SCHOLARLY PUBLISHING AND PUBLIC SERVICE

GÉRARD BOISMENU
GUYLAINE BEAUDRY

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THE PLACE OF NON-PROFIT JOURNALS

When called on to produce a picture of the players in the domain of scholarly journal publishing, the temptation is high to follow the easiest path and make conclusions without carefully examining the issue. For example, the well-known graph of the growth curves of costs for books or journal subscriptions shows, in the case of journals in particular, a growth rate that is distinctly higher than the inflation rate (Association of Research Libraries, 1999b; Case, 2001; Harrassowitz, 2004). For similar data from France, see the summary table on the change in average cost of serial subscriptions in university libraries in Chartron and Salaün (2000). These studies often lead to the hasty conclusion that the sector is under the complete control of the big commercial publishers. In this case, we could call “game over,” because only the big publishers are seen to have a stake in the leading journals on an international level. This interpretation offers a certain advantage, even if it stretches reality to a great degree. Its simplicity is seductive, whether in regard to the proposed assessment or to the solutions entailed. Unfortunately, reality is much more complex, as journals do exist that manage to dodge the big commercial publishers and, moreover, that occupy a central place in scientific journal communication.

TWO TYPES OF PAYERS, TWO TYPES OF PRACTICE

In a nutshell, we can summarize that journal publishing is characterized by a great duality, namely, that two types of players with two types of commercial practices coexist. First, there are the non-profit publishers and the so-called "responsible" publishers; they occupy a significant place in the international publishing arena and are also dominant in their national scientific-communication structures. These publishers are fragmented on an organizational level and have cost-recovery pricing policies. Commercial publishers, for their part, have a major place in the milieu of leading journals and impose oligopolistic structures; this translates into exorbitant prices, explaining in turn their outrageous profit margins. They also dominate commercially—so well that their credibility with institutions is well above their status as a publisher. They use marketing devices such as journal packages, with which they can ensure a vast distribution of their publications, in addition to attracting the best journals, in terms of both publisher and author. As is seen later, a journal published by a non-profit publisher costs many times less per character than a journal published by a commercial group in the same discipline. Similarly, we know that mergers of large commercial journal publishers lead to noticeable price increases (Abate, 1997; Chronicle of Higher Education, 1999; McCabe, 2001; Wyly, 1998).

The following two tables illustrate this state of affairs. The figures are based on a survey of the 25 leading journals (in terms of impact indicator[1]) of eight disciplines, representing the social sciences (sociology, political science, social services, and education), and the natural sciences (chemistry, physics, metallurgy, and electrical engineering) (Boismenu & Beaudry, 2004).

First, in Table 1, we observe that in this select group of internationally leading journals, the big commercial publishers control at most half of the journals surveyed; this leaves the other half to non-profit publishers. Secondly, we note that the impact indicator is higher overall for non-profit journals; this contradicts the popular opinion that the big commercial publishers, though perhaps not occupying the entire market, have a stronghold on the most renowned journals. We thus see that the impact of journals in the non-profit sector is superior to that of journals of the commercial sector.

Table 1: Relative impact and impact factor of leading journals according to type of publisher, 2000

	Social Sciences		Natural Sciences	
	Relative impact	**Impact factor, average**	**Relative impact**	**Impact factor, average**
University presses	20%	1.07	1%	n/a*
Learned societies	30%	1.35	55%	3.44
Commercial publishers	50%	0.88	44%	2.83

*The presence of only one university press is too marginal to be integrated into the calculations that follow. By itself, this university press can only represent one sector. Knowledge is "invoked to overcome perceived deficits in understanding or to circumvent potential barriers to learning" and might include, in this case, an ability to review the article's metadata, to tap into online critical discussions of the article's findings, and to consult media coverage of the article's topic (p. 199).

