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Delivering Open Access: From Promise to Practice

Derek Law predicts how the open access agenda will develop over the next ten years.

Introduction

Training as a mediaeval historian encourages one to look backwards before looking forwards. In doing so it is difficult to overestimate the impact of technology push. The combination of increased speed, increased power and increased storage has transformed the opportunities available to the community at large and academics in particular. Twenty years ago we saw the first CD-ROMs with 650Mb capacity; today a standard entry-level PC will have 80Gb of storage, while 200-1000Gb is not uncommon. Indeed the iPod revolution has made higher storage capacity a requirement for a much larger number of users. Ten years ago NCSA Mosaic was still a novelty and the Web barely acknowledged. FTP, WAIS (Wide Area Information Servers) and Gopher were still the technologies of choice. Ten years ago Google did not exist. Ten years ago Superjanet2 was launched with speeds ranging from 8-155Mb while dial-up from home could reach as much as 28Kb; today a 100Gb campus network is commonplace and wireless broadband in the home quite normal. It seems not unreasonable to claim that information technologies have been growing at an explosive rate. We are in a paradigm shift and at some point in the next decade we will reach what will be seen as a tipping point in the provision of content.

During that period the nature of research has also changed, or at least developed. Technology has produced a large development of complicated instrumentation which produces deluges of information. The Internet has encouraged the globalisation of research so that international and inter-institutional research is normal. It has also allowed the development of the concept of the a-literate researcher to move from the improbable to the possible. Pluchak memorably coined the phrase 'the satisfied inept' for those who relied unthinkingly on the Web and the a-literate are a logical, if not yet inevitable consequence of this. It is almost conceivable that a scientist could read no literature, but rely on networking and video links to gain information; to devise and conduct experiments and analysis on sophisticated instrumentation and to spread the results on the Web and through conferences. Because this can happen does not mean it will, of course, but that scholarly paradigm which has existed for centuries does now have an alternative. The journal was created in a text-based society where communication of complicated arguments could only be done through the postal service. The development of the Internet which allows complicated datasets and argument to be distributed instantly and simultaneously to everyone interested gives a fundamentally different set of requirements.

Open Access

It is then perhaps something of a paradox that the Open Access debate has made much less marked progress in the last decade. The tireless proselytising of a host of John the Baptist-like figures from Paul Ginsparg to Stevan Harnad has been unceasing throughout that period, has won many battles, has chipped away at the edifice of scholarly communication, has moved the debate from the fringes of discourse to the mainstream, has probably won the argument, but so far has not won the war. A decade ago Joshua Lederberg, the eminent scientist and Nobel prize-winner talked of the change in technology at a UNESCO sponsored meeting [1] and said:

> '*Now what are some of the foreseeable consequences? I really have nothing to ask of the print publishers or of the "for profit" electronic purveyors. Unless they are very selective - and they sometimes will be - about their value added, they will fall of their own weight as scientists become empowered to manage their own communications without the benefit of intermediaries.*'

This simply has not happened in mainstream science. Although Swan's work [2] has demonstrated the willingness of researchers to deposit articles in repositories, this has tended to be a passive rather than an active agreement, judging by the thin population of most institutional repositories. Open Access journals have also grown in numbers. In November 2005, the [Directory of Open Access Journals](#) [3] lists almost 1900 open access journals. But open access is a long way from being at the heart of scholarly communication and is ranged against large commercial forces in the STM (Scientific, Technical and Medical) publishing area; and although optimists will feel that the tide has turned on Open Access and that moves such as the much heralded but still awaited Research Councils' mandating of deposit will tip the balance, it has to be acknowledged that the UK scientific community looks more like donkeys led by lions (to paraphrase Max Hoffmann) than the reverse. The community looks remarkably unmoved by considerations of the future of scholarly communication. And yet it is common ground between at least some publishers and some proponents of open access that the present model is disintegrating and cannot survive [4]. It can be argued that the position in the UK is skewed by the Research Assessment Exercise. If that is the case it hardly affects what is a global problem and in any case should be self-correcting in two years time when the RAE is over. In sum then Open Access has made good progress (although as the mailing lists show there remains substantial confusion between the green and gold routes, between Open Access and Open Archives), but commercial STM publishing remains in rude and profitable health. And in an expanding market of scientific communication the commercial sector also continues to grow.

Change Drivers

Google is a concept and product which librarians love to hate as an example of dumbing down. But its phenomenal growth suggests that it understands its market, while its commitment to new product

development, though scattergun in nature, has rapidly developed services which in some cases have become very popular very quickly. It has effortlessly achieved a dominant position in the marketplace and is now a fundamental tool for teaching and research - as well as coping with everyday life. It has clearly demonstrated its capacity to mould user behaviour. Google's plan to digitise major library collections has promptly landed it with a legal action, but it has the financial power to fight this and to make huge amounts of data available. Coupled with the ability of personal technologies to store and display such data, there is the potential for radical change through the so-called googlization of research.

