

THE ECONOMICS OF INFORMATION AND THE INFORMATION SOCIETY: IS SOCIAL EQUITY STILL ON THE AGENDA IN THE 1990S?

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Librarians tend to overestimate the social value of information and ignore its economic value. Although economists and information scientists use the term information in narrower senses than librarians do, there is much that can be learned from them. In order to guarantee that redress actually takes place in South African society, especially for the information poor, librarians may need to take advantage of the commodity value of information in new ways, in order to gain access to the financial and technological resources necessary for the vast job of reconstruction in our sector. The question is, how can this be done?

This article tentatively suggests that South African librarians and information service workers (hereafter generically LIS practitioners) may be misreading one of the most persuasive arguments for massive and essential investment in our sector by government and business. This is, in my view, because of a consistent underestimation on our part of the *economic*, as opposed to the *social* or *educational* meaning and value of information.

This is not to say that information's economic value is *more important* than its social and educational value. Even the mainstream North American academic economist Paul Samuelson admits in his college textbook that "democracies, pursuing social goals other than economic efficiency, opt to achieve equity through redistributive policies" (Samuelson and Nordhaus 1985: 49).

This principle applies as much to information as to anything else, and is fundamental to the ethos of our work, especially in a situation

in which the vast majority of the people of South Africa are *information poor*. But if LIS practitioners are unwilling to work to understand the economics of information in an era of explosive change, because of a distaste for the dominance of the market-place, we will be unable quickly to discover creative new ways of exploiting an emerging information environment to achieve our social objectives.

In a recent article, Christopher Merrett argued in passing that

right wing [Reaganite and Thatcherite] economics posed a fundamental threat, undermining the very foundations of our enterprise ... the Right thought up the commodification of information so that it became a material good rather than a civil right (Merrett 1994: 1).

Merrett is correct about the threat, but I would suggest that the commodification process with regard to information is both more complex and more historically deep-rooted than this formulation suggests¹.

All this has two immediate practical results. First, money spent on libraries is seen, I would suggest, *by LIS practitioners and policy-makers alike* as a social investment with little *direct* impact on economic development, and therefore *by policy-makers* as money which might if necessary be reallocated without overall long-term negative consequences. Since the answer to the rhetorical question posed in the title of this article can only be a resounding 'yes', such perceptions can only be a formula for disaster.

Second, by starting from the assumption that information should be freely available to all

without payment, LIS practitioners effectively *sidestep* the vitally important debate about the commodification of information. Information does play an economic role. If we ignore this fact, potential arguments which can and must be made about the need for free-to-the-user, (or more properly, subsidised) access to information for the information poor are, ironically, weakened.

In my view, the process of policy formulation for LIS which took place in 1994, within the framework of an ANC-supported initiative on educational policy undertaken by the Centre for Education Policy Development (CEPD) (1994), demonstrated these tendencies quite clearly². The even more recent (and poorly reported) negotiations over the location of LIS between various ministries is another manifestation of the same problem. As the Australian theorist Lamberton has argued, information policy is important not only because it seeks to coordinate existing organisational structures, but also because "information policy must seek optimally designed units *because organisations are information mechanisms*" (Lamberton 1984: 20, italics mine).

LIS practitioners sometimes make two questionable assumptions, both of which need re-examination in the 1990s, and especially in the context of the global information system in which we all now work. These two assumptions are

- (a) that information is *only* a public good, of importance primarily in the area of education, and that access in the new South Africa should therefore be free of charge to the user; and
- (b) that the best-known traditional delivery system for information, the library, is still the most appropriate in the global networking age.

The idea of information as a public good, rather than a commodity with a price attached, is implicit in the four NEPI principles of historical redress, democracy, unity and non-discrimination (*Library and information services: report of the NEPI Library and Information Services Group* 1992: 3). Obviously these four principles did not emerge out of thin air; they were articulated as the result of an historically-determined process,

namely the struggle against apartheid and for democracy in this country and in the southern African region. For this reason, many LIS practitioners in South Africa undoubtedly feel uncomfortable with the idea that the 'public good' theory needs to be critically examined and defended against increasingly powerful evidence that the commodification of information is a process under way and happening whether we like it or not.

