

THE 'ALEXANDRIAN' LIBRARY, DIGITAL RESOURCES, AND THE SHRINKING PUBLIC DOMAIN: A CRITIQUE OF THE CURRENT MODEL FOR DELIVERING ACADEMIC INFORMATION IN AFRICA¹

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'Information and knowledge are the thermonuclear competitive weapons of our time. Knowledge is more valuable and more powerful than natural resources, big factories, or fat bankrolls. In industry after industry, success comes to the companies that have the best information or wield it most effectively - not necessarily the companies with the most muscle.'³

ABSTRACT

In this article I argue that the classical growth model for academic libraries has been shown, by and large, not to be sustainable in less developed and indebted countries, especially in Africa, and may be reaching the end of its useful life even in advanced industrial societies. Libraries in Africa have been shown to be hard to sustain, not in the library literature, which presents by-and-large 'a fairly rosy and encouraging picture of the state of libraries,' and not *theoretically*, but *empirically* in the reality of empty shelves and worn-out book stock in university libraries across the continent.⁴

¹ Some sections of this article first appeared in a paper given to a conference on 'The Electronic Library as a Gateway to Information: Resource Sharing and User Services in the Electronic Library,' Lund University, Sweden, 2 to 6 June 1998. I am grateful to Al Kagan for commenting on an intermediate draft. For the original and more pessimistic text, see Colin Darch, 'The shrinking public domain and the unsustainable library,' available at <http://www.lub.lu.se/sida/papers/darch.html> [accessed 4 January 2001]. A slide presentation of the same material is at [http://www.lub.lu.se/sida/Lund presentation/sld001.htm](http://www.lub.lu.se/sida/Lund%20presentation/sld001.htm). [accessed 19 January 2001].

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³ Thomas A. Stewart, *Intellectual capital: the new wealth of organizations* (London: Nicholas Brealey, 1997), p.ix.

⁴ Diana Rosenberg, 'Can libraries in Africa ever be sustainable?' *Information Development* vol.10, no.4 (December 1994), p.247.

In general, the problems of attempting unlimited growth in individual print-based libraries are not hard to see, and have been predicted in the literature at various periods. However, our contemporary context is the emergence of post-industrial or knowledge-based societies in the wealthy North, characterised by rapid but *fragmented* technological change. In Africa, the post-colonial state is in a condition of collapse, economically marginalized and overwhelmed by indebtedness. Since the fall of the socialist bloc, Northern capitalism has come to dominate the world economy, a phenomenon usually referred to unproblematically

as 'globalisation.' Unsurprisingly, in the post-industrial or 'information' society, knowledge is seen as a form of capital - or even as a weapon, as the astonishing quotation above indicates and its exclusive possession confers competitive advantage in the marketplace.⁵ Thus, we are not only witnessing a huge *quantitative increase* in the volume of available information, but also a huge increase in the cost of access to it, *and* in the additional costs of the new ability to manipulate it electronically.⁶ This increase occurs both through and alongside a systematic process of privatisation or commodification of information. This began in areas such as patents, but is now also impacting directly on library practice in terms of limitations on fair use copying, impermanent and restricted access to purchased electronic resources, restrictions on end-users, facilitation of electronic micro-payments, and so forth. Every one of these changes hits African libraries hardest of all.

The phenomenon of 'globalisation,' intersecting with the new information and communication technologies (ICTs) *manifests itself concretely* in the arena of information as the Web and the Internet. The uneven character of globalisation and its contradictions are also made concrete. Thus, the growth of e-commerce and the ubiquity of the 'dot com' domains may be an expression of the growing commodification even of low-cost digitally-stored information, but I shall argue that the present reality of the Internet, and its possible future, may leave some room for alternative scenarios. Nevertheless, if individual print libraries are unsustainable in Africa under present conditions, and if electronic resources cannot be widely accessed because of infrastructural weaknesses, a reconceptualisation of what constitutes library activity may be required to meet, at a strategic level, the information requirements of a truly independent African scholarship in both teaching and research.

⁵ I have argued elsewhere that librarians in general tend to overestimate the social value of information and to ignore its economic value. See Darch, 'The economics of information and the information society: is social equity still on the agenda in the 1990s?' *Innovation* no.10 (June 1995), p.3-12

⁶ At present many publishers require academic libraries to purchase *both* print and electronic formats. This is obviously expensive - it involves traditional management and storage costs *as well as* the pricey campus-wide IT infrastructure needed for electronic access to remote databases.

Libraries in the South: Are they Unsustainable?

