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Electrical storms: electronic information management issues and their impact on libraries

Professor Derek Law, University of Strathclyde

This paper is in essence a discussion on the future of our profession. Many regard us as working in a threatened profession, threatened by the new electronic environment. I don't share this view. I think the future is bright although it does mean a careful reconsideration of what the profession is and does.

But first I want to explore the metaphor of electrical storms in the title of this paper by reference to the sequence from Walt Disney's *Fantasia*, in which Mickey Mouse (a disguised systems analyst) plays the Sorcerer's Apprentice - the Sorcerer of course being the chief cataloguer. When he finishes with his book of spells or AACR2, he goes to bed leaving hat and wand. He starts playing with tools he doesn't understand like the broom, which starts to unleash buckets of water or information into the pool of knowledge. The self satisfied Mickey fails to understand the dangers and launches a great electrical storm in the heavens which produces mighty battles the OSI-TCP/IP debate. While this has been going on the pool of knowledge has filled uncontrollably due to a lack of metadata. Mickey tries to kill the broom by chopping it up but this simply increases broomwidth and yet more uncontrolled water or data. Mickey looks at the hard copy spell book but can't understand it. Only the return of the Sorcerer from his metadata course saves the day. The point of the metaphor is that traditional expertise is not devalued by novelty and that the best way to face the storms of the future is in the security of our rethought but still traditional strengths.

Background

A single talk on the future and its implications can only begin to touch the surface of the issues. This in turn produces a need for fairly sweeping generalisations which can - and should - be challenged. However, even if there is room for debate on the drivers for change and how far we can influence them, there is no doubt that great change is taking place, in technology, in education and in global structures.

The iconic technology of the information revolution is the computer, but it is the communications infrastructure - the network - which has allowed the revolution to begin the transformation of society. Using the precedent of the Agrarian and Industrial revolutions we may discern the outline of what will create the information society. The role of the state will be found in providing the regulatory environment. We can see the expansion of mass higher education caused by the need for a higher skill set in the population; we can see a regulatory environment such as in the recent sale of telecommunication licences; we can see some legislative and security regulation emerging internationally through GATT and WIPO as much as at national level. Yet we still have the robber barons. Lord Thomson of Fleet famously remarked that having a television franchise was like having a licence to print money, while figures as varied as Bill Gates, Robert Maxwell and Rupert Murdoch are only the most recent and the most famous of that modern tribe which stretches back to Andrew Carnegie. We might then feel that the nature of the state itself is changing. It is an increasing commonplace that the state is at the mercy of global corporations, which can bypass national conventions. In his 1999 Reith lecture series Anthony Giddens noted:

The radicals argue that not only is globalisation very real, but that its consequences can be felt everywhere...Nations have lost most of the sovereignty they once had, and politicians have lost most of their capability to influence events. It isn't surprising that no one respects political leaders any more, or has much interest in what they have to say. The era of the nation state is over. Nations, as the Japanese business writer Kenicche Ohmae puts it, have become mere 'fictions'.

Whether it is a currency speculator such as Soros attacking currencies in ways much more damaging than any military adventure, or global conglomerates such as the Disney Corporation or News International, richer than most nation states, or criminals such as Colombian drug barons, these global groups appear to be wresting power from the nation state. Their form of government appears increasingly oligarchic with the odd dose of heredity. The most obvious winners in this revolution are content providers, although no doubt others will emerge. It is then cheering to note that thanks to the persistent curiosity and invention of individuals, anarchists may also emerge as winners.

The ability of the authors of the Love Bug and Melissa viruses to puncture the thick hide of these corporations or the 15 year old boy in Montreal who can penetrate the Pentagon defences should be welcomed.

All of these great sweeping forces creating the information society must and do affect libraries, for information is our business.

The history of librarianship

The best way to go forward is to look back at our roots and to identify our strengths and skills which can then be developed in the new electronic environment. So let me begin with a brief potted history of librarianship and the skills we have developed over time.