But that is not all. We must also face up to the reality that librarians' unrelenting focus on libraries as systems disadvantages us in the competition for resources, partly because library systems are *only one* of a range of possible information delivery systems for information. We must also recognise, I believe, that the commodification of information is a complex historical process which may offer social opportunities for LIS practitioners to take on a much more dynamic role, especially in economic development processes, than we may have previously thought possible.

Although there is some realisation in this country that information is economically significant, there is little evidence that the kind of fundamental rethinking about the economic role of LIS which is necessary, is actually taking place. In his keynote address to the SAILIS conference in 1994, Dr Robin Lee stated that

the Reconstruction and Development Programme (RDP) argues the need for improving information flow in society as an informed citizenry is better equipped to participate in the transition process. This re-conceptualisation of information work as a central process in reconstruction and development provides one of the most exciting professional challenges ever facing information workers (Lee 1994: 5).

So far, so good. Lee goes on, himself teetering on the edge of commodification, to refer to information as "a valuable resource which can be used to transform living and working conditions." When he does explicitly address the

problem of the nature of information later on in his text, Lee, who apparently welcomes the "shift away from the notion of the neutrality of information towards a view of its role in advancing ideologies, systems and programmes", reduces commodification of information, like Merrett, to mere profiteering:

the commoditisation of information as an attempt to control its free flow ... means nothing more than the fact that brokers sell information for profit and that information is censored for political or 'moral' reasons to uphold certain systems and beliefs and to ward off others (Lee 1994: 6)

This is clear, but I think wrong. He illustrates what he means by a 'value of information' paradigm in the following terms, which in point of fact clearly illustrate what might be termed the public good position

the RDP argues that in order for a society to advance, it requires informed government and citizenry. It further argues that there is a critical need for the free flow of information which aims at 'facilitating exchange of information within and among communities and between the democratic government and society as a two-way process' (Lee 1994: 6).

But this is muddled: the value in question here is arguably a social value, not a use value. As LIS practitioners, we clearly need to do some work clarifying our terminology and how it relates to the terminology of other sectors. Let us begin by examining how economists themselves view the economic role of information.

Information in mainstream economic theory

The importance of the role information

plays in the creation of wealth is now widely, if not universally, recognised in mainstream Western economic theory. But this recognition, potentially explosive in its impact on conventional economic theory and practice, has been granted only slowly. One anecdote has it that some years ago IBM discovered that the United States Bureau of Statistics was measuring its production in terms of manufacturing units, as if computers were like cars. When this was changed, at IBM's request, to a measurement based on processing power, an information-based yardstick, the statisticians had to revise growth rates for the whole economy upwards. The Conservative government in Britain under Margaret Thatcher, however, decided at about the same time, that existing theory was adequate, and refused to make any change in the public accounts at all.

The economics of information as a sub-discipline owes much to pioneering work in the 1960s and 1970s by two US economists, Fritz Machlup and Jacob Marschak, generally considered conservative and both now deceased. Marschak's interest in economic behaviour led him to study the way information is communicated, and the manner in which it acquires value. This led also to developments in the theory of organisations as information systems. Marschak's point of departure was the, in retrospect somewhat obvious, insight that "the value of information is governed by the benefits generated by its optimal use"³. His major papers in this area were published in the 1950s and 1960s and are collected in an anthology of his essays published in 1974 (Marschak 1974).

Fritz Machlup started off analysing the economic impact of the patent system, which creates property rights in information - a form of commodification - in order to encourage technical development. It was Machlup, in fact, who first realised that the national accounting system of the United States did not adequately reflect the impact of the process of investment in *education, research and technological information*. In his seminal work *The production and distribution of knowledge in the United States* he argued, inter alia, that the information industry, as defined above, was producing as much as 29 percent of the United States GNP as long ago as 1958 (Machlup 1962, quoted by Lamberton 1984: 5). Machlup later planned, but never completed, a massive reworking of his book in eight volumes, of which only the first two ever appeared.