In the South, academic libraries are usually recent foundations, closely modelled on Northern exemplars. Libraries and information systems in poorer African countries and in LDC's in other parts of the world have difficulty sustaining themselves financially and organisationally at any level of growth at all, and have been in that situation for some time. This phenomenon is not in itself essentially a characteristic of poverty, although poverty exacerbates it. Rather, it is implicit in the Alexandrian library model, in which the ideal library collects 'everything,' just in case, and grows forever.

The ancient Library of Alexandria, famously allowed to burn by Julius Caesar in 47 BC, serves as a metaphor for the contested growth paths of such modern academic libraries.⁷ In the legend, the Greco-Egyptian rulers of ancient Egypt acquired manuscript texts by all possible methods, fair or foul, and so the library is believed by some accounts to have held over half a million scrolls in its collections by the time the Cyrene poet Callimachus became the 'first classifier.' When books were produced by scribes copying out the texts by hand, the idea of collecting 'everything' must have seemed feasible, especially with solid financial and political backing from a ruthless state apparatus.

The modern discussion about the sustainability of this 'Alexandrian model' - the indefinitely growing print storehouse - is not new, even in the developed world. In 1975, Daniel Gore condemned 'the unexamined faith that to be good a library *must* be vast and always growing,' arguing that it rested on 'nothing more solid than mistaken intuition.'⁸ Whether such intuition is in fact mistaken about *quality*, as opposed to *economic viability*, remains to be proven; certainly many users appreciate bigger facilities where their chances of finding particular materials on the shelves are presumably enhanced.⁹

Not surprisingly, Gore's insights have met with strong resistance and have not had much impact on library practice in the United States - or even, unexpectedly, in Africa. Explaining this, Andrew Odlyzko points to the 'understandable inertia' of successful and developed library systems, based on the existence of huge accumulated print collections that will be preserved into

⁷ The *metaphorical* power of the idea of the *museion* remains the same, regardless of how its history is deconstructed or demythologized. For a recent, rigorous historical account, see U. Jochum, 'The Alexandrian library and its aftermath,' *Library History* vol.15, no.1 (May 1999), p.5-12.

⁸ Daniel Gore (ed.), *Farewell to Alexandria: solutions to space, growth and performance problems of libraries* (Westport, Conn.: Greenwood Press, 1976), p.3.

⁹ In this case, ownership may well be better than access by itself.

the foreseeable future.¹⁰ But, he argues, as the means of delivering information to readers change, such libraries may find themselves ‘disintermediated’, with scholarly electronic publishers selling information services directly to end-users. Thus ‘publishers may be able to retain or even increase their revenues and profits, while at the same time providing a superior service. To do this, they will have to take over many of the functions of libraries, and they can do that only in the digital domain.’

This vision, from Gore to Odlyzko, has often provoked indignation. Some North American librarians have gone onto the counter-attack, arguing fiercely that ‘strong library [print] collections correlate with higher scholarly productivity and higher institutional ranking [...] and this correlation holds solidly over time.’¹¹ This is undoubtedly correct: the problem is, however, that *we are presently unable to predict* with any confidence how the articulation of digital and print publishing is going to function, even in the immediate future, and especially outside the United States. If Odlyzko is right, and publishers successfully disintermediate libraries, what happens to the significant value that libraries add to the information chain through reference and research services? What motive would the commercial sector *by itself* have to guarantee that out-moded electronic formats remain accessible, or that important databases survive the bankruptcy of their current vendors, for instance?¹² The physical and financial planning of future information services in the present context is truly a risky business.

This is especially true, because we do not even understand properly *how traditional libraries grow*. Our uncertainty is exacerbated, not relieved, by the modern availability of digital texts across electronic networks. In the mid-

¹⁰ Andrew M. Odlyzko, ‘Competition and cooperation: libraries and publishers in the transition to electronic scholarly journals,’ *Journal of Electronic Publishing* vol.4, no.4 (June 1999), available at <http://www.press.umich.edu/jep/04-04/odlyzko0404.html> [accessed 24 January 2001] and also in *Journal of Scholarly Publishing* vol.30, no.4 (July 1999), pp. 163-185. The definitive version appears in S. Berry and A. Moffat, (ed.), *The Transition from paper: a vision of scientific communication in 2020* (New York: Springer, 2000), which I have not seen. Also available in various formats at Odlyzko’s own Web site, <http://www.research.att.com/~amo/doc/competition.cooperation.txt>, [accessed 13 July 1999].

¹¹ James C. Baughman and Marcus E. Kieltyka, ‘Farewell to Alexandria? Not yet!’ *Library Journal* vol.124, no.5 (15 March 1999), p.48.