In the very earliest days, the main requirement was strength. The first royal archives, such as at Ashurbanipal, consisted of tablets of stone, which must have done wonders for the muscles, since open access hadn't been invented. The next requirement was to use the muscles to throw sand and water at fires, judging by the destruction of the great library at Alexandria, a sort of primitive disaster control planning. We can then move on to the fifth century where St Jerome was in the process of turning into the patron saint of librarians. He was difficult and cantankerous, was the guide and mentor of a group of dedicated ladies, notably St Rita and St Marcella, although his relationship with them gave rise to gossip which the *Oxford Dictionary of Saints* describes with wonderful academic bitchiness as "largely unjustified". On consideration it seems to me that the patronage of St Jerome should be confined to chief librarians. I know very few assistant librarians who are both cantankerous and lecherous. By the time the universities had properly begun in the early middle ages, the monks in the scriptorium in Paris were copying manuscripts on a production line basis in order to form the first short loan collections for their undergraduates. They presumably worried about quill maintenance contracts rather than photocopy quality and introduced the concept of dealing with library suppliers. By the seventeenth century St Andrews University was introducing the death penalty for non-return of library books. Admittedly, the one reader who was executed was also accused of rebellion, murder, robbery and insurrection, but non-return of library books was down on the bottom of the charge sheet. So we can add the preservation of public order to the list. Hatred of readers comes next. When Thomas Carlyle was a student at

Edinburgh University in 1814, a fat Highlander was sub-librarian. On cold winter's mornings he stood firmly behind the locked door, with the students battering at it, until the very last stroke of ten had sounded. He would then open it very slowly. Unable to express his contempt with feet or fists he would turn his back on the crowd, bend over and prove that the controlled expulsion of gas was yet another skill required of the librarian. This of course was further proof, if proof were needed of Maurice Line's joyous sentence from a 1980 lecture that he did not propose to go into the history of ignoring users, since there was no time to give a history of librarianship from its beginnings.

Then there was the question of whether this was a real job or just an early form of moonlighting. Over 100 years ago in 1890 a predecessor of mine at King's College London was appointed. The College Principal had a clear view of the library training required: "The Principal thought that as a successor to Mr Lamb it would be desirable to get a young man who could give most of his time to the work; possibly a young clergyman who was only employed otherwise on Sundays would answer the purpose". In 1904 confetti was invented with the creation of edge-notched cards, an early example of co-operation with the private sector. By 1908 F M Cornford of the University of Cambridge obviously pre-figured modern concepts of open access libraries when he wrote that books should be stored in such a way that no one can find them without several years training.

Before the Second World War at least some university libraries recruited library boys straight from school. They were given a practical grounding in running the library and the good ones, still without any formal qualifications, rose through the ranks. Some of them gave up to fifty years of service to their library in all sorts of capacities. Edinburgh University recently rewarded one of these library boys, a very good friend of mine, with an Honorary MA, still his only formal qualification. The point of this is that as recently as the 1930s a certain native intelligence and wit was seen as enough of a background; on the job training provided the rest. The skills needed to deal with readers remained much the same however. Roy Hattersley has written lovingly of his days as a student in Hull, where the Library operated on the Polonius Principle - neither a borrower nor a lender be - and keeping a girl out all night was safer than doing the same to a book.

Then in the nineteen sixties we move to the last act of the tragedy (or is it a farce) and our decision to become an all graduate profession, although still concentrating on traditional skills. The future arrived, at least in my library school, in 1969 when automation first entered the curriculum as an option - Historical Bibliography or Library Automation was the choice. More recently we have tended to concentrate on modern management oriented concepts. There was a recent course for librarians interested in personnel work held at Senate House in the University of London. It offered morning lectures on bad time-keeping, alcohol abuse, drug abuse and sexual harassment. There was then to be a buffet lunch followed by some hands on experience. Not that sex features on the official library school curriculum. By one of those nice coincidences, while I was first writing this piece I saw a review of Nicholas Slonimsky's autobiography which referred to an earlier work he had written called 'Sex and the Music Librarian'. I tried to track this book down, with no success until I mentioned it to a colleague who is a music librarian. "Ah yes" he said "I know the piece, but it's a journal article not a book - there isn't enough of it for a book". Sadly, it now appears to be an unpublished conference paper.