For the time being, we can conclude that commercial publishers, who disseminate the same kind of journals with the same characteristics as those of non-profit publishers, demand subscription prices that are generally three times higher than those of non-profit publishers; this applies to both the average and the median price. We remind the reader that we are dealing with a fairly homogenous sample of journals. Moreover, the impact of non-profit publishers' journals is larger than that of commercial publishers' journals. The discrepancy lies in the average prices for journals in the natural sciences (which are twice as high, not three times as high). If compared with the median price, it seems that certain learned societies are inspired by the commercial practices of oligopolistic publishers, but they are few. This explains the notable gap between average and median prices. At the same time, we cannot ignore that the prices charged in the social sciences and humanities are almost identical for university presses and learned societies. The data are comparable to the results published by Adler and Olsen (1999), Association of Research Libraries (1999a), Bergstrom (2001), Bergstrom (2002), Bergstrom and Bergstrom (2004), Brueggeman (1996), Chronicle of Higher Education (1999), Library Journal (1999), Van Orsdel and Born (2004), and Wilder (1998).

Table 2: Subscription prices of leading journals according to type of publisher, 2000

	Social Sciences		Natural Sciences	
	Average	**Median**	**Average**	**Median**
University presses	$145.39	$125.00	-	-
Learned societies	$128.32	$118.00	$899.91	$625.00
Commercial publishers	$411.25	$358.00	$1,969.14	$1,689.50

NATIONAL INFRASTRUCTURES OF SCIENTIFIC COMMUNICATION

If we look beyond this select sample of the most cited journals in their respective disciplines, we must recognize the fact that many journals operate within a "national" infrastructure of scientific communication. These journals have a mission of disseminating knowledge internationally (this goes without saying); however, they are not generally situated on the top of the pyramid of scientific communication. Therefore, when considering conditions in France or even Canada, we can say that we are dealing with weak publishing structures that are financially unstable. Their journals are mostly from the social sciences and humanities, and they are produced to a large proportion by small independent publishers, namely research laboratories, university departments, learned societies, university presses, and small private publishers. These journals nevertheless play an essential role. Aside from the fact that they participate in the development and distribution of knowledge in their respective societies, they are instruments of recognition, legitimation, acknowledgment, dissemination, and enhancement of scientific heritage. Moreover, they generally have a pronounced openness to the world. These journals charge prices lower than those of leading journals from non-profit or "responsible" publishers (which are on average US$135 per subscription).[2] In sum, the journal milieu is far from being as homogenous as is often portrayed, in the sense that it is far from limiting itself to journals controlled by the big commercial publishers. We have found at least as many independent journals published by non-profit or "responsible" publishers. The prices charged are a different issue. On this point we note that of those journals operating primarily in the national structure, a great quantity are from the social sciences and humanities and belong to the non-profit category. These are institutions that can and should become central players in the renewal of our scientific-communication structure. It would be entirely unrealistic to deny this fact in the evolution of our knowledge-dissemination structures. The question that arises now is how this reality can be reflected in the alternative models proposed to counter the big commercial publishers and the conditions they have been able to impose—conditions that have provoked budget crises at institutions working in the documentation of research. More precisely, one can pose the question in terms of asking what the proper place of non-profit journals is among the mechanisms created to counter the commercial oligopolies.

ESTIMATED EFFECTS OF ALTERNATIVE MODELS

Many approaches designed to dodge the oligopolistic practices of big commercial publishers have been presented. Of course, these models are not limited to this objective alone, because they also aim to exploit digital tools as much as possible in order to rethink modes of scientific communication. However, it is clear that the practices of big commercial publishers have provoked reflection on alternatives that could counter their harmful impact on the conditions for circulating research results. Four of these models are the subject of particular attention today. They are 1) the tendency on the part of libraries to build consortia, 2) the creation of new journals, 3) the adoption of open access, and 4) the setting up of collections (archives) of pre- and/or post-publications. These concepts will be discussed in relation to their effects on the journal milieu and their respective standing.

