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Information Professionals for the 21st Century

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The setting

The last thirty years have seen information professionals working within four overlapping contexts:

> As librarians, maintaining traditional manual libraries with card catalogues, collections of "POP" (print on paper) books and journals, with a strong focus on lending.
> As systems managers, establishing efficient automated libraries, with our traditional processes computerised, but little change to the actual resources provided for our users - books, journals and perhaps a little more audio-visual material than before.
> As information managers, now much more focused on information, coming to terms with the information age context which is impacting both on our processes allowing us to network outside the walls of our libraries, and also on the kinds of resources we make available in our library - the provision of new digital resources over the WWW for example.
> As knowledge workers, beginning to wonder about the more recently hailed knowledge society context, where we are still trying to evaluate our role. Will we become the knowledge managers of the 21st Century?

While not forgetting the very diverse picture of library and information service provision and technological limits we experience day to day as librarians and information professionals, in this presentation, I shall concentrate on the following:

> A brief discussion about our roles within the information age and within knowledge societies.

Some important competencies for information professionals to help

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perform these roles.

The information age

For a good number of years now we have been talking about the implications of the onset of the information age. And for information professionals there has been anxiety to understand both what the information age means and what role librarians and information workers would play within it.

The information society has been defined as "a society where individuals use information intensively" (DTI 1996)**,** and where the way we live and work is modified fundamentally by access to information, computers and telecommunications. In an information society, the intensive use of information and the changes in society are indeed brought about through the convergence of these three areas that were previously seen as separate:

- Telecommunications - including telephony; satellite networks; cable networks; broadcasting; mobile networks

- Computer technologies - including hardware, software, as well as interfaces and protocols

- Information content - including information services, reference tools, databases, publishing; AV products; films, video, music, graphics.

This convergence "enables us to process, store, retrieve and communicate information in whatever form it may take - oral, written or visual, unconstrained by time, distance and volume" (Bangemann, 1994). In other words we can use ICTs to access information, data and knowledge in unprecedented ways.

For librarians, it has meant moving beyond merely automating our traditional library housekeeping processes of acquisitions, cataloguing and lending - the main concerns of our profession when computer technology first became available to us in a big way about thirty years ago. My first professional encounter with computers was with a mainframe, so large and special that it had to have a spacious white painted air-conditioned room all

to itself. This important machine had been carefully and laboriously programmed to run MARC tapes from the British Library and to triumphantly output printed cards which as a junior, I then had to interfile in the card catalogue - it seems incredible now to think that this was once the cutting edge of library automation!

Our role in the information age - information managers

Librarians have within the so-called information age concentrated on facilitating their users access the information that is available through ICTs and I think that they have proved that the role of information manager belongs to them.

They have:

- Meshed their services into various wide area networks, through "Telematics". This is the exchange and processing of electronic data including multimedia, between networked computer systems, with ever more powerful ways of sharing bibliographic data, on-line ordering and document delivery and electronic publications, not forgetting the World Wide Web.

- Made more electronic resources available to users. This has been encouraged by digitization, through which library resources, which we used previously in print formats, become available in digital formats, either through changes in publication, or through deliberate programmes to retrospectively digitize important library collections and learned resources. It has also been revolutionised and democratised by the WWW, which allows every user to be simultaneously a user and a creator of digital content.

- Developed the virtual library concept - in which the entire range of library resources begins to become available through remote computer workstations, over the WWW, with access to a range of electronic library and information resources, on-line catalogues and reservations services, electronic journals subscriptions, often through a single user interface with powerful searching capabilities. The virtual library concept has made most progress in the academic library environment, and in the UK context this has

been made possible on the platform of the publicly sponsored Joint Academic Network - JANET of United Kingdom.

The librarians (or information manager's) role has been to innovate, to implement and to facilitate the development of the processes I have described above, negotiating and agreeing on common standards and protocols, procedures, copyright issues, often working closely with various players in the book and journal supply chain. In the arena of the World Wide Web, where new search and retrieval skills are required, librarians are now beginning to offer the professional knowledge they have developed over many years of debate about indexing and classification.