Library schools officially prefer to teach more public interpersonal skills such as management. Here democratic concepts such as teamwork abound; I treasure a reference which I received for one candidate which recorded that "he must be good at teamwork, because he plays in a band". Douglas Foskett thought a love of cricket and an appreciation of beer the fundamental qualities which we require.

Although we have displayed all of these skills and abilities over the centuries public perceptions stay resolutely the same - we think. Stress free ladies of uncertain age in twin sets, ever ready to chide and hush, or to put up the sort of notice reputed to have appeared in Northampton Public Library about 1940, 'Persons must not lie on the shelves'. Many librarians are obsessed with image, the spectacles and the bun, the wimp. My children's bedtime stories included a series by Dorothy Edwards about My Naughty Little Sister. In these the Librarian is known as the Shush Lady. Then we have the group who believe that a smattering of automation allows them to force their views on others who if they are not with us are Luddites. There is the assertive group of librarians who strut around being proactive, aiming for a sort of Conan the Librarian image. Yet when we look

around for real-life role models, these are an equally unlikely bunch. Forget Dewey and Panizzi, what about those other great librarians - Imelda Marcos (the Iron Butterfly), Philip Larkin, Golda Meir, Arnold Schwarzenegger, Mao Tse Tung and, of course, Casanova? At least I can assure you that we are not boring. According to that bible of the trades and professions, the Yellow Pages, for "Boring see Civil Engineers".

The future of the profession

However, let me now turn to the future of the profession. It would be all too easy to launch into some expansive view of the library without walls, of collection free libraries where we shift away from all the dreadful stereotypes like Sourdust, the exquisitely named librarian in Mervyn Peake's *Gormenghast*, who is Master of the Rituals and Guardian of the Collections. To be Master of the Rituals and Guardian of the Collections is a perfectly respectable role and one which many libraries and librarians will fulfil even into the future with distinction. However, although my theme today is that of the future and change, I want to suggest to you that the way we cope with and manage that change is by holding fast to our traditional skills and professional abilities. I would perhaps suggest that we go back to basics, save that that phrase now has some very negative attributes. I perceive a situation in which librarians have become besotted by a restless search for the latest bright baubles of information technology, who find the provision of a coloured screen web-based windows environment a substitute for thought and who blow in the wind - or is it the flatulence - of every new management fad. I want to suggest to you that the way to deal with the storms of the future is to hold fast to that which is at the core of our profession and to look at a future which has solid roots in our professional present and in the culture of library and information science.

Technology

The growth and development of technology is frightening in its speed, although which technology is almost irrelevant. Any computer magazine offers a bewildering array of USB memory sticks, Bluetooth, DVD, home networks and so on, with every home computer now capable of running a small nuclear power station but used only for mail.

The underlying trends are fortunately a little clearer. They are towards ubiquity and portability. Wireless technology, the convergence of PDA's, mobile phones and laptops and government policies aimed at delivering broadband to the home all lead to a situation of great power being put in the hands of individuals. Much of education's - and by extension libraries' - power base has depended on the concentration of resources. Knowledgeable teaching and research staff, laboratories and libraries have provided a magnet which draws students and researchers. The technology at least theoretically removes that advantage. The growth of simulations (whether for chemists or lawyers), digital libraries and webcams mean that it is entirely possible to create a virtual university.

Fortunately and with one or two exceptions all that these lack is the credibility bestowed by centuries of survival. However we can expect technology to continue its rapid growth and obsolescence. We can expect technology increasingly to be owned and provided by the individual and student on the analogy of the slide rule's replacement by the pocket calculator. Only at the very highest end will the university continue to provide major and costly equipment.

