primary means of scholarly communication in an online environment: what would it look like? Because of the disciplinary culture that dominates the academy, and because of the essentially inward focus of the disciplines, the most effective approach would be to create a designated channel or domain for each discipline. One large channel encompassing all disciplines, such as a National Electronic Article Repository as advocated by Schulenberg (1998) might serve as a place to start, but such a megachannel would still need to be organized into disciplinary subdivisions. Such channels would have both a political and a bibliographical value.

Politically the channels would serve to separate information access from the institution—although it would clearly be essential for institutions, as the economic base for scholarship, to provide financial support in some kind of membership capacity. To be a member—and all academic institutions would need to be members—would be to support full public access to all contents of the channels. Institutions would be able to provide the financial support necessary for such a network of channels, because institutions would no longer be compelled to purchase publications written by academic scholars.

A primary bibliographic value of the channel would be to provide the long sought one-stop shopping. Any reader wanting to understand what is known (in the sense of what is being published, what is being said publicly) in a discipline would consult the content of that channel. And if a scholar has a formal contribution to make about some aspect of the discipline, that is where he or she would place it. Far from impeding interdisciplinarity, such a system could promote borrowing from one discipline by another—especially if the kind of interoperability now being proposed by the Open Archives Initiative is achieved (see www.openarchives.org).

The key requirement for publication in any such channel would remain, as in the traditional environment, quality control. That is presently provided through peer review—a practice that works well for scholarly communication and which should be maintained and protected in the online environment. A trusted group of scholars in the discipline should take responsibility, probably on a rotating basis, for deciding which materials inserted into the designated chan-

nel should be certified. Certification should have two implications. First, it should mean that reputed scholars have decided that the item does indeed add substantial knowledge to the discipline. Second, certification should mean that academic information services, the library community, will take responsibility for the item, and will guarantee its access over time.

The organization, software, metadata, and archiving of such a designated channel should be the responsibility of academic information services. If an item submitted is not certified, that does not mean it would not be accessible through the channel, but only that it is not viewed as significant by the current peer reviewers, and that means it would not become the responsibility of information services.

If a writing is not certified, therefore, its maintenance remains the responsibility of the author. Certification of a publication should define it as a "core" item, in the sense that users should normally be encouraged to read it before uncertified materials. Normative metadata, informing the reader that certain items are currently viewed as being more important than others, should lead the reader to certified materials. While the uncertified publication might be found through keyword searching, the certified publication should be subject to indexing based upon a carefully controlled vocabulary, preferably arrived at in consultation with the author.

In all likelihood, most scholars today would admittedly object to such a process of publication, because it purposefully eliminates individual journals and publishers. The objection would derive from the fact that every discipline, as noted above, has a hierarchy of journals and publishers well known to all members of the discipline—and that hierarchy is presently used by writers to gain prestige and by readers to decide what to read in what order. How, then, could the designated channel replace (from the standpoint of both writers and readers) that service now provided by the separation and hierarchy of journals and publishers? The answer must be use-tracking.

We need to convince scholars that the quality of their work should be judged not by whether a few editors decide it is worth publishing in a particular journal—but rather by the extent and quality of its use by the scholarly community once it is published. To provide this level of use-tracking, the channel manager—academic information services—will need to create a method of tracking and computing the degree to which different publications are used in different ways. While privacy would obviously need to be protected, a use-tracking system should be designed to allow an author and all members of the discipline to know the extent to which other scholars in the discipline (or scholars in other disciplines, students, and members of the general public) access the publication. Metadata describing various aspects of the use of a particular certified publication should probably

include citation data, so that together such information can be used to estimate (or define) the publication's current and continued utility—although there is admittedly still much work to be done on how such user information is to be evaluated, for mere quantity of use does not necessarily indicate value (Cronin 1999).

While the author may provide an abstract of the uncertified publication, the library, in assuming responsibility for making the publication accessible, should perform what may possibly be its most important bibliographical function, the creation of a *synopsis*—although we must supply this term with a special meaning. By synopsis I mean a description of how the certified publication fits into or relates to all of the other publications that have been certified in the channel, i.e., the certified whole (see figure 3). The purpose of the synopsis should be in effect to stipulate what is new or unique in the publication.

As the designated channel grows in size, its use will become more complicated and congested. Information services will inevitably need to produce a new form of cumulative metadata, which we can call the surrogate whole. This surrogate whole provides a summary of the discipline, in effect presenting the user with an overview of all aspects of the discipline and permitting the user to move selectively from the surrogate whole into the certified whole to read particular publications. One primary function of synopses should be, therefore, to merge together in such a way as to form in their aggregate the surrogate whole. The base or model bibliographical format must shift under such circumstances from the catalog or bibliography, which dominates in the traditional environment, to the encyclopedia. The primary purpose of information services must be not to list publications by name, but rather to provide a narrative context for their content, while at the same time ensuring direct access to those publications at the user's discretion.

In the same way that we must expect the library and the classroom to merge in an increasingly online, distance education environment, we must also work to link more effectively the work of the scholar and information services. While it should be the work of information services in the future to define the discipline and its parameters (including the creation of such synoptic resources as textbooks), the work of the scholar should focus on extending such disciplinary parameters through the certification and creation of new publications.

Were the academy to decide to create such a network of designated channels, librarians would need to take the lead in partnering above all with university presses and probably unavoidably with scholarly societies. While some scholarly societies at the present time may not be interested in such partnerships, we should bear in mind that the "shareholders" of such societies are often mainly scholars in academic institutions. Here, as elsewhere, success will depend directly upon the academic library community's ability to explain the options and the vision to individual working scholars.

This concept of the designated channel is, needless to say, only one simple model of an academy-based process for scholarly information exchange in a primarily online environment. Which model is ultimately selected is of less importance. What matters, regardless of the method eventually chosen, is that scholarly information in the future be freely and openly accessible to all who need and want it, and that the natural competition among institutions be based upon the application of that information rather than access to it. It is only by such a refocusing of the processes and priorities of scholarly information exchange that the academy will be able to ensure that its primary clientele will continue to have in future the specialized information that it needs and deserves.

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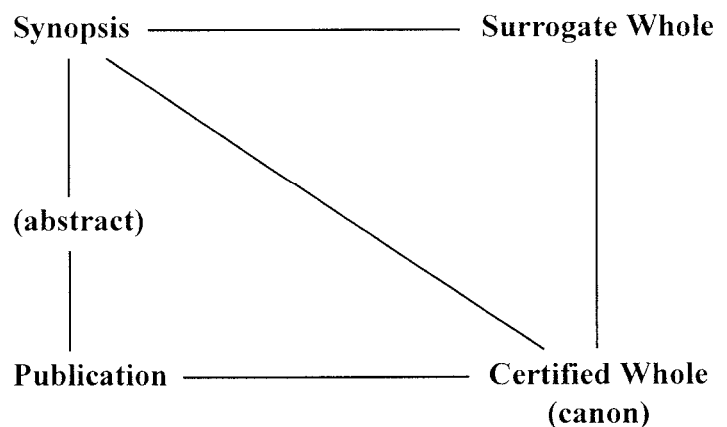

Figure 3. Designated Channel Model

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