PURCHASE CONSORTIA

Libraries have reacted to the leverage of big commercial publishers and their oligopolistic practices and exorbitant profits by forming power relationships that limit the stranglehold. Consortium negotiations can take diverse forms depending on the country; however, generally they aim to establish better conditions for accessing information holdings than those proposed by the big commercial publishers. Because the consortia enable access for institutions that, on their own, could not afford these purchases, they expand access. The negotiation power that the libraries thus gain allows them to improve the price levels they obtain and to have better control of costs, especially through multi-year agreements. Moreover, the negotiated access conditions are generally more suitable for the libraries (permanent access, interlibrary loans, et cetera).

This avenue has great limits, however. In fact, agreements between consortia and big commercial publishers confirm the dependence of libraries on commercial publishers. This has the effect of institutionalizing the dominant position and oligopolistic practices of these publishers, which ultimately leads to having to pay exorbitant prices for access to journals. The simple feat of containing price increases does not really change the core of the problem. Nevertheless, it does momentarily mitigate the most devastating effects.

Cornell University Library recently (at the end of 2003) carried out a study on the situation; the study found that oligopolies' journal prices increase at a far faster rate than those of non-profit publishers (Cornell University Library, 2004). The result is that the library spends 1.7 million dollars for journals from the Elsevier package—an expenditure that represents less than 2% of journals for which the library has subscriptions, even though the cost of the package constitutes more than 20% of total expenses for journal purchases. These figures are a good demonstration of a common disproportion, especially since nothing justifies the exorbitant prices of commercial publishers. Certain other studies also prove the aforementioned state of affairs, namely that the oligopolies' journals do not supplant, in terms of impact, the competing journals from non-profit publishers (Bergstrom, 2001; Bergstrom, 2002). Cornell University has decided to "unbundle" the package of Elsevier journals and to make individualized purchases by title after having proceeded with a case-by-case justification. Moreover, the university publicly condemned the harsh penalty that Elsevier imposes when an institution unbundles the package. This initiative still remains an exception. But it is a clear indicator that awareness is growing significantly regarding the extremely sophisticated and aggressive marketing strategies of the big commercial publishers toward institutional buyers, which are largely libraries.

Despite all odds, the standard seems to be that the milieu is increasingly accepting parameters imposed by the scientific-publishing oligopolies in agreements negotiated with individual institutions or, rather, by library purchase-consortia. Yet this formula clearly disregards journals published by non-profit or "responsible" publishers because one of the conditions for being of interest to the consortia is size, meaning the number of journals that can be proposed for subscriptions. To the extent that, for the non-profit sector, this offer is only proposed by a very limited number of organizations or dissemination platforms (like Muse, for example), non-profit journals are not, structurally, sought as partners for consortia. This means that non-profit journals are doubly affected by the dominant commercial position of big publishers and the practices of institutional buyers (libraries): they most often come out on the losing side when subscriptions are reduced due to the position of and the demands of oligopolies. They also do not appear as stakeholders that are qualified to negotiate with consortia.

CREATION OF NEW JOURNALS

Another model, for some years now presented in the reports and activities of Scholarly Publishing and Academic Resources Coalition (SPARC, http://www.arl.org/sparc/core/index.asp?page=c1), contends that one way of confronting big oligopolies is to promote greater competition in the milieu. According to this theory, new technologies should be exploited to create a competitive market, by creating new journals in direct competition with the established journals. Yet this avenue, attractive at first, requires many resources and remains a risky operation. We point out that SPARC, in particular, emphasizes the development of non-profit structures in which university presses and learned societies remain first-rate players. Regardless of the fact that this model places a priority on creating competing new journals, the strategy raises many questions.