Nor is the technology of the Internet as robust as might be expected. Although the web is only eight years old, this is a lifetime in technological terms. The World Wide Wait is a frequently used term of complaint, while the popular figure of 900 million web pages greatly exaggerates the level of content actually available. A pessimist would claim that the content is meagre, that navigation remains dreadful, that the content is typically inappropriate for scholarship and carries none of the burden of control we take for granted and that the whole is little more than a giant experiment. Nor do we ever mention how feeble nine hundred million pages is. A library with three million volumes has nine hundred million pages and there are many of them. At least arguably, every library with 500 books, a terminal and access to document supply services can access much much more than the internet can.

Rebranding professional skills

I want to argue that the knowledge based enterprise of the future will not be created by the slavish adoption of all the attributes of the private sector but by creating

our own environment with our own rules and our own standards and our own goals and vision. This is of course difficult given the nature of government policy in which obfuscation is all to precise a term for the activities of Departments for Education. Higher and further education does not exist to create identical production line products. Our institutions and libraries consist of groups of individually talented people who work together in the creation of new knowledge and the transmission of previously developed knowledge. As Douglas Van Houweling has put it we should be "centered on challenge and opportunity, not organization and process. Our focus is not on routine, but on change". While we as managers and our administrators may focus on management and issues of resource allocation at institutional level, academic staff make their links by discipline across institutional boundaries. The increasing domination of institutions by accountants and management consultants is a pernicious trend which should be resisted. It seems to me most unlikely that this resistance will come about through institutional managements or, say, Universities UK, probably the only remaining British institution where *sangfroid* is indistinguishable from *rigor mortis*. It then falls to professional groups such as ours to argue the case for knowledge led rather than financial led approaches in our organisations.

Let me now return to my dominant theme - dealing with electronic information. There are lots of visions of what this will be and do, but for us perhaps the most important question is whether we are to be information consumers or information brokers and providers. It is claimed that the Internet is growing by 4.5 million users a month and the quantity of data available is growing by a commensurate amount. Our role in this future has been the subject of much anguished debate, but I believe it has some obvious features which relate to our traditional skills. The Internet, that network of networks, has been constructed in a climate of controlled chaos and as a public good. It is now threatened, and I use that word advisedly by the arrival of all sorts of people. Not just friendly traditional publishers in new garb, but cable companies, satellite companies, telephone companies, Rupert Murdoch and other media magnates with squads of lawyers and accountants. Which is to run the network - the moguls or the anarchist communes? The present state of the Internet was usefully described by A.J. Wright, in a comparison with a traditional library:

...the shelves have been removed...the materials lie in huge piles all over the building. The locks on the door have been changed, and there are vendors everywhere selling keys... you find the call numbers have been changed into

a language system you do not understand. The OPAC terminals are gone, but there are voices everywhere --- you cannot see anyone --- talking about this or that guide. You pick up the first book you see and find that its contents have been transformed into language for which you will need a special translator. "Welcome to the virtual library" says the display.

The view of current users was recently and eloquently described by David Bouchier, an avowed technophobe. He noted that:

From time to time I venture into the howling wastes of the Internet. The technocrats promise us that this information overload will increase a thousand times, ten thousand times until every suburban home will have access to every piece of useless information in the universe.

Bringing order to that chaos is a huge challenge, but the organisation of knowledge is the basic first year class in library schools, it is our foundation skill.

Like Cavafy's Romans we can wait paralysed for the Barbarians - who in his poem never came - or we can move ahead charting our own course and our own future in a way which will allow us to deal with the barbarians. We need to set the agenda for professional change and we can do it through imaginative extension of our existing professional skills. Not new wine in old bottles, but old wine in new bottles perhaps.

There are four major areas which I wish to explore in developing this argument:

- The organization of knowledge
- The transformation of publishing and quality assurance of information
- User support
- User instruction

The organisation of knowledge

I have used before the example of the History Channels's acclaimed *American Civil War* series which ran to some sixteen hours of television and is now a standard instructional tool. How is the three minute segment on the Gettysburg address going to be identified? There has been renewed interest of late in trying to enhance catalogue records so that

they rather more fully record what printed volumes contain. This becomes even more of a problem with networked and multimedia resources where a whole new set of issues arise. How do we define the original and uncorrupted text? How do we define the status of the latest and intermediate texts? Do we distinguish between supported resources and unsupported resources? Is a resource with 80% of the information but available 7x24 better than a resource with 100% of the information but available only 6x12?