In university libraries in the UK, in particular, the role of the university librarian has developed and increased to the extent that it is now common for the person in charge of academic library services to also manage the entire campus IT network, as overall director of information services. Strategic and financial responsibilities have vastly increased. And it is expected that UK public and school library services will do much more to develop services appropriate to the information age, with the implementation of the recommendations of the UK Library and Information Commission for the people's network (Library and Information Commission, 1997).

At this information age stage, much professional development work still remains to be done, not least in areas such as efficient use of the WWW, appropriate copyright/intellectual property rights regimes and enforcement, and in the area of preservation and archiving of electronic resources.

And we cannot as information professionals dedicated to equity of access to information, forget that there are terrific unevennesses in terms of access not just globally, among countries, but perhaps even more, within individual countries. The gap between the information "haves" and the information "have nots" is widening rapidly and has become another indicator of social exclusion and poverty (Mansell, 1998; WDR 1998/99, 1098; Panos, I996 and 1997). Much strategic thinking is required of us as We wrestle with problems of access in the 21st century.

To give some indicators of that gap:

> Between mid 1996 and April 1998, the number of web sites available on the WWW grew from under 300,000 to well over 2.2 millions, and while resources over the Web burgeon, so does good old print on paper (Internet figures quoted by Burton, 1998)
> We have never seen so many new books published per year in the UK: in the year 1997, about 98.5 thousand new titles were published in the UK compared with about 78.7 thousand in 1992 (Loughborough, 1998)
> In low income countries (average per capita annual income of US$875) in 1997, there was an average of less than 11 telephone main lines per 1,000 people (18 per 1,000 in Pakistan) compared to an average of 540 per 1,000 in high income countries (average per capita annual income of US$9656) - this obviously impacts directly on access to the resources available on the WWW. (WDR 1998/99, 1998)
> In the world as a whole, it is said that there are about 400-million computer altogether! In South Asia as a whole there were estimated to be about 1.5 personal computers per 1,000 people in 1997 (with Pakistan estimated to have about 1.2 per 1,000). This could be compared with about 224 personal computers per 1,000 in high-income countries (with higher averages in USA, Australia, New Zealand and most of the Scandinavian countries). (WDR 1998/99, 1998)

Knowledge societies

Even though we haven't sorted out issues of inclusivity and access within the information society, the so-called knowledge driven economy is upon us. The World Bank Development Report of 1998/99 stresses the importance of harnessing knowledge for development, while a recent UN sponsored report (Mansell, 1998) discusses ways of establishing innovative knowledge societies.

What do we mean by knowledge societies? Certainly knowledge goes beyond information. Through the information society phenomenon, more and more information is produced and shared, but this needs to be harnessed by being read or otherwise absorbed, understood and appropriately applied to become knowledge.

A knowledge driven economy is "one in which the generation and the exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about more effective use and exploitation of all types of knowledge in all manner of economic activity". (DTI, 1999)

There are a number of reasons for the recognition that it is knowledge that is key to sustainable development and continued economic growth:

> The progress of information and communications technology, and the information age, already briefly discussed, means that huge quantities of information are being made available at faster and faster rates
> The increased speed of scientific and technological advance caused by a global increase in the overall amount of scientific and business Research and Development, better research equipment and better communication. All this has resulted in an acceleration in the growth of the stock of scientific and technological knowledge which it has become easier to share through ICTs.
> Globalised economies which have both increased potential markets but also competition and the imitation of products and processes.
> Changing demands associated with change in tastes and interests, attitudes to new technology.

It is common to make a distinction between two types of knowledge:

> Codified knowledge - knowledge which can be expressed, written down and can be transferred easily to others.
>
> This encompasses the whole range of information resources made available through libraries and information centers, electronic resources. Within an organization it may include even unpublished knowledge resources: files, archives. reports and so on.
>
> Tacit knowledge - knowledge which is more difficult to summarise in words - it consists of experience, understanding and familiarity with a particular field of activity.