Is the main issue whether the competition posed by existing journals is sufficient to contest the journals from the oligopolies? To ask this question is also to ask if one has really assessed the extent of the existing competition against the big commercial publishers. In any event, a plethora of journals from all domains has sprouted in the past years, to the dismay even of libraries. In oligopolistic structures, the factors that allow big commercial publishers to impose extraordinary conditions and demands on buyers are the market structure, marketing conditions, and the disproportionate stronghold of the seller. Under current conditions, one would think that the creation of new journals would pose more of a challenge to non-profit journals, because they do not benefit from the same structural advantages in the market of scholarly documentation.

As the creation of new journals requires many resources, the endeavour does not seem to represent the best use of public funds, especially if the new journals are similar to already-existing ones. It is common knowledge that launching a new journal entails challenges in terms of establishing its status as a reference of scientific quality in the respective discipline. This "purgatory" every new journal experiences during its first years is not related to its being either in digital or paper format; it is related more to the nature of being new (Kiernan, 1999; Langston, 1996; Sweeney, 2000). In light of this, it seems more worthwhile to promote existing journals than to create new journals. This option does not require investments in the starting phases for new journals, and it avoids the much-despised duplication of journals. Nevertheless, success like that of the Public Library of Science (PloS) — where significant and diversified resources were brought in — will certainly have beneficial effects in the non-profit journals milieu.

OPEN ACCESS

The issue of access to scientific production has occupied a central place in public debate, especially in recent years. Open access is seen as a condition for maximizing the usage and impact of publications—which is entirely legitimate. The international movement that supports open access gained momentum with the launch of the Budapest Open Access Initiative. Nevertheless, this straightforward concept raises many questions; these questions were discussed, for example, in the online debate forum of the journal Nature in 2001 (http://www.nature.com/nature/debates/e-access). The application of this simple model is possibly the origin of the destabilization of the fragile equilibrium of non-profit or "responsible" journal publishers, because it involves a reengineering of the mobilization of resources. Based on the principle that "price-free is not cost-free," open access requires that one financially support journals that are to be freely disseminated. For many journals and non-profit or "responsible" publishers, this option puts their economic viability at issue. One possible model is to apply a "moving wall," disseminating articles dating 18 to 24 months old for free. Yet whatever virtue this option might have, it is not open access as such.

The Open Society Institute prepared a thorough report in 2004 on the possible conditions and financing packages for sustaining an open-access journal. This report, which is particularly rich in information, shows clearly that we are dealing with a complex matter (Open Society Institute, 2004). The economic model would have to ensure that the journal receives independent revenues, all the while guaranteeing external subsidies. Whether for independent revenues or for external financing, a great variety of means exist. Yet these require significant investment of effort and resources—all for results that remain uncertain. This is all the more disconcerting when concrete results are needed for forecasts. Table 3 serves to demonstrate this.

As inventive, ingenious, and potentially profitable as these concepts may be, their realization remains problematic for many journals. They demand know-how that is not inherent to non-profit publishing structures. Moreover, due to the extensive initial funding and resources required for their implementation and long-term operation, their net benefit is far from assured, and their ability to produce steady revenues is uncertain.

Paradoxically, these open-access initiatives, which aim to liberate the dissemination of journals from market forces, in practice oblige them to adopt a fierce marketing approach with regard to substituting revenue. (We refer here in particular to activities related to "Affinity Relationships," "Alternative Distributors," "Electronic Marketplace," and "Complementary Products.") At the same time, the other big prospect for financially supporting open access to journals consists of depending to a large degree, if not exclusively, on one form or another of patronage. If this is the avenue to take, it should be regulated by public and collective structures; otherwise, it would spur strong competition among journals to solicit the same sources. On a public and collective level, this model could be introduced in terms of public service, an aspect to which we will get back later.