It is now virtually an article of professional faith that we have moved from holdings to access strategies. How are we to manage that? Do we begin to catalogue the things we don't have rather than the things we do? If subject portals are to be set up, are these all to be managed at local level or do we need national subject based initiatives? Managing and making accessible the resources of the Internet is a huge professional challenge and thus far I have to say that I see very little sign that our profession is getting to grips with the issues - and yet the organisation of knowledge is one of our traditional domains. So far the principle response appears to be to discuss an extension of MARC tagging rather than to reconsider the nature of information.

The Transformation of publishing and quality assurance of information

I have already touched on one aspect of that in terms of defining what is either the latest or the master version of an electronic publication. Electronic publications are much more susceptible to corruption since it is quite difficult to tell from where they originate and whether and when they have been changed either accidentally or by design. But there are other problems too. Conventional publication has markers. For example, take a monograph entitled *Gun Control in the United States*. We have quite different expectations from this monograph if it has an Oxford University Press imprint from one which has a National Rifle Association imprint or if the author is Charlton Heston rather than Al Gore. To a degree, library acquisition policies have provided a form of quality assurance in that we buy only what is presumed to be relevant or appropriate. But when everything is available without these markers, selection by the user becomes more of a problem.

Views on commercial publishing have all the vigour and tolerance of the European religious wars of the sixteenth century and shed as much light on what is happening. It is perhaps fair to say that the balance has swung from one where publishing supported research to one where research is seen to supporting publishing. Multinational

corporations have set out to acquire scientific content very aggressively and have recorded huge profit margins. Curiously there seems to have been little reaction to the notion that a model which may or may not work for "big science" is being foisted on every other discipline, although in terms of staff and student numbers, scientists are in the minority in almost every university.

A backlash is developing which tends to focus on SPARC type solutions which attempt to play publishers at their own game or OAI (Open Access Initiative) solutions which attempt to change the model by wresting power back to the individuals. A third and interesting strand is emerging in some countries which aims to restore the power to universities. The publication of research papers has been governed by the fact that they have no commercial value to universities and the universities have never bothered or felt the need to bother arguing about copyright. However, paradoxically, as they move into distance learning and collaborative arrangements with other universities, these become very difficult to manage unless there is clarity over the ownership of teaching materials. The costs of creating on-line courses are huge; the price of not resolving ownership is that binding collaborative arrangements are difficult to make. As a result there is clear evidence that universities are attempting to address the ownership of at least electronic rights.

Beyond this there is a whole sub-culture on the development of personal websites which is not explored here, but which arguably is a vibrant emergent form of publishing. In this as in other forms of publishing should we explore a role in selection of material in the sense of judging quality and relevance and ensuring availability and access?

User support

We need to consider and design systems which are user friendly. Much of what we have historically done has been user oblivious, wishing to serve the user of the future rather than the user of today. All sorts of areas come into this and I would commend to you the simple expedient of trying to use an unfamiliar library - or at least your own. It can be quite bewildering to wander in when unfamiliar evening staff are on duty and try to borrow a book or check a reference or access a database. Everything from traditional problems

such as lighting quality or signing and guiding, through to Library guides and the number and availability of terminals or the ease of sending messages from the website to the ILL Department should be considered in looking at the accessibility of the library and its collections and services. Individual areas such as public relations or marketing can be identified readily in professional literature but I tend to feel that too little thought is sometimes given to looking at the whole environment in which the librarian, the library and the user interact.

There are fundamental changes in the information business which have been described above. However there are other changes which at least optimists will see as transient. This still requires information managers not to be complacent and to review and reposition their services. The trends are potentially terrifying. There is a clear view amongst many users that if it's not on the Internet it doesn't exist; that because search engines are easy to use they provide worthwhile results and that libraries are old-fashioned. Pluchak has defined one group as "the satisfied inept" while Lesk records the terrifying throwaway line of one of his students "I don't do libraries". More level headed thought reminds us that 'twas ever thus. There has never (regrettably) been a correlation between library use and degree class and students tend to want enough information to deal with the assignment in hand, not comprehensive information.