Subsequent research has shown that traditional non-Marxist economics has not been able to account fully and analytically for all the characteristics of information⁴. Information is not, for example, subject to the laws of scale in the same way as simple commodities. Indeed, the cost of obtaining a piece of information is the same whatever the decision to be based on it may be. In the words of one theorist, "the formula for a steel alloy has a given cost, though it may be used to make one ton or a hundred thousand tons" (Arrow 1979, quoted by Lamberton 1984: 7). This is not the case, evidently, with any of the other, tangible ingredients which are used in the manufacture of alloy.

Research on the so-called information industry itself has typically been case-study oriented, and relatively little work has been done on the structure of the industry or on "the broader analysis of the economy-wide input-output interdependence of economic activities" (Lamberton 1984: 14). However, a 1981 study by the Organisation for Economic Cooperation and Development (OECD) suggested that there are four main types of economic activity with regard to information as here defined, namely information production, processing, distribution, and the maintenance of infrastructure.

The changing economics of information production and processing

The information industry is in the midst of a process of explosive change. Peter Young has pointed out that in late 1993, the number of billion-dollar 'megamergers' between large corporations active in the North American market was the second highest on record, and that these were predominantly in *and between* such information-related sectors as telecommunications (e.g. telephone companies) and entertainment (the motion picture industry). The technological changes which brought the various print and non-print formats together in a multimedia environment have thus already begun to reshape the commercial milieu, at least partly because mainly United States- and Japan-based corporate giants have begun "frantically" to position themselves to take advantage of new opportunities,

which are "based on vertical integration and segmentation of the emerging interactive multimedia services *global marketplace*" (Young 1994: 103-104, italics mine).

Lone voices have been raised in Luddite protest against this process, denying that the sea-change in information provision referred to here has in fact taken place, or that electronic information access can ever *completely* replace more traditional means of delivery.

The truth is no online database will replace your daily newspaper, no CD-ROM can take the place of a competent teacher and no computer will change the way government works. The Internet is an ocean of unedited data, without any pretence of completeness. Lacking editors, reviewers or critics, the Internet has become a wasteland of unfiltered data (Stoll, 1995: 39).

But nobody, least of all LIS practitioners, is in fact arguing that online databases will replace daily newspapers. Nevertheless, online databases of newspapers of record are already changing the way social science research is done. As for government, any statistician will confirm that computer-based economic modelling techniques have already dramatically changed the way in which economic policy is made⁵. The brutal fact is that libraries are no longer the only delivery system in town.

The changing economics of information dissemination and its infrastructure

A major Mellon Foundation study on large research libraries in the United States, published in 1992, concludes that big libraries are in the early stages of a dramatic change from warehouses of information stored in print formats to gateways for gaining electronic access to information (Cummings et al 1992: xv). The Mellon study argues that these technological advances allow librarians involved in the management of scholarly communication to focus on guaranteeing *access* to

data and research results, rather than on making sure that their institution *owns* those data in a physical format. The question of physical location has become a secondary issue (Cummings et al 1992: xv).

Ever since the mid-nineteenth century, there has been a clear boundary between the activities of libraries exclusively supported either directly or indirectly by public monies, on the one hand, and the then relatively insignificant sector of commercial information provision. In a pre-networking age, libraries as repositories of information exhibited a strong tendency to generalise their specific organisational characteristics into universals of the information business, the library as delivery mechanism and the book or serial as storage device.

Typically, traditional big libraries involved a large financial and human resource investment

in a carefully selected collection, housed in a grand but static facility, with internal support systems and procedures designed to provide limited bibliographic access to local collections with human resources arrayed in a hierarchical management structure designed to provide services to support location-specific populations (Young 1994: 109-110).