Table 3: Potential open access business and/or funding models: An inventory

Self-generated Income	
Input Fees	• Article processing charges • Off-print sales
Affinity Relationships	• Advertising • Sponsorships • Conference co-hosting
Alternative Distributors	• Convenience format licences
Electronic Marketplace	• E-commerce • Community marketplace
Complementary Products	• Journal publication in off-line media • Other publications • Value-added fee-based services
Dues Surcharge	• Society-member dues to subsidize open access
External Subsidies	
Grants	• Foundation grants • Institutional grants and subsidies • Government grants
Contributions	• Gifts and fundraising • Voluntary contributions • In-kind contributions
Partnership	• Alliance between two or more complementary organizations

Open access, which allows the dissemination of knowledge without obstacles, is certainly a worthwhile objective. However, the means to achieve it are not easy to put into practice. We point out here that the eight major scholarly publishing houses whose journals are listed by SPARC in its website section “Alternative Publishing Options” have operated with filtered access, at least over the last years; the same applies to projects like Muse, BioOne, and Highwire Press. Finally, we underline that of SPARC’s list of “Current Publisher Partners,” 60% practise filtered access. These figures are important, because these are environments that promote open access or the cost-recovery approach. Moreover, these are organizations that possess, by and large, first-rate institutional and intellectual resources, if compared with their counterparts on an international level. What is clear, in any event, is that open-access initiatives solicit the participation of “responsible” or non-profit publishers and not the sector that is mainly responsible for the crisis of access to research results, that is to say, the big commercial publishers.

INSTITUTIONAL REPOSITORIES

One of the other means of restructuring scientific communication consists of generating and interconnecting new institutional repositories, taking universities as the first and most central example. Clifford A. Lynch (2003) contends that these repositories assure the institutional preservation of its members’ productions, yet that they also contribute to a change in the scientific-communication infrastructure by assuring control of the university milieu and access to research and by developing a decentralized communication structure. Stevan Harnad (2003), for his part, emphasizes the capacity, through unobstructed access, to maximize user access and the impact of research, all the while referring to primarily conventional forms of publishing. In a systematic way, he argues, the dissemination of institutional repositories through open access will have a negative impact on toll access. In principle, these repositories consolidate all publications that authors wish to store there, including journal articles. This article-author initiative is received in varying ways by publishers; however, the negative perception of some years ago seems to have evolved and softened, though it has not disappeared entirely. In a way, these repositories are potential competitors to publishers, as they offer similar content. Reactions to this model are clearly related to the structural position that the respective parties hold. The big commercial publishers aim to contain this movement as much as possible, going so far as to integrate pre-publication sites into their information system. However, by and large, these big oligopolies currently have the capacity to confront this challenge posed by the institutional repositories; their dominant market position has thus not diminished in any way. Non-profit publishers, for their part, may legitimately fear that institutional repositories are another destabilizing agent that threatens their ability to cover costs. In addition, with fairly limited public funds for non-profit or "responsible" journal publishers, these publishers may view the support of institutional repositories by public resources as competition.

It is difficult to evaluate the potential collateral impact of institutional repositories; only time will tell. However, the real and concrete development of these collections and the relative place of journal articles in them are a crucial given. Similarly, it is important to observe how the meaning of the article and/or journal will evolve as a primary unit of reference in documentary research, and the relative efficacy of repositories to satisfy research requests. In other words, will journal-dissemination platforms continue to be the first-rate tools for researchers?

A GOAL WORTH STRIVING FOR?

This quick overview demands further specification. The new digital world in which we find ourselves makes possible, and even calls for, a renewal of the forms and conditions of scientific communication. With scientific-publishing oligopolies overpowering university institutions and compromising access to research results, the possibilities that are opening up should make these big publishers accountable or to at least confront them directly. But will the alternative projects be able to reach the goals they are striving for?