There are powerful reasons for hoping that what we are seeing is the swing of the pendulum. Law's First Law states that Good information will drive out bad. If the choice is an information source available for limited hours, whose URL constantly changes, whose information is unreliable, whose relevance is unclear and whose authority is unknown or a library mediated portal available 24x7, with relevant, validated and quality assured information it is inconceivable that students at least will not migrate to that. This does of course imply that libraries must actively engage in building electronic services relevant to their constituency.

User instruction

Law's Second Law states that User friendly systems aren't. The library has always had a role in what was often called user instruction. The plethora of electronic systems with different structures, search techniques, passwords and the rests mean that more than ever there is a need for instruction. Whether this is based on formal

instruction, FAQ's or web delivered courses is less important than the need for the library to rethink how it delivers this old but valuable service.

One potentially significant change will rest on institutions recognising the obvious fact that they are producers as well as consumers of information. Who and how such information will be managed is an open question, but a revivification of (electronic) university presses managed by librarians is at least one avenue to be explored.

The same messages are true for academic staff. At my own institution we undertook a major project funded by the British Library to consider some of the issues surrounding electronic information take-up. This was done through a close study of a small group presented with an information rich environment. A number of perhaps obvious points emerged. The first problem is finding the time to invest in setting up and learning systems. Secondly there is not a perceived current unmet need for information. Most users believed they had good information gathering systems already. In part this reflects an understanding of the danger of information overload. Brindley has argued that because of this there is a need for a much greater and more active future role for the librarian in filtering information, mirroring my previous point relating to quality assurance. The still apparently inevitable technical problems lead to great frustration for users. There is also a feeling of enthusiasm and power for those who succeed and of impotence for those who do not. These lead to complex cultural problems and a need for significantly supportive environments although there is a general reluctance to seek support.

In sum we need as a core part of our business to be able to instruct users in the skills not just of using such systems but in assessing their strengths and weaknesses.

Weathering the storm

Philip Agre has defined a set of rules for building an internet culture and these bear examination since they emphasise that in the creation of a new culture and society it is not the technology but the social structures which are critical. We should resist the Technology Sales Pitch. The world is full of snake oil salesmen and the computing world has a particularly dense concentration. Remember that classic definition of a computer as a very fast idiot. Computers speed up processes but it might almost be a variant of Murphy's Law that doing something stupid very fast doesn't make it any less stupid.

We should not put technology on existing dysfunctional institutions. Organisations don't work because the wrong people are doing the wrong things, not because of technological weakness. The proper course of action is to make the organisation functional. Technology may then help the right people do the right things better or quicker.

We should develop people not machinery. The world is littered with unused or underused technology. Computers which could run a small country are used for e-mail and word-processing largely through a failure properly to skill the workforce. One Scottish local authority currently has as its development plan the creation of a thousand blue collar apprenticeships. Creating new jobs is of course eminently laudable, but one wonders what society will find for a thousand new carpenters and plumbers to do.

We need to build an Internet civil society. In a recent lecture Webster recorded the growing dissatisfaction with politics. Some charities have more members than our major political parties and voting rates continue to decline, partly because of the apparently increasing irrelevance certainly of local politics. Societies do of course just happen if left unattended but the sort of society we all might wish to see develop will benefit from some building and encouragement.

There is a tendency to treat the Internet and the World Wide Web as synonyms. They are not. E-mail is perhaps more important than the Web since it implies communication between people rather than a relatively passive individual activity. The art of letter writing seems largely to have died out in the middle of the last century. Curiously it has seen a recent if somewhat mongrel revival through e-mail leading to an increase of communication if not understanding between such groups as parents and student children.

Perhaps obviously, one should analyse both the technical and cultural environment. Building an internet culture will depend on identifying the problems or issues first then identifying appropriate solutions. Good outcomes rarely come from identifying technological solutions then seeking problems to which they can be applied.