¹² The technical problems of keeping old formats accessible are not impossible to resolve theoretically. See Steve Gilheany, ‘Preserving information forever and a call for emulators,’ 1998, (22010v052), available in PDF and Word formats from <http://www.ArchiveBuilders.com/whitepapers/index.html>, accessed 28 March 2001.

1940s, Fremont Rider calculated, in a pioneering study, that the collections in most research libraries in the United States had been doubling in size every sixteen years since 1831. As it turned out, his exponential model accurately predicted a collection size at Yale University in the United States of 2.6 million volumes by 1938; the collections at that time were in fact just over 2.7 million volumes. However, if this process were to have continued for another century, to 2040, Rider famously and absurdly worked out that Yale would have a collection of over 200 million volumes, growing at a rate of 12 million volumes a year.¹³

Rider's views remained influential into the 1990s, but the extraordinary truth is that his work was not submitted to any kind of rigorous critique until 1994, when Molyneux was able to demonstrate some fundamental flaws in method. Rider's data does not prove that library growth is exponential; or that there is a sixteen-year 'doubling period'; nor that growth rates are consistent over time.¹⁴ Despite these errors, and the problems with the conclusions that the model leads to, other scholars have blithely applied the same principles to growth rates in, for instance, scientific papers. As late as 1975, Derek de Solla Price, the guru of bibliometrics, was blithely echoing Rider by arguing about scientific periodicals that 'the most remarkable conclusion obtained from the data [...] is that the number of journals has grown exponentially rather than linearly [...] the number has doubled every [...] fifteen years [...]'¹⁵ In reality, there are significant difficulties in predicting or plotting compound growth curves of this kind into the future.

Since we understand so little about how print library collections grow in conditions of relative prosperity, it is surely blind optimism to suppose that they can unproblematically maintain growth in the conditions of indebtedness and extreme poverty that prevail in much of Africa. This is not a new insight, and a series of distinguished commentators, none of whom is especially sanguine about

¹³ Fremont Rider, *The scholar and the future of the research library: a problem and its solution* (New York: Hadham Press, 1944), p.12.

¹⁴ Robert E. Molyneux, 'What did Rider do? An inquiry into the methodology of Fremont Rider's *The scholar and the future of the research library*,' *Libraries and Culture*, vol.29, no.3 (Summer 1994), p.321.

¹⁵ Derek Price, *Science since Babylon*, enlarged ed. (New Haven: Yale University Press, 1975), p.169.

the future of libraries in this continent, has preceded me in articulating it.¹⁶ They point to the generalised and perhaps understandable absence of political will to build and support libraries, given that a clear causal link between access to information and successful socio-economic development has not yet been modelled in mainstream economic theory.

Intuitively, it is not hard to believe that such a link exists - even the World Bank now appears to think so. The demonstration is needed to *create* political will, at present almost completely absent. Sturges and Neill, for example, characterise the Alexandrian model as an 'alien implant' in Africa, and write that 'the reality is that after more than three decades of independence libraries are, at best, grudgingly tolerated by governments, and are placed low on any national list of priorities.'¹⁷ In these circumstances, in most African countries, even a 'steady state' or no-growth library model oriented towards performance measures, such as Gore and his colleagues advocated in 1975, has been extraordinarily difficult to implement. In more than a few African universities, the libraries have virtually no locally funded periodicals subscriptions, and purchase hardly any books; many of them survive on gifts and exchanges, and soft money from overseas donors. Local knowledge production is severely hampered, and local languages are ignored in favour of English, French or Portuguese.

Similarly, Agha and Akhtar tactfully point out that '[s]tudies indicate that information systems in developing countries usually thrive when assisted with external aid through the development of products and services, along with related infrastructural development. Unfortunately, however, once aid ceases, the information systems tend to function at a lower level of productivity, or on occasion, become inactive.'¹⁸ But it is not even as simple as that, unfortunately. To some, perhaps, much aid to libraries is of 'dubious benefit,' a short-term panacea, and too often 'donations [to libraries] are irrelevant and inappropriate. In the process, the culture of silence and submission to imperialism, which is partly responsible for the African crisis in the first place, deepens.'¹⁹ This is not to argue against financial support for African libraries, but rather to insist on its sustainability and appropriateness as defined by local beneficiaries.