Our role within knowledge societies - knowledge managers?

Clearly information professionals can identify a role within the realm of codified knowledge. But having said that, how does our knowledge role differ from our information role, or more correctly, what is added to our information role to make it a knowledge role?

Our knowledge role stems most strongly, I think, from the notion of information overload. Actual information overload which is further complicated by a fear of missing important or significant information is a common complaint in today's workplace. People just cannot sift through and cope with the amounts of information they are exposed to from all kinds of media today.

An IBM study of the global oil and gas industry has estimated that as much as 60% of all professional staff time is spent on locating, collecting, collating and manipulating information rather than on analysis of that information for better decision making. A long time ago, Simon suggested that when people have too much information to process, they will stop applying intellectual criteria to the information they receive, they will cease to analyse and evaluate, and will fall back on "gut feeling" and "simple rules of thumb" that may or may not work in changing circumstances. (Soberman, 1998)

The potential role of the librarian or information professional as information mediator and facilitator to shorten the journey from information to knowledge is therefore a very strong one. Paul Burton, for example, (Burton, 1998) has helped us to see new roles for cataloguers in addressing the mass of material available to users over the WWW, pointing out that the key issues are not new to us and they concern:

> Quality - and the lack of it. Here traditional skills of selection may need little adaptation to help us make choices on what are good and authoritative sources on the WWW, and what sources should be avoided.
>
> Quantity - and how cope with it. Again, all the intellectual work done on subject indexing, are gradually being applied to Web search engines - most of which started with very crude keyword

> searching capabilities. In addition, directories and gateways are endeavouring to provide useful filters and selections.
>
> Retrieval - and how to improve retrieval. The two main approaches are (surprise, surprise) the browser and the focused searcher. We used to support both approaches through a mix of linear shelf arrangement to support browsing, and the structure of our card catalogues to support focused searching. The techniques of achieving this support on the web are obviously somewhat different, but the principles remain very much the same – the browser needs collocation and appropriate linkages while the focused researcher requires hierarchical, logical and cross referenced structures.

Apart from becoming better searchers and filterers of information we also have to be in a position to train and mentor information users. There is no doubt that user education has become more central to our professional role in all types of library setting.

But is there a greater role for us in this field of knowledge management by taking advantage of the tacit knowledge residing in the organization too? I think the answer is only qualified yes, because approaches to exploiting tacit knowledge seem to be a mix of

> Ensuring that the right kind of management styles and work environments are applied to encourage individuals to contribute their knowledge creatively and innovatively, and
>
> Setting up information and knowledge networks, both actual (such as cross functional teams) and virtual (such as corporate intranets), that encourage and reward the sharing of knowledge in various ways.

The emphasis here is on getting colleagues to choose and implement the right management styles and for many of us, management techniques (apart from a dash of customer care and financial management) have not been of great concern to us in the past - and so for us to claim strong roles as knowledge managers, I think we do have to raise our profile as managers.

Competencies for information and knowledge professionals in the 21st century

What is competency?

Competency in the workplace is commonly defined as a mix of the following:

The knowledge
The skills
The behaviour

Needed to do a particular job. As we have seen above, there will be a mix of codifiable and tacit knowledge in each staff member in our organisation.

Global Knowledge inc. (a company and nothing to do with World Bank supported Global Knowledge initiatives), claims to have identified 300 generic activities which are responsible for 80% of all work and that these are codifiable and therefore transferable through training. It is interesting however to note that they also recognise a series of stages on the way to achieving competence.