The Analogy of the Entertainment Industry

There is an interesting and perhaps instructive comparison to be made with the entertainment industry. That industry has been obsessed with copyright since personal domestic players became widespread. From tape recording to video cassettes and DVD the industry has attempted to crack down on illicit copying and use of copyright material. A vast bureaucracy was created to stop people doing things. Peer to peer downloading of music files was at first seen as simply the latest manifestation of the public's wilful contravention of legislation on ownership. Napster began this in 1999 through a central server and was first taken to court then taken over. But very quickly a series of true peer-to-peer open source services came into being. The response of the entertainment industry remained however that of prevention. Then came the iPod. Apple has transformed the industry by transforming the model from the album to the single track and making purchase both cheap and easy. As a result revenue streams to the major companies have been transformed with music sales growing at a phenomenal rate. The newly launched video iPod will no doubt do the same for film and television material. The technology and a simple but imaginative shift of the model has created a new approach, a new market and the corporate muscle to drive change. The cynical might also draw a parallel with the claim of music publishers to be acting in the interests of their bands and the claims of STM publishers to be acting in support of their authors. There is also a body of evidence that Napster and others actually promoted sales of legitimate products and that the slump in CD sales followed the sacking of Napster. In fact there is a widespread belief that it is counterfeiting which is the only real threat.

Google Scholar

Within a few months of its launch in November 2004, Google Scholar has established itself as a rival to powerful multinational companies such as Thomson and Elsevier that offer huge (and, for libraries, hugely expensive) databases of scholarly material [5]. Google's somewhat grandiose mission is 'to organise the world's information and make it universally accessible and useful.' With a market valuation in July of more than $US 80 billion and quarterly earnings of $US 343 million, the company is in a far better financial position than any library. It is at least worth speculating whether Google's mission, its ever expanding set of new products such as Google Scholar and its financial muscle will also begin to provide a real and readily available alternative to the tyranny of citation indices and whether it will prove, like the iPod, to be the technical platform which encourages desirable change to happen.

The Small Country Effect

Another key driver is national ambition of small countries. A number of programmes have begun in Europe [6][7] in countries as disparate as the Netherlands, Portugal and Scotland, where Open Access is seen as a key element of national strategy to cover everything from the dissemination of publicly funded research to encouraging inward investment. The DARE Project in the Netherlands is the most developed of such programmes but pragmatism rather than optimism encourages one to believe that other countries will see advantage in co-ordinating and optimising the dissemination of their research. In Europe research accounts for between 2-4% of GDP, a figure large enough to warrant government policy initiatives.

The Needs of the Researcher

The whole concept of information overload is also relevant. Increasingly researchers need intelligent access to a spectrum of news, datasets, journal articles, abstracts and other forms of information where some form of filtering is applied in advance. While librarians have played with the concept of moving from just-in-case to just-in-time libraries, they have failed to understand that for most purposes what the user requires is just enough to complete the task in hand. There has been a very substantial debate about the future of the journal and how it should be funded and made available, but very little debate over whether the journal will continue to be the standard form of scholarly communication. As technology changes the way in which research is conducted, there is a need to consider how far the journal article is the appropriate format for reporting research outcomes. Coupled with this is the future of the library. There is a substantial and growing literature on this subject [8], at least part of which can be summarised as a move from content to service. This will both contribute to the demise of the journal as we know it and will see the library's role as providing the infrastructure and services which allow the intelligent access which will further change the model of scholarly communication.

Conclusion

Open Access is a battle where a ragamuffin band of academics and librarians are challenging the imperial pomp of billion dollar global companies. In those terms the contest is both unequal and unwinnable, since too much inertia is built into the system. However, as this article has tried to show there are powerful drivers and change agents in place - technology; the nature of research; Google; national interest - which coupled with the sheer bloody-mindedness and persistence of the proponents of open access will lead to its growth as the dominant form of scholarly discourse. Whether that scholarly discourse will still include the journal article as we know it is a much more difficult question.

Predicting the future is a hopeless task, but perhaps a necessary one. Mitchell [9] was quoted on his experiences with futures research concerning the digital divide. He explained that when considering this

> '*it becomes obvious that neither the past nor the future actually exists; only memories, projections, and perceptions exist. However, both the past and the future guide current action. When blended with the topics of social change and leadership, the value of futures*

research emerges as an absolute imperative. Without the ability to plan, project, and forecast, the ability to prepare for the future is hopeless. However, without hope, there is no future'.

On the other hand, one can perhaps do no better than heed Winston Churchill's words that a good politician should have the ability to foretell what is going to happen next week, next month and next year. And afterwards to explain why it did not happen.

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