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The Changing Roles and Identities of Library and Information Services Staff

Derek Law

Reg Carr retired as Bodley's Librarian in 2006 and, as many senior professionals have done, he published a sort of *apologia pro vita sua* (Carr, 2007) reflecting on changes throughout his career. As a young graduate contemplating a career in librarianship in the late 1960s, he had a clear and predictable potential future mapped out: assistant librarians were aged in their early twenties, and this was the normal career grade; one became promotable to sub-librarian (a departmental head) from age 30 onwards, deputy librarian at 40 and for high flyers the university librarian aged 50 or so. Retirement age was often still 67 and although the universities had seen some expansion of student numbers in the 1960s, the role was largely unchanged from that of a century before. Technology did not exist in any meaningful way, with even photocopying being a novel, rather messy and certainly expensive toy.

Throughout the 1960s the growth in student numbers had led to a slow parallel growth in library staff numbers. As a result and often in the 'new' universities of the 1960s there was some experimentation with the concept of subject specialists as opposed to the old functional departmental divisions of cataloguing, reference and reader service. Although first degrees in library science existed, a much more common qualification route was a first degree in almost any discipline – English and history being prevalent – with a one-year diploma course taken at a library science department and two years of on-the-job training leading to Associateship of the Library Association. Formal training and career development were non-existent, with skills developed by example. Some practical skills were gained through involvement in the committees of the Library Association – often a sandpit for Young Turks – and attendance at

conferences was rare, usually national and only very exceptionally international. Many librarians pursued a sort of dual career undertaking scholarship in a small way, publishing in decently obscure journals, usually in the humanities. Very rarely a doctorate might be pursued in an academic discipline, but it was certainly not seen as a requirement. The skill set acquired at age twenty-two could last a professional lifetime. Almost without exception the entire university passed through the doors of the library. No serious researcher, scholar or undergraduate could work without the collections of the library and the inter-library loan service. There was as yet no national library service and very little co-operation with other libraries beyond the local. The University Grants Committee Annual Report for 1921 (University Grants Committee, 1921) had famously stated 'The character and efficiency of a university may be gauged by its treatment of its central organ – the library. We regard the fullest provision for library maintenance as the primary and most vital need in the equipment of a university.' The Parry Report (University Grants Committee, 1967) cited this statement with apparent approbation, maintaining that it was as true as ever, but noted without comment that little was known about the adequacy or efficiency of libraries. That state of affairs continued largely unchanged until around 1990. Then, as Carr noted, 'those who have worked in academic research libraries since the mid-1990s have been through a time of "white water" change such as none of their predecessors ever knew'. Within the span of a single professional career this part of the university community had experienced a period of quite unparalleled seismic change which shows no sign of abating. The very raison d'être of libraries is open to question while the skill set required appears to change almost by the week.

The position in computer centers was to a degree analogous. In 1970 computers were still novel and mainframe based and researchers had to visit the computer center to use them, usually to run batch processing jobs. Computing center staff typically had science degrees in vaguely related disciplines ranging from physics to biology and were much more likely than librarians to have a PhD. The capacity of computers was almost in inverse proportion to their size, the usual wry view being that the university computer of 1969 had the power of a microchip running a household central heating system forty years later. Indeed computers were sufficiently expensive and rarified that their replacement was managed by the Computer Board, an agency of the University Grants Committee, on a seven-year cycle with visitations by members of the Board who would solemnly adjudicate on university plans and agree, and at least partially fund, an investment strategy. The computer center was an arcane and exciting place of new research opportunities for new scholars in science, but at the periphery of university life. No real career paths had yet been created or developed and technical skills were at least as valued as management skills in what were still quite small operations in terms of staff numbers. The skills required were technical and programming skills. The role of computers in management of the institution was non-existent. Again the operation was local. JANET (the Joint Academic Network) was not created until 1983 and even then was limited and partial in its availability.