¹⁶ Syed Salim Agha and Shahid Akhtar, 'The responsibility and the response: sustaining information systems in developing countries,' *Journal of Information Science* vol.18 (1992), p.283-292; Rosenberg, *op.cit.*, p.247-251; Paul Sturges, 'Search for a new librarianship: Azania to Zimbabwe (and other parts of Africa),' *Focus on International and Comparative Librarianship* vol.28, no.1 (1997), p.3-6; Sturges and Richard Neill, *The quiet struggle: information and libraries for the people of Africa*. 2nd ed. London: Mansell, 1998.

¹⁷ *Op.cit.*, p.92.

¹⁸ Agha and Akhtar, *op.cit.*, p.284.

¹⁹ Paul Tiyambe Zeleza, 'Manufacturing and consuming knowledge: African libraries and publishing,' *Development in Practice* vol.6, no.4 (November 1996), p.295-296.

Cheap networking technology simply will not come to the rescue of resource-strapped African libraries in an unproblematic and sustainable way. There are several reasons for this, but the main one remains the problem of keeping connectivity affordable over time. In its turn, affordability is a function of political decisions by and about African telecommunications monopolies, as the South African experience of deregulation indicates. But the major obstacle to the development of adequate ICT infrastructure in Africa - as indeed, it is an obstacle to all other kinds of development - remains indebtedness. African debt continues to rise inexorably. Sub-Saharan Africa includes 33 of the 42 countries classified as 'highly indebted' by the World Bank.²⁰ Nearly forty years ago, in 1962, the debt burden of sub-Saharan Africa amounted to \$3 billion; by 1980, the amount was \$142 billion; and at the end of 2000 foreign indebtedness for the region stood at \$231 billion, and posed, in the words of the Jubilee 2000 campaign, 'a fatal impediment to Africa's development.'²¹

Theoretically, therefore, it might reasonably be argued that our main challenge is the effective integration of past experience in the management of print sources, requiring as it did the mediation of the professional information worker, with a developing practice in the organisation of digital information, which can be accessed directly from the end-user's desktop. But if the inheritance of past practice is just 'emptiness, indeed squalor, behind the facades of library buildings,' or 'utterly empty shelves' and if the prospects for generalised access to networking technology remain gloomy, then the problem lies at a deeper socio-economic level altogether.²²

The Long Coming of the Information Society

Meanwhile, as the traditional library model collapses under the weight of indebtedness in many parts of Africa, it is being superseded in the wealthier parts of our continent as well as in much of Asia and in the industrial North.²³ The study of the coming of the information age to advanced industrialised

²⁰ 'Grouping of the Heavily Indebted Poor Countries,' World Bank, December 2000, available at http://www.worldbank.org/hipc/Grouping_Final.xls [accessed 22 January 2001].

²¹ Kwesi Owusu et al., *Eye of the Needle: the Africa debt report* (London: Jubilee 2000, 2000), available at <http://www.jubilee2000uk.org/reports/needle.html> [accessed 18 January 2001].

²² Sturges and Neill, *op.cit.*, p.93, 95.

²³ For example, the AAAS successfully helped to introduce databases using CD-ROM technology into non-networked African academic libraries in the 1990s, a project that transformed research practice in many of the institutions involved. See Lisbeth A. Levey (ed.), *CD-ROM for African research needs: some basic guidelines*, 3rd ed., (Washington D.C.: AAAS, 1994); and the earlier *Computer and CD-ROM capability in sub-Saharan African university and research libraries* (Washington D.C.: AAAS, s.d.)

countries has been a rich furrow for scholars to plough for over twenty five years, starting with Daniel Bell's 1973 classic *The coming of post-industrial society* through Manuel Castell's magisterial current trilogy *The information age* (1996-1998).²⁴ Bell's book, which he described as a venture in social forecasting, dealt with the future of advanced industrial societies, and has had an enduring impact in the United States and elsewhere. Bell argued that 'intellectual technology' (computerised knowledge, universally distributed by telecommunications) was moving the world (or at least the United States) into a 'post-industrial' period. Such a society would be based on 'the centrality of theoretical knowledge as the axis around which new technology, economic growth and the stratification of society will be organised.'²⁵ What would count in post-industrial society, wrote Bell, was 'not raw muscle power, or energy, but *information*.'²⁶ Information would become a key factor of production, manufacturing industry would be subordinate to service provision and people (in the North at least) would work in offices rather than in factories.