The big publishers constitute an incomparable economic, organizational, and marketing force, demonstrating to this day a capacity to adapt and to push back the biggest threats. Though not engraved in stone, their stronghold is far from being seriously destabilized. On the other hand, non-profit or "responsible" publishers are much more vulnerable and affected by these alternative initiatives; theoretically, they are directly or indirectly the first targets to be hit. This vulnerability comes from their relatively limited resources, as well as from their weak negotiating position, which is related to the fragmentation that characterizes the non-profit milieu. Moreover, these non-profit publishers are politically and socially much more exposed to critique. Without doubt, this is due to their direct contact with the university community; in fact, they are the players in closest proximity. They are, for example, more directly called upon to provide open access than are the big commercial publishers (who one can hardly imagine engaging in such an endeavour).

We thus have to ask ourselves whether a poorly led offensive against the big commercial publishers could only serve to strengthen them. In this sense, the simplistic image questioned at the beginning of this article, namely that the big commercial publishers occupy the entire market, could become a self-fulfilling prophecy.

It is in this context that we can interpret the conclusions of Michael Keller, the publisher of HighWire Press, who comments in Nature on the subject of various initiatives, among them open access: "Ironically, the combination of changes... reduces the competitiveness of responsible publishers, and reduce their utility to universities and the scientific community." He continues: "Moreover, a key objective should be to seek ways to improve the competitive position of scholarly societies and other responsible publishers—both in terms of economics, and Internet functionality—against that of irresponsible publishers. In this way, the beneficial effects of checks and balances in scientific scholarship can be reasserted, and the negative effect of the serials crisis redressed" (2001, p. 27). We will discuss our reflections on this type of action in the third part of this article.

ACTION IN TERMS OF PUBLIC SERVICE

Much effort is expended to develop alternative projects for scientific communication, but too little is done to bring forth solid action against the harmful effects of the publishing oligopolies. We have seen that the non-profit journal sector, including responsible publishers, occupies a central place in scientific communication. From this we could logically conclude that this sector should also play a strategic role in the restructuring of current practices and modes of organization. Efforts to limit the market dominance of big publishers should certainly not be restricted to manoeuvres that bypass publishers' commercial appetites. They should, rather, focus on supporting channels of scientific communication that have demonstrated their quality, their impact, and their place in the university community. In this sense, there is no need whatsoever, most of the time, to create new journals; rather, we must focus on those that already occupy an enviable and central place in the dissemination of research and whose mission is not centred on profitability. For this, we must part from the simplistic image that is too often purported to be the reality, for opposing reasons, by both the big commercial publishers and by partisans of alternative communication.

AN INCLUSIVE PUBLIC STRATEGY

Having almost ten years of experience relating to all aspects of this field, we conclude that we are now faced with the need to develop an inclusive public strategy for scientific communication that would involve diverse types of publications, among them journals. It is the latter that we will focus on in this section. The public authorities should not replace the organizations and players in this sector, but rather assume the role of a major partner—a role that is nonetheless essential. In view of the big commercial groups that charge exorbitant prices and pocket disproportionate profit margins, responsible and non-profit publishers must find the resources to sustain an alternative that is responsible, professional, and positioned to act as a genuine alternative in the real world. In the United States, initiatives have emerged that stand apart from oligopolistic practices and that show promise for establishing alternative journal publishing and dissemination structures. These initiatives highlight the role played by patrons who act as private sponsors for initiatives with a public mission. The social fabric that supports private initiatives for public benefit is not transferable to other countries, remaining an atypical phenomenon. Moreover, it should be up to public authorities to promote public services.

We currently find ourselves in the midst of a neo-liberal upsurge, with all the underlying powerlessness and fervent, incantatory credos that go with it. Since it is well known that nature abhors a vacuum, public inaction gives free rein to oligopolistic publishing initiatives and their commercialized, consumerist agenda for libraries. Public inaction is tantamount to rolling out the red carpet for the private sector to appropriate scientific communication at the expense of the public interest. The abdication of responsibility by public authorities has a cost. We can only hope we will not be called upon to pay the bill in the near future. Getting back to our main point, the situations in many countries show that, while the political will is not always sufficient (as shown by the interruption of the Figaro project in Europe), it is nevertheless essential for mounting networked action involving key players in responsible, non-profit scholarly publishing.