E-learning did not of course exist, but there were always academic staff who developed an interest in pedagogy and there was some thread of instructional design using images in particular. They would typically be based in subject departments and the idea of pedagogic centers had yet to take root. The creation of the Open University in 1969 spurred interest and the ‘new’ universities of the 1960s were also particularly

interested in novel approaches to instruction for the broader student body which the expansion of the system had created. Many universities had what were usually termed audio-visual departments. Equipment was bulky and relatively primitive. Expensive production facilities with studios and recording areas were required for the keenest universities. As for the rest, content creation tended to be of slides and sometimes tape recordings with video beginning to make a mark. Medical schools often led the way in developing audio-visual materials, but tended to have separate and dedicated facilities. Classroom support revolved around slides, overhead projectors and acetates and above all the provision of chalk. There were no clear qualifications or requirements throughout the system, with each university recruiting technical staff to meet the individual needs of the institution.

Thirty years on these the groupings have all changed in quite fundamental ways and are now commonly aggregated to form the information services of the university. How this has come about, and the human resource challenges this has posed and continues to pose, offers object lessons for the future. For there is no sign that the information revolution has run its course. Of the three groups, librarians were the only one with the sort of professional knowledge base which is a defining characteristic of a profession. The erosion and supplanting of that knowledge base has blurred the distinction between the groups so that ‘information professional’ is a term which can apply in any of them.

1970-1990

The characteristic feature of this period was the inexorable growth and spread of technology and a move from purely locally based activity to national and international

co-operative systems. In libraries much of the period was spent in developing what was mechanisation of existing processes. Librarians by and large spent a generation developing library housekeeping systems with all sorts of glittering features, but these were and are gold-plated dinosaurs. As a general rule, throughout the period, library users still had to visit the library, still go to a catalogue hall and write down the call number on a scrap of paper, still go to the shelf, still find the book they really wanted was not there, and still come to the issue desk to argue about paying fines. Such re-skilling as went on was a consequence of purchasing commercial systems and associated training. Conferences and special interest groups grew in number to exchange experience. If there was a change it was a cultural one which reflected wider cultural sensitivities. Carr (2006) describes this succinctly:

> In fact – in this country at least – it was not generally until the 1980s that the 'customer-oriented' ethos of the service industries really made serious inroads into the reader service departments of the older and larger university libraries. Until then, the emphasis in those more 'traditional' libraries tended to be placed more overtly on collections (rather than on services to users), on administrative procedures (rather than on ease of use), and on rules and regulations (rather than on what users wanted). Thankfully, the world has now changed for the better in this respect; but 'old habits die hard', and even now there are still a few library staff here and there who prefer, mistakenly, to think that their libraries exist primarily to provide them with employment, rather than first and foremost to serve their users.

As the use of IT systems began to spread, the library and the computer center began to have some real contact, developing small products and routines. Similarly university administrations began to develop an interest in the use of IT to mechanise administrative processes. To a degree the computer center had begun to provide basic IT skills training to administrators and librarians. Pedagogical concerns remained detached. For the library this still meant little more than trying to acquire reading lists to make sure that the books were in the library, while the computer center might offer some skills training for undergraduates in science disciplines. More generally the development in particular of European Union programs for higher education and for research began to expose staff to new influences and new thinking, which meant that the environment was seen as stimulating and skill-enhancing through learning from others. JANET was, of course, the preserve of the computer center, but librarians were quick to grasp the potential significance of networks as a means of resource sharing, and from the mid-1980s a febrile debate began on the opportunities which were emerging. In practical terms libraries began to undertake major projects to convert their catalogues to machine readable forms. These huge projects represented a major investment and many staff received formal training in project management, usually from external consultants. As a side benefit this gave a confidence in management and an appetite for developing technology. And a new range of skills was expected but never provided for. Along with other university staff, information services staff were expected to develop skills in areas as wide-ranging as fundraising, marketing, human resource management, and resource management. Most universities were now prepared for this and a range of internal and external courses was made available as well as a much more formalized process of assessment and goal-setting.

Technological drivers and organizational change

Electronic information resources had existed since the mid-1960s, particularly in the sciences. However access to them had been significantly restricted. The resources were abstracting and indexing tools rather than primary sources and all searching was mediated and batch processed. In many universities, while on-line searching operated from the library it was conducted by externally funded individuals whose principal skill was disciplinary. It was very much at the edge of library life. Technology slowly and inexorably spread, although it was not until the early 1980s that the possession of a personal computer became relatively common in universities. What had begun to change however was the thinking about the future of libraries. In a seminal paper in 1978 Lancaster stated 'We are already very close to the day in which a great science Library could exist in a space less than ten feet square' (Lancaster, 1978).