Although Bell has become 'a sage without a following' according to one recent reassessment, this vision has gained wide popular acceptance, and remains influential, despite the many things that Bell got wrong.²⁷ He claimed, for instance, that the 'decisive social change taking place in our time [...] is the subordination of the economic function to the political order' - while we see extra-national corporations acting with impunity in the global economy, and the world as a playground for currency speculators, for example. He also wrongly foresaw that 'individual private property [would lose] its social purpose.'²⁸ But his most serious mistake was his broad optimism regarding the progressive nature of such changes in the structure and hierarchy of society. He implies that the massive growth of higher education in the United States during the second half of the twentieth century will mean safer and more rewarding occupations and freedom from drudgery in the workplace in the information society of the future. An un-politicised acceptance by librarians and information

²⁴ Daniel Bell, *The coming of post-industrial society: a venture in social forecasting* (New York: Basic Books, 1973); reissued with a new introduction by the author, Basic Books, 1999; Manuel Castells, *The information age: economy, society and culture* (Oxford: Blackwell, 1999), 3 vols.

²⁵ Bell, *op.cit.*, p.112.

²⁶ *Ibid.*, p.127, emphasis added. This is the same language that Stewart, quoted at the beginning of this text, is echoing a quarter of a century later.

²⁷ John Patrick Diggins, 'Daniel Bell's balancing act,' *New Leader* vol.79, no.9 (16 December 1997).

²⁸ Bell, *op.cit.*, p.373.

workers of many aspects of Bell's utopian vision may underlie much current 'techno-optimism' - the belief that 'future economic prosperity is dependent on the rapid development of national electronic infrastructures.'²⁹

The quotation cited at the top of this paper represents an extreme view of the post-industrial global economy at the beginning of the third millennium. Intellectual property rights in information are as important as thermonuclear weapons to the hegemonic powers of the North, in Thomas Stewart's amazing analogy - and presumably they will go to almost any lengths to defend these rights. A new regime of international law to enforce Northern intellectual property rights and control over information has already been put into place. A high profile example of its exercise can be seen in the court battle taking place in South Africa at the beginning of 2001 over a government's right to import cheaper generic drugs. The case lined up international pharmaceutical companies against activist organisations and the government, as the companies sought to assert their exclusive patent rights over and above the clear *social* interests of people with HIV/AIDS.

For information workers and librarians in Africa and other parts of the Third World, the extension of IP rights is not an encouraging prospect, to put it mildly. If we are to be faced, not only with existing problems of infrastructure, culture and language, but also with the fundamental loss of access to information represented by such expressions as 'pay per view,' then the electronic library may turn out to be, not a gateway, but even less sustainable than its traditional counterpart in the developing world. In themselves, the ICTs 'offer no magic solution to the challenges of information dissemination and scholarly communication facing Africa [...] electronic information service in Africa benefits only a small, already privileged elite.'³⁰ Against this view, it may be argued that there is no question that the African continent is one of the growth areas of the Internet. But there is always room for growth when the starting point is close to zero. In 1996 only a dozen or so African countries had stable local Internet access, but 'by November [1999] all 54 countries and territories had achieved permanent connectivity and the presence of local full service dial-up ISPs.'³¹

²⁹ Roma Harris, 'Service undermined by technology: an examination of gender relations, economics and ideology,' *Progressive Librarian* no.10-11 (Winter 1995-1996), p.7.

³⁰ Paul Tiyambe Zeleza, 'Manufacturing and consuming knowledge: African libraries and publishing' *Development in Practice* vol.6, no.4 (November 1996), p.296.

³¹ Mike Jensen, 'Policies and strategies for improving Africa's information and communication infrastructure,' presentation to the African Development Forum, Addis Ababa, 24-28 October 1999, available as a Power Point file at <http://www.bellanet.org/partners/aisi/adf99docs/adf99-mikej.ppt>, and as text at <http://www.bellanet.org/partners/aisi/adf99docs/infrastructure.htm> [accessed 10 January 2001]. See also Jensen's later paper 'African Internet Status,' November 2000, available at <http://www3.sn.apc.org/africa/afstat.htm>, [accessed 10 January 2001].

However, it would be unreasonably optimistic to see this as anything more than an extension of electronic membership of the 'Golden Billion' to a handful of local beneficiaries from the global middle-class.³²

The Internet-based electronic library - however conceived - does provide us in Africa, in the abstract, with the technological means to share resources and serve users. However, we are already finding out that this is - most emphatically - not accompanied by the necessary concrete economic or legal conditions that would allow us in the South to maximise the free flow of information in order to improve people's lives. One of the main obstacles is the aggressive extension of the world's intellectual property regime that has taken place over the last decade or so.