A series of components should take part in the collaboration with public authorities. To begin with—and this is not only symbolic—journals, on the grounds of their mission and their role in knowledge dissemination, should be considered as a public good. Consequently, it would then be up to the public authorities to ensure that this public good is as accessible as possible to the greatest number of people, and in a stable and professional environment. This applies to all the public goods for which the public authorities assume responsibility. In several countries this acknowledgment has already been made, in part, by financial subsidies granted to journals. However, this support has not developed much this past decade, despite the radical transformation of production and dissemination methods since the onset of the digital age. Current support actions are no longer sufficient, as the new context requires that the journal milieu receive support that will enable it to enter the digital world in a concrete and professional way.

Whatever shape this infrastructure may take, its objective should be to offer a reliable alternative to the big commercial publishers by developing a professional structure for journals and by promoting the networking of partners on a global level. This involves developing a global vision by following the principles of public service. This collective vision should, moreover, go hand in hand with the protection of the autonomy of journals, which are the guarantors for the scientific quality, validity, and legitimacy of their content. One can imagine that instead of replacing the players, public authorities would be much better positioned to become involved with the set of players that are already at work.

In this sense, it is advisable to distinguish from among all players those who are "responsible" publishers and those who contribute to the non-profit sector. These are "natural allies," to the extent that they essentially seek only to cover their costs, rather than capitalize on profit. Therefore, it is possible to try to work with these stakeholders in partnership and thus to establish specifications and standards that allow objectives, responsibilities, means, and a plan of activities to be set up. This means that it would also be possible to work with counterparts who have the status of "private players" (independent publishers, for example) by imposing certain conditions, without this being understood as contradictory behaviour.

On the whole, an action such as the one described above can only have impact and credibility if the public authorities (or public sponsor) are in a position to commit themselves on a long-term basis and, in this way, establish a social pact with the journal milieu and its diverse players. We remind the reader that we are dealing with journal publishing, an activity that takes place in time. A journal is also a collection the value of which is defined by its constituent elements, as well as by its editorial quality and validating agency. A journal is, moreover, a company that plans ahead and must ensure its conditions for survival, not only in the present, but also for the future. To this end, decisions regarding a journal's conditions for survival and the participation of its public partners should be made from a perspective of predictability and stability. It is in this context that we speak of the need for a social pact between the journal milieu and public authorities.

The sources outlined in the "External Subsidies" section of the table presented by the Open Society Institute (see Table 3) would be the most promising here and, above all, the most congruent with the journals' main mission, without inducing the marketing behaviour required by the strategies in the "Self-generated Income" section. The latter section is the one where public authorities should be legitimately solicited. On the whole, public authorities would face smaller expenditures following alternative models than subjecting themselves, as is presently the case, to the price structures imposed by the big scholarly publishing oligopolies —price structures that are in the process of eliminating scholarly institutions.

NETWORKS AS A STRATEGIC OPTION

On the other hand, the introduction of digital models allows us to reflect on the dissemination of research results from a different perspective, namely that of networks. The introduction of digital technology can go hand in hand with continuing the existing fragmentation of publishing sites or, on the contrary, with the consolidation of the latter in a voluntary and mutually advantageous form. This consolidation can take the form of implementing services that are sustainable and that have professional standards for the digital exploitation of journals, whether for their production or dissemination. In the latter case, dissemination is amplified by the establishment of dissemination structures that consolidate a package of journals and offer researchers consultation and exploitation tools that facilitate research and constitute significant added value. Some examples that come to mind are Muse, HighWire Press, BioOne, and Érudit.