Partly as a result of this generalisation of the specific, libraries have traditionally measured their effectiveness on a macro level in an entirely circular fashion, by equating quantitative data about collection size with effectiveness and efficiency. This is as true of modern South Africa as of other countries. For example, M H C du Preez's article on collection size and growth rates among university libraries stops just short of equating size with quality (Du Preez 1990). But this is an extremely crude way of measuring, as Young has pointed out, because it says nothing about the positive impact that library services have on the economic process. When hard times arrive librarians have no special argument to be heard, as Young points out in his observation that "the fact that libraries have not related service offerings in terms of economic value serves as a disadvantage when confronted by stiff competition for declining

tax support" (Young 1994: 110).

In the 1990s, in the context of this 'bigger is better' mind-set, two contradictory sets of pressures are being exerted on big libraries. On the one hand, users' expectations have been raised by the promise of instant access to bibliographic references and even primary information, via CD-ROM database technology, via full-text libraries on the Internet, via fax and e-mail document delivery on a global scale, within minutes of requests being filed, and via the vision of multimedia virtual libraries. On the other hand, and simultaneously, big and small libraries world-wide are struggling with reduced budgets, the down-sizing of staff complements, and even the closure of some facilities. Clearly, the concurrent and impossible demands that institutions should expand technological access to an ever broader range of information resources, while investing less in traditional collection-building activities, have their own imperative logic.

David Ward, Chancellor of the University of Wisconsin at Madison, has recently coined the term 'archival library' to denote the traditional research-oriented, collection-building, geographically-located, and print-based university or research library, presumably as distinguished from the digital 'virtual library' of the soon-to-be-here future, which has none of those characteristics (Young 1994: 106). Such 'virtual libraries' imply, of course, information delivery anywhere, on demand, even to the home.

The current inadequacy of the old library-based paradigm is indicated in other ways as well. A gradual but detectable shift is taking place in the way libraries spend their money. In the United States, staff costs as a percentage of library expenditure declined from 62 percent to 52 percent in the 28 years from 1963 to 1991; expenditure on printed media (books and serials) has increased slightly to 35 percent, in the face of price increases in the order of 200-300 percent; and operating costs have more than doubled from six to 14 percent. Those operating costs are the budgetary area which most directly reflect technological changes, above all computerised information access (Young 1994: 110).

There is also growing public reluctance to continue financing the old model of the endlessly-expanding research library, with new buildings required for storage every decade or so, and sharply increasing materials budgets. Indeed,

the worldwide trend to consortium arrangements among neighbouring institutional libraries, with its concomitant emphasis on shared collection development strategies, is also part of the paradigm shift away from the independent and self-reliant large library. It has been a commonplace for years that the 'information explosion' in print media threatens the economic viability of the traditional library model; but the sheer volume of research-driven data transfer among scholars in an ever-increasing range of post-modern sub-, inter-, multi- and cross-disciplines dwarfs even the older model. Young has aptly argued that "network technologies are effecting basic changes in the way information is created, shared, controlled, transmitted, valued, protected, distributed and exchanged" (Young 1994: 111).

If 'archival libraries' are seen as the dinosaurs of the information dissemination business, the role of the librarian as information mediator also appears to be under threat. It is necessary to recognise that even a simple description of the 'traditional' role of librarians is problematic, tied up as it is with questions of 'professionalism' and gender issues. It has been argued that in law or medicine

service is not a matter of an exchange of information or assistance between two equal partners as it is in librarianship. Rather, it constitutes a relationship in which the professional takes on the role of the expert with respect to the client and dispenses information for a fee. Rather than dispensing information, librarians traditionally perform an intermediary role by working to match the client's need to the information resources available (Harris 1993: 874-875).

If this view is correct, then the integration of telecommunications, entertainment and information systems corporations which is under way in the marketplace must surely transform what we do. It has already begun to mean that direct and virtually instantaneous delivery of information to consumers by fax or e-mail is already possible.

It remains to be seen how quickly such systems might replace 'archival libraries', if in fact they ever completely do so. But there is little doubt that there is already an imperative need for LIS practitioners to develop new sets of skills, if they are to continue in the role of *critical* mediators between information users and resources. The word 'critical' is, well, critical here, because commodities follow the dollar, and there will probably always be a need for a group of specialists committed to a defined set of ethical principles regarding freedom of access to information.