The Assault on the Public Domain

For many librarians and information professionals, the broad issue of intellectual property rights is normally seen through the narrow prism of the impact of copyright law on their daily activities. However, the imposition of the present world trade regime at the conclusion of the Uruguay Round of the General Agreement on Tariffs and Trade in December 1993 has marked 'a clear historical demarcation in the global control of information.'³³ A key Northern objective in 1993 was to extend intellectual property rights through patent, copyright and trademark law to such new areas as pharmaceuticals and agro-chemicals, whose products - medicine and food - are fundamental to human well being. The view of the United States and its allies was, and remains, that the knowledge-and-information components of these commodities are themselves private capital goods. A common view in the rest of the world is that information and knowledge are a public good, both in the sense that they are non-depletable, and in the legal sense that they should not be commodified (that is, bought and sold).³⁴ The long-awaited revolt by scientists against the privatisation of what should be the

³² The phrase has appeared in various speeches by Presidents Gorbachev and Putin, as well as in N.A. Kosolapov's 'Inter-civilizational wars: myths and the reality,' in *Diplomaticheskii ezhegodnik 1997* (Moscow: 'Nauchnaia Kniga', 1997), [in Russian].

³³ John Frow, 'Information as gift and commodity' *New Left Review* [London] no.219 (September-October 1996), p.89.

³⁴ For a much more detailed analysis of the issues, see my 'Copyright, contract law and digital information resources: changing library practices and the changing information environment,' paper presented to the Conference on National Libraries in an African Renaissance, National Library of South Africa, Pretoria, 31 October-2 November 2000, available at <http://www.nlsa.ac.za/nlar/darch1.pdf>, accessed 13 March 2001.

public record of their work, and in support of full disclosure, seems at long last to be beginning.³⁵

It is not only on the left that concerns are being raised about the extension of intellectual property rights at the expense of the shrinking public domain. In a text on legal aspects of the information society, James Boyle, for example, has argued that the trend set at the 1993 GATT negotiations '[...] leads us to have too many intellectual property rights, to confer them on the wrong people, and dramatically to undervalue the interests of both the sources of and the audiences for the information we commodify.'³⁶

The commodification of information in the global economy is a gloomy prospect for librarians who have been trained in the liberal tradition of the free flow of information as well as for scientists who believe in full disclosure as the basis for scientific method. It seems that we will not be able to enter the electronic library of the future without a credit card. Nevertheless, as I argue below, the nature of the technology itself may offer a ray of hope. Copyright law protects the commercial interests of those producing fixed and printed texts, and is the basis for our current highly individualistic idea of authorship. But the fluid, non-linear and impermanent nature of the electronic text may eventually change the way research is reported. In fact, a powerful case is already being made that the electronic revolution is changing the fundamental nature of scholarly discourse. The 'current geography of information is the product of the seventeenth century doctrine of copyright,' and its origins lie in the political interest of the state, and the commercial interests of publishers and booksellers, as well as in the fixed nature of the printed text. But because an electronic text is not fixed, and can be altered on the fly, in the foreseeable future '[a] work of scholarship mounted on the Internet will belong to the field it serves and will be improved by many of its users. Scholar-users will add to the work, annotate it, and correct it, and share it with those with whom they are working. All the really important works of scholarship, the works we commonly call research tools, will quickly evolve into several subspecies in the hands of scholars.'³⁷

It is possible to go further. It has been plausibly argued that technology may eventually alter the traditional organisational base of higher education, the

³⁵ Public Library of Science, 'Should the record of scientific research be privately owned and controlled?' available at <http://www.publiclibraryofscience.org/>, accessed 9 April 2001. This site includes important links to the debate on access to the scientific record.

³⁶ James Boyle, *Shamans, software and spleens: law and the construction of the information society* (Cambridge, Mass.: Harvard University Press, 1996), quoted in *College and Research Libraries* vol.59, no.2 (March 1998), p.193.

³⁷ Stanley Chodorow, 'The medieval future of intellectual culture: scholars and librarians in the age of the electron,' *Organization of American Historians Newsletter* (November 1997), p.10.

campus-based university. The historical origin of the university is centred on the library: '[s]cholars came to the information-storage institution and produced collaboratively still more information there, and students came to the scholars.' In this model, people had to come to the information: this is the basis of the organisation we call the library. The Internet changes all that: information comes to the people instead, and the economic basis of the organisations we know as universities and university libraries *are and will be* affected by this fundamental change.³⁸ However, past experience may well lead us to believe that this will be an evolutionary rather than a revolutionary process, not least because of the massive economic and social investment in the institutional *form* of the university and the university library, if not in their *content*.