This second stage in the existence of a network, which comes after the establishment of an infrastructure with a public and collective mission, pursues a fundamental dissemination strategy. As noted by Manuel Castells, "If we do not concern ourselves with networks, the networks, for their part, will concern themselves with us. Whoever wishes to survive in society in this day and age will unavoidably be confronted with a society of networks" (2001, p. 342). More precisely, networks of dissemination platforms contribute greatly to exploiting the functionalities and logic of digital structures, which in turn promotes an alternative public service to counter the market dominance of oligopolistic publishers. These networks, connecting rich and diversified collections, maximize the dissemination of an impressive body of knowledge by distributing it through many channels (Fletcher, 1999). The development of the non-profit sector is in no way dependent on centralized mega-structures. In fact, a reliable network with a collaboration protocol would offer a more efficient way to create a solid alternative within a short time frame.

In the midst of the development of this network, one should expect the concurrent development of know-how in the university milieu, which should be thought of in complementary rather than competitive terms. We are thinking here of developing norms of interoperability that would allow the maximum exploitation of research. This would include, at least, full-text searches, in addition to the collaborative development of tools (for production and dissemination platforms) and the transfer of expertise between the network components. These developments would provide for the mobilization of a critical mass of expertise, financial and institutional resources, and complementary collections. All these elements contribute to establishing a credible alternative that is in the position to gain leverage with institutions specialized in knowledge dissemination. In addition, a network of non-profit journals would be able to use non-commercial channels to gain exposure for its collections, competing with the journals of big commercial publishers that could often be less prestigious. This would diminish concurrently the vulnerability of the non-profit journal milieu with regard to alternative models deployed to face the crisis of scientific communication.

Integrating dissemination platforms into the network also has a linguistic dimension, in the sense that it can give consistency to language subgroups in scientific communication. This considerably strengthens the multilingual nature of the Internet. For example, this structure allows the Francophone world to meet the challenge of global dissemination of scholarly documents in their language through networking and the exploitation of the logic and possibilities of digital technology. Far from being boxed into a restricted universe, a language subgroup of scientific communication thus gives itself the means to exist and to establish itself on the World Wide Web with the mass effect that a large journal collection can achieve.

This aspect is of particular value to language groups that are not dominant in scientific communication, as is the case for the French language. Nevertheless, the topic of networks is equally relevant to all, including the English-speaking public. The aim of networks is to ensure journals' survival and to function in knowledge dissemination channels as first-rate partners in global research. Furthermore, we should not underestimate the contribution that a multilingual network makes to the heritage of scientific research on an international level.

An understanding of networks cannot be limited to organizational agreements; it must also show an interest in developing digital know-how that is appropriate for scholarly documentation and for initiating research activities. This also implies incorporating, often with a distributed model, diversified and multidisciplinary know-how to account for production, dissemination, and integration into an infrastructure for scholarly publishing and research. We refer here to a team of people that cannot be reduced to a single professional profile. Our discussion of the transformation of working conditions and publishing sites applies to the whole set of players participating in the development of the information system.

We may speculate on the conditions for realizing this prospective action. What is important is that an alternative based on the spirit of public service is possible by relying on the players already in place and by counting on the responsibility of public authorities for research dissemination in our knowledge society. Not much is needed to radically change the landscape and to eradicate the simplistic image of the battle lost to the big oligopolies. By embracing and acknowledging the complexity of the existing situation, a new landscape can be founded, this time with distinctly superior means and an optimal use of the logic of digital technology.

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1 The impact factor must be used cautiously. In this context, the measure allowed us to select the journals that apparently had a dominant position in the disciplines and to select a qualified sample for each one. Van Orsdel and Born (2004) are also using ISI databases to provide the titles for their survey.

2 The discussion in this section is based on a review of different sets of data, our participation in the university community, the many discussions we have had with journal editors, and our involvement in journal publishing in recent years. The analysis is thus based on a compilation of data and the observations and experience derived from our presence in the community. See also Godin, Archambault, & Vallières (2000), Godin (2002), and Lorimer & Lindsay (2003).