The best use of technology is to amplify existing sharing. Where institutions are working together and well, the technology can be used to enhance this process. There is and will be a vast range of technological options. Although it has been argued here that the information revolution is transformational rather than representing a continuum of change, that transformation will be most readily absorbed through the reform of existing beneficial structures.

It is a mistake to distribute technology randomly. The history of UK schools is, for example, littered with well meant but ill-considered attempts to distribute technology with no consideration of the issues surrounding such distribution. Initiatives typically fail due to a failure to address issues of support and sustainability.

Education should be directed to social organisation not technology. Teaching people to use a particular bit of hardware or a particular piece of software is rarely a good investment. The pace of technological change is such that the knowledge is often outdated before the training is completed. An understanding of concepts and social organisation is much more relevant. Universities are full of those trained to use mainframes attempting to use them to provide Internet solutions.

Machinery does not fix social problems and institutions. A shared vision of the way ahead is much more important than the particular technology currently in use. It is the social and human issues which will determine whether we build an information society rather than the ability to make a particular technology work.

Conclusion

There are half a dozen big background messages that it is important to remember when considering the choices and paths we face. Firstly tools are just tools. It is not enough to fill our educational system with computers or to build a network. We need a vision of what kind of society we are trying to create. Secondly geography is not destiny. It is quite clear that at least for the moment it is small and swift acting societies and institutions which are adapting best; Singapore, Finland, Malaysia and even

Vietnam are the sort of countries which appear to be adapting best, while it is of the nature of a global communications revolution that we are removed from the tyranny of distance. Thirdly, bad management is not the same as destiny. We are not helpless in the face of large global conglomerates, but are quite capable of creating structures that are adaptable, hospitable and societal. Fourthly, we should avoid mainframe solutions to Internet problems. One of the most notable features of the short history of computing is the rapidity of the successive waves of technology. Technologically based initiatives are unlikely to prove as productive as innovative thinking. Fifthly, we must recognise that content is king. Commercial pressures are aimed at converting us into a nation of mouse potatoes consuming entertainment and shopping. Yet nations rich in culture, industry, invention and science have a huge contribution to make to the knowledge economy and we need as part of our vision to be clear about what we can contribute as well as consume. And finally, it is irresistible to conclude without a reference to one classic role of librarians essential in shaping the information society. If content is king, then metadata is the king's interpreter. There is little point in having nine hundred million pages of Internet content if one can find either nothing or too much. Metadata, otherwise cataloguing in its Sunday clothes, will be central to our capacity to weather the storm, for it will be in the management of information that we can perhaps find its most effective role.

Let me then close with my two alternative visions of the future. The first or static view might be reflected in Theodor Roethke's 1943 poem *Dolor*, where:

I have known the inexorable sadness of pencils...
Desolation in immaculate public places...
And I have seen dust from the walls of institutions,
Finer than flour, alive, more dangerous than silica,
Sift, almost invisible, through long afternoons of tedium,
Dropping a fine film on nails and delicate eyebrows,
Glazing the pale hair, the duplicate grey standard faces.

This sounds very reminiscent of the world inhabited by the already mentioned librarian of Gormenghast, Sourdust, where nothing changes and the rituals and ceremonies continue for now forgotten reasons.

Alternatively and perhaps perversely in a search for our basics we may go 600 years back to the future seeking our information highway with Chaucer:

Forth, pilgrim, forth! Forth, beste, out of thy stall!

Know thy contree, look up, thank God of al;

Hold the heye wey, and lat thy gost thee lede,

And trowth thee shal delivere, it is no drede.

The future is going to be difficult, demanding and different, but the surest and best way of attacking and enjoying it is through the fruits of our professional disciplines and training, through their extension, development and renewal. Know our own country and we shall hold the highway - the information highway that is. We will not, I repeat not, do this by hitching our wagon to every glittering and shallow fad that comes along peddled by a snake-oil salesman, but by being secure in and developing our traditional professional skills.