These are:

- Define work and the required standards
- Define the learning gaps in the workforce
- Teach the worker to the stage where s/he can say "I know" and "I can do" - this is the codified knowledge, if you like
- Mentor and bring on, on the job to develop the skills, knowledge and behaviour - this is the development of the tacit knowledge if you like.
- Arrive at competence

Competency to cope with change and self-develop

Perhaps the most important competency for any worker today is the competency to be able to cope with change, and adapt to change through personal development. The Training the Future project in the UK has tried to produce practical guidelines to help the implementation of the recommendations of the Library and Information Commission's New Library: the people's network - which is the blue print for public library

development in the UK (LIC. 1997, 1998). Although specific skill areas like IT skills are given due prominence. a lot of the focus is on coping with the continuing need for change, how therefore to get staff to willingly "take charge" of their own on-going life-long development needs, and what needs to be done to provide the right environment for staff development (Jones, 1999). Similarly the Special Libraries Association of the US (SLA, 1996) mentions commitment to lifelong learning and personal career planning as a key competency.

In sum, the achievement of a competent workforce in today's ongoing climate of change involves the following:

- Coping with on-going change as a continuing fact of life, accepting the need for life-long learning
- Getting staff to take ownership of their own development, to identify their own training gaps.
- Providing the right climate and facilities for staff to achieve competencies at their own pace in their own way.

Competency in the newer management styles and people management

Both Jago (1995) and the US Special Libraries Association (1996) have emphasised the need for information professionals to develop their management competencies stressing that the old "command and control" style of management must give way to team working, and the manager as leader and mentor. Jago identifies five specific management skills which will encourage not only innovation and creative adaptation to change, but will also support the development of an accountable, responsive workforce:

- Empowering staff, giving them the opportunity to share power, encouraging participation and accountability
- Developing and mentoring staff, delegating appropriately and ensuring that all staff have the chance to grow in the job
- Valuing diversity. identifying and utilizing each staffs individual strengths, and seeing diversity as a valuable organizational asset
- Constantly supporting change, and working for change.
- Communicating responsibly with all staff, not just delivering

messages, but asking questions, listening to staff, showing empathy, but also making sure that expectations of staff are clearly understood.

Competency in resource management

Strategic and financial planning and budgetary control have also become more important in information work for several reasons:

Information professionals need to plan far beyond the old book and journal budgets and often have to make plans for considerable investment in IT and other infra-structure for information work and its on-going running costs

Funds for information work never seem to increase and in order to attract and retain funding we must demonstrate efficiency and value for money in the way we use our resources.

As the organizations within which we all work develop stronger financial and budgetary procedures, information professionals need to demonstrate complete accountability for the funds allocated.

Competency in marketing and promotion

The marketing of library and information services is, crucially, selecting and positioning library and information services to meet the needs of identified target users (or market segments) and then promoting the services. Being customer focused and market oriented has become very important because there are more and more competing ways for people to access and use information and it is likely that these choices will become greater in the 21st century, with the diffusion of digital radio and television, access to the Internet and new ways of selling and distributing books and journals.

Competency to constantly innovate and update information and knowledge services

This is the heart of our professional work, but all the competencies already mentioned will support and facilitate our work in this area. We have already mentioned a range of areas where information professionals have made progress. A lot of the practical skills needed have proved to

be a blend of practical IT skills, and understanding of the implications of new technology and traditional library skills.

The main areas seem to me to be the following:

- Up to date hands-on information technology skills and appreciation, including system management skills
- General information management skills to handle the entire range of information resources available to our potential users
- User training and education skills, advisory skills
- Management of all types of codifiable knowledge
- General collection management and development skills

Conclusion

The focus on knowledge and information that informs and drives the age in which we live provides us with huge opportunities to make a difference in the world. However, we know that many information professionals are frustrated by not having the tools to provide access to our users to the information and knowledge they need. We may have to start by proactively sensitising policy makers, influencers and funders on the importance of supporting information and knowledge access and a good starting point may be to advocate the establishment of national and individual organizational information strategies. With a strategic vision of where our information services are going, the right mix of management skills, IT skills and information management skills will be needed for effective implementation.

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