But technological forces are at work right now, which will confront librarians with fundamental choices about the ways in which they articulate their traditional collection-based activities with a local focus, and digital information delivery systems which are global in nature. We must explicitly recognise that these forces are also changing the economic environment of information provision in ways which go far beyond the capacity of national governments to control. Information provision itself is becoming part of a milieu which is in the process of bringing together and eventually, one supposes, of integrating communications, entertainment and information. As Peter Young has argued in the United States context, the issues which arise from this process

are central to public sector economics and national information policy, and they involve the institutional and professional values that [serve] as the basis of support for libraries and librarianship ... the ultimate effect of [economic, technological and market] forces and developments is likely to be the death of our traditional concepts concerning the business of libraries (Young 1994: 105-106).

As I have already implied above, I am not so sure that there is a 'business of libraries', any more than there was ever a 'business of horse-drawn carriages': we are in the information business, just as those long-gone stable-owning entrepreneurs were in the transport business. Young himself argues for this viewpoint when he writes

if you accept the view that libraries can be seen to be an invention of publishers, designed to link readers with books at a time when the economics of print technology required the library to serve as an intermediary that mitigated the imperfections inherent in an inefficient distribution system, *then network technology efficiencies can be seen as correcting the imperfections that resulted in market failure*. Under this view, network technologies make libraries obsolete (Young 1994: 112, italics mine).

Yes, libraries *are*, not simply but certainly fundamentally, organisational and technological delivery systems based on the dominance of print media. The horse was rapidly replaced by the internal combustion engine, but one hopes and imagines that the more clairvoyant of blacksmiths started at some point to study auto mechanics. Librarians must ask themselves what lesson can be learned.

Who pays and how?

If the policy objective of redress is to be achieved, and if we are to reach a point in South Africa where the difference between the information poor and the information rich is effectively eliminated, then we must build information services that are effective, autonomous, and sustainable. On sustainability, Agha and Akhtar have written bluntly that

information systems that have been established in developing countries, are not well supported, are under-staffed, and operate in a resource poor situation to provide traditional services that are not well utilised (Agha and Akhtar 1992: 285).

This is as true in most of South Africa as it is elsewhere in the so-called Third World. Agha and Akhtar propose a solution in terms of a kind

of contract between funders and practitioners based on the recognition that "investment in the management of information is an integral part of the development process" (Agha and Akhtar 1992: 286). The contract aims at ensuring that information systems are sustainable. The contract is composed of two parts, which the authors term the *responsibility* and the *response*. The responsibility requires policy makers to recognise the value and usefulness of information; to invest in the phased development of national information infrastructure, and to audit their investment to evaluate its effectiveness. The required ten-point response by practitioners is more extensive and is essentially value-based, but includes explicit recognition of the need to manage scarce resources effectively and to evaluate efficiency. Crucially, the response includes using appropriate information technologies, and "actively sharing in cooperative schemes and resource-sharing programs" (Agha and Akhtar 1992: 287-288).

But autonomy and effectiveness must be based upon the availability of adequate resources, if free access is to be guaranteed. A poor library system cannot help the poor very much. The question of 'free' access to information is related to a complex set of issues such as social equity, civil and human rights, social justice, intellectual property rights, principles of user charges, and the role of the state, many of which are in turn intertwined with the deeply-held personal and political beliefs of practitioners and users alike.

'Free' can mean several different but related things in this context. Obviously, no access to information is free of cost: but public, national and higher education libraries typically do not charge individual users for specific service transactions. Often, tax-payers eventually meet those costs. Free access can also mean that users are entitled to reach information without any restrictions of censorship or confidentiality, but do not necessarily have an absolute right to *free-of-charge* delivery through *any system of their choice*.

Clearly, if arguments of economic determinism are allowed simply to prevail, then a massively dangerous potential exists for an information services policy which would effectively consolidate the social and racial differentiation between the information poor and the information rich. This is one of the least visible but most important parts of the heritage of

apartheid in South, and indeed in southern Africa. The institutionalisation of a dominant class of information consumers whose privilege rests only on their ability to pay the necessary fees for access to the wealth of information would be absolutely unacceptable on both ethical and pragmatic grounds.