'Fragmented Globalisation:' The Future of the Internet

An argument presented in this article is that despite powerful attempts to integrate the Internet entirely into the commercial domain, these have not been uniformly successful. Contradictions endure - the question is what opportunities do they present? Happily for end-users, the decentralised and essentially subversive character of cross-border data transmission is in direct conflict with the trend towards commodification, and 'policing' Internet traffic is an almost impossible task. Peer-to-peer file-sharing from one work station to another is the basis for such initiatives as Freenet and Gnutella, that challenge the very basis of the idea of individual intellectual property as a means of extracting profit.³⁹ The contradiction inherent in the technology is that it allows us to do whatever we want to, challenging traditional power centres, while at the same time economic and legal restraints are being feverishly put in place by the privileged to constrain us. This tension has been a visible characteristic of the Internet environment for some years, and seems as far away from resolution in early 2001 as it did in the middle or late 1990s.

The domain survey by the Internet Software Consortium, published in July 2000, lists just over 93 million hosts world-wide, of which 32 million, or just under 30 percent, were 'dot com' domains. To gain a sense of scale, South Africa has 185,000 of these hosts, and Tanzania a mere 536. The difficulty is that we do not have much reliable information about what level of economic

³⁸ Eli M. Noam, 'Electronics and the dim future of the university,' *Science* vol.270 (13 October 1995), p.247.

³⁹ This issue has been extensively commented upon. See especially Tom Standage, 'Why Napster matters,' *Prospect* (October 2000), available at http://www.prospect-magazine.co.uk/highlights/report_oct/index.html, accessed 9 April 2001; and for a differing view, Michael Scadle, 'Libraries and the meaning of Napster,' *Library Hi Tech* vol.18, no.4 (2000), p.301-303.

activity all those 'dot com' companies really represent.⁴⁰ All kinds of 'guess estimates' are put forward as statistics. In 1998, on-line trade on the Internet was projected to reach \$24 billion in turnover by the year's end, twice the amount generated in 1997.⁴¹ Estimates from various other sources for the year 2000 ranged from \$60 to \$160 billion, and some sources are now speaking of \$600 billion in turnover by the end of 2002.⁴² That only represents somewhere between two and five percent of the value of the US economy, but it still means lots of money going in and out.

However, making a profit from Internet trading remains problematic, and dominating an industry through on-line presence has so far turned out to be hard to achieve in practice. It may be cheap 'to start a site, but [it is still] tough to make money with it.' The 'most heavily capitalised Internet media projects have been [financial] disasters, whether or not they have a traditional media firm behind them.'

Regardless of doubts over what the commercial Internet will look like, it can also be convincingly argued that 'the Net is an increasingly open territory, impervious to the carefully drafted plans of governments, service providers, well-funded Web sites, record companies and both radical and establishment critics.'⁴³ Governmental and corporate authority would normally overwhelm opposition in circumstances where it is clear to the powerful how to exercise their power; but there is an opportunity, in this view, to push for the creation of new principles or for the extension of old principles into new areas. An example is the right to 'fair use,' which permits the making of single photocopies of documents by individuals for research purposes. The successful extension of this *principle* into the area of access to digital resources would represent a massive victory for advocates of the free flow of information, and the scientific revolt mentioned above may represent a first step in this direction.

⁴⁰ 'No one really knows how much money cross-border Internet commerce currently generates.' Robert E. Litan, 'Think again: the Internet economy,' *Foreign Policy*, March-April 2001, available at http://www.foreignpolicy.com/issue_marapr_2001/thinkagain.html, accessed 12 March 2001.

⁴¹ Mark Tran, 'Dash for online cash' *Mail and Guardian* [Johannesburg] (15-21 May 1998), p.30.

⁴² Several sites provide commercial Internet statistics, but change quickly. They include E-marketer, Internet.org and Internet.com

⁴³ Jesse Walker, 'Tinkers, tailors, sellers, spies: the case for cautious optimism about the Internet,' *Reason Online*, December 2000, available at <http://www.reason.com/0012/cr.jw.tinkers.html>, accessed 8 January 2001.

The commentators remain divided and cautious. Some claim that until recently the phrase 'information superhighway' used to evoke the idea that the Web was an open resource for learning and communication, but now, 'in name and concept, [it] is fading away.' Today the Web is best understood as a 'way to make and spend money.'⁴⁴ Others have changed from optimism to become similarly downbeat, contending that although 'the Internet can still be an empowering tool [...] that opportunity is being missed as our entire culture seems bent into turning the Internet into an electronic strip mall [...] Indeed, 'more and more of the world we live in is commodified [...] more and more of public space is being privatised.'⁴⁵ It is obviously true that the character of the Internet has changed overwhelmingly in favour of the numerically dominant 'dot com' domains, but it is far from obvious that this means that there is no room for the 'disorderly, decentralised, eccentric Net.'