Nevertheless, what are the possible principles which will determine who is to pay and how? Setting up a straw man, Peter Young has argued that

charging direct fees to patrons for certain library services is an economic, practical, and managerial necessity if librarians are to provide patrons with the fullest possible range of service options (Young 1994: 105).

The counter-argument runs that if information services "are beneficial to the entire society, then they represent a public good and should qualify for tax support outside the considerations of the marketplace" (Young 1994: 105). Although Young lists seventeen arguments against service fees, and sixteen in favour, the article is not about fees as such, but the economics of redress (Young 1994: 106-108).

The question of information service charges needs to be unpacked. There are several other questions implicit in the larger issue: who pays for which services? What is paid (real money or credit units, for instance)? What mechanisms are appropriate (over-the-counter payment, partial tax or rates subsidies)? Where and when should payment be made (pay-as-you-go or a credit system)? How would charges be calculated? It is unlikely that there is a single appropriate solution to these questions. In the field of electronic database provision, creative and arguably equitable charging systems are already being developed, for instance OCLC's principle of charging for each use of the '< FIND >' command, regardless of the quantity of data retrieved.

Despite the arguments presented above, we must recognise that there is in fact a serious danger in over-emphasising the economic importance of information for tactical reasons within the policy process. First, it can be intellectually dishonest. Second, while it can be argued that the interests of the private sector and

the needs of such professions as law and medicine are determinant in the production of an information-literate work force that can compete in the twenty-first century's global labour market, this is by no means the only moving force at work. A truly information-literate work force will recognise that there is also a *social need* for a critical attitude towards and use of information, as part of the cultural enrichment of all sectors of South Africa's population. Doctor reminds us of former President James Madison's apt remark about the role of information in government

Popular government without popular information, or the means of acquiring it, is but a prologue to a farce or tragedy, or perhaps both. Knowledge will forever govern ignorance, and a people who mean to be their own governors must arm themselves with the power that knowledge gives (Doctor 1992: 43-44).

Accepting, however grudgingly, the reality that information can be treated as a commodity is problematic, especially in South Africa, in several obvious ways, some of them merely technical. Information is simultaneously and always intangible, expandable, compressible, substitutable, transportable, diffusive, sharable, and often does not depreciate; it is widely and freely available, it often increases in value with re-use, and it is difficult to manage (Young 1994: 108).

But given the economic imperatives at work globally and also at the level of specific societies, South African LIS practitioners might like to consider ways in which the economic value of information can be put to work for our sector. Let me end, therefore, with a question. Is it possible, in terms of the ethos of our work, for information in its different guises to be *both* a commodity with a price, providing an economic resource which might underpin our activity, and *simultaneously* a public good and a civil right to which all must and do have the right of access?

Notes

1 We need, for example, to explore much more fully the relationship between venerable concepts such as intellectual property rights (including patent law), which most librarians accept as given, and the contemporary process of the commodification of information. The question of scanning existing print collections into digital formats is a concrete case: massive projects are already underway by OCLC and the Vatican Library. What are the implications for intellectual property rights as well as the economics of production of such monographic works?

2 Other substantive criticisms of both process and product have been made elsewhere. See chapter 16 on LIS policy in the African National Congress's *A policy framework for education and training* (1994), for the starting point of this process.

3 It is clear from this that economists are using a much narrower definition of the term 'information' than LIS practitioners (cf Lamberton, 1984: 5). Much of the information which follows is taken from Lamberton's useful overview, which is recommended to anybody wishing to follow up the issues touched upon here.

4 Marxist economics is not much better at solving this particular problem, of course.

5 Astonishingly, a recent report on information (as opposed to LIS) policy in South Africa has attracted only a tiny fraction of the attention generated by the comparable CEPD report in the related LIS sector (Centre for Education Policy Development, 1994): see Harfoush and Wild, 1994.

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