In a happy turn of phrase, a Zapatista leader from southern Mexico described this kind of situation as 'fragmented globalisation' and characterised it as a kind of political oxymoron - the rhetorical figure in which, to paraphrase the Argentine writer (and librarian) Jorge Luis Borges, 'one applies to a word an epithet that appears to contradict it.'⁴⁶ The Internet, of all the phenomena of the epoch of globalisation, clearly displays this character of oxymoron, being an anarchic monolith - precisely and simultaneously *both* increasingly monolithic and, one hopes, increasingly anarchic.

CONCLUSION: ARENAS OF STRUGGLE

There is scarcely an academic library left in the world that has the financial resources to purchase the monographs and journals it needs, let alone that it wants. As a result, many physically proximate libraries around the world have grouped themselves into consortia in order to share resources; a sharing largely

⁴⁴ Norman Solomon provides some scrappy statistical evidence from newspaper sources to back up his argument. See his 'Money changes everything,' *Media Beat* syndicated column, 12 January 2000, available at <http://www.sfbg.com/MediaBeat/99.html>, [accessed 8 January 2001].

⁴⁵ Uri Dowbenko, 'Media, manipulation and the cult of consumerism: an interview with Douglas Rushkoff,' *Steamshovel Press*, 2000, available at <http://www.steamshovelpress.com/coercion.html>, [accessed 8 January 2001]. *Note that this is a 'conspiracy site' and is not endorsed as a reliable source by being cited here.*

⁴⁶ Subcomandante Marcos, 'La derecha intelectual y el fascismo liberal,' [The intellectual right wing and liberal fascism], *Le Monde Diplomatique* August 2000, available in the original Castilian at <http://www.monde-diplomatique.fr/2000/08/A/oxymoron.html> [accessed 10 January 2001] and in an abbreviated English summary under the title 'Why do we all agree the global market is inevitable? Do not forget ideas are also weapons,' *Le Monde Diplomatique* [English ed.], October 2000, available at <http://www.monde-diplomatique.fr/en/2000/10/13marcos> [accessed 10 January 2001].

made possible by networking technology. The central ambition of almost all these library consortia is to attempt to rationalise the building and use of information resource collections through sharing, extending access (which is supposedly 'better than ownership,' as we have all been taught by now) to each other's users. It is important to understand that, to the extent that it attempts to solve the economic problems of sustaining adequate traditional comprehensive collections in traditional campus-based academic institutions *by moving operations on to a larger scale*, the library consortium is a short-term panacea, which is bound to fall short in the end, unless it is accompanied by appropriate practical and behavioural changes among information workers. A consortium, in other words, cannot and will not behave rationally, like a bigger library; it is a framework for conflict resolution, not just (or even) a larger organisation.

Consortia structures only work in certain specific conditions, many of which do not exist in most parts of Africa. Resource sharing requires that all participants have unique and useful resources to share; that they are either physically close enough to each other, or technologically sophisticated enough to be able to share what they have across distance; and that they can agree on the common objectives, however minimalist, to be pursued.

Despite the isolation of most African academic libraries, two factors may enable information workers in Africa to develop the *new behaviours* that I referred to at the beginning of this article. The first and most obvious is technological change, which even at the level of standalone workstations running locally-mounted databases can have a major impact on user expectations and satisfaction. And at higher levels of networked access to a range of resources can impact significantly on patterns of expenditure, collection development, document delivery, and co-operation with other institutions, at the very least. The second is *actual co-operation* with other institutions. The shift from libraries operating as 'standalone' systems to libraries operating as nodes of larger local, regional, national or international networks (in the broadest sense of the word) is already well under way globally. Academic libraries in many parts of Africa need to find creative new ways of linking themselves together, despite the obvious difficulties of distance, weak technological infrastructure and lack of funds. Consortia models developed elsewhere will, I suspect, be of little use in this process.

The present concrete situations of libraries and information delivery in most of Africa give little cause for optimism. Librarians and information workers in Africa, a marginalized profession in a marginalized continent, may not *by themselves* be able to turn the tide. As long as African public debt remains the single major social obstacle to development, as it is at present, the prospects for building the massive information infrastructure that we need - both a precondition for and an outcome of the development process - will be bleak. Nevertheless, if we attempt to seize the time, to become makers of history, subjects as well as objects, and to retain something more than a residual role in the academy of the future, we can play a role in the ongoing *political* struggle for ownership of and access to information and knowledge.