By 1990 the new technology in libraries was CD-ROM. Most libraries had by now set up IT systems departments, buying in technical skills rather than retraining staff. Libraries still looked back. A raging debate took place in libraries on whether users should be allowed unmediated access to CD-ROMs and if so whether they should have to attend mandatory training courses. Pedagogy was slowly developing to take account of computing. The now ubiquitous PowerPoint was launched only in 1987 but by 1990 was not in common use. Teaching remained largely traditional.

Perhaps the largest change came in 1990-91 when the Computer Board was finally closed down. Until then much of higher education was required to have an IT strategy and that was a well-understood process defined and refined by the Computer Board.

At about that time, when the Computer Board became the Information Systems Committee there was a strong push to make institutions produce an information systems strategy. This recognized that the days of the mainframe had largely gone, that much of the purchasing power was at departmental or grant-holder level, but that the university still needed to have a view of what it was trying to achieve, rather than what it intended to buy. Before that concept had been defined, far less refined, the notion of information strategies began to take hold, perhaps precisely because it was an imaginative but ill-defined concept. Computing was now seen as a local responsibility, not a nationally driven issue. The days of the central procurement of a major mainframe every seven years had in effect been swept away by the personal computer. Finally and presciently the Computer Board had appointed a librarian to its board, recognizing the convergence of library and IT interests. It was a period of intense ferment. In 1991 the first-ever national site license was signed with the Institute for Scientific Information to create the BIDS (Bath Information and Data Services) service. This confirmed the position of the UK as the leading country in developing both the theory and practice of electronic information provision. The short-lived Information Systems Committee became the Joint Information Systems Committee (JISC) as the home nations set up their own funding councils. The Joint Funding Councils (Joint Funding Councils, 1993) promptly commissioned a review of libraries – in part driven by the addition of the polytechnics to the sector. This reported in December 1992 and foresaw a major expansion of electronic library activity. That was picked up by the JISC. It funded electronic resources, it adopted a mission of promoting cultural change, it promoted training groups and activities and it required all institutions to adopt an information strategy. It consciously set out to involve every institution in projects and activities and training and considering the

future. This forced library and computer managements to work together to consider joint futures. Then in 1993 the World Wide Web was invented and the world changed forever. The first Web browser came in 1994. In the four years after that it achieved a phenomenal acceptance, in what has been characterized as the largest mass migration in human history. It was adopted by 50 million users in fifty months. Radio took thirty-eight years to gain such an audience and television some thirteen years (Law and McSean, 1998).

Convergence

The response of many institutions was to bring the library and computer center under common management (Royan, 1990). This model and its variants spread like wildfire through the higher education system in the UK – although, curiously, almost nowhere else in the world. Perhaps unsurprisingly, and despite the huge cultural differences between librarians and computer center staff, no real effort was made to consider human resource issues. The larger groupings required a broader range of management skills and there was a general growth in the use of management training courses for senior managers. As for all other staff, the JISC played a seminal role in developing staff. The nationally driven eLib program was crucial but aimed very much at library staff. The recent evaluation of the program was clear on its impact:

> There was agreement across the board that theirs is a highly risk-averse profession. Nevertheless, they have taken on board a huge raft of changes in the ways in which they deliver services. Indeed, they have taken almost complete ownership of the changes which have occurred, showing a degree of imagination and breadth of vision

> which is striking. Such ownership explains the lack of memory of eLib, despite the fact that its aims and objectives have become so widely embedded (Duke and Jordan, 2006).

Computer center staff also faced a whirlwind of technological change. Nor was this just technological growth. A common complaint was that while IT had moved from supporting a handful of departments to supporting the whole university, resources had not grown at the same pace. Whole new areas of skill had developed from networking to personal computing and software support. Computer centers now supported a mass market and not a few technically competent areas. Perhaps as a result computer centers recruited much more from industry, effectively buying-in skills rather than simply re-skilling those already in the sector. It was quickly discovered that mistakes could be expensive – as the disastrous national MAC (Management and Administrative Computing) initiative aimed at developing university administrative systems demonstrated.

Many converged services included learning services which had also been overtaken by this huge personalization of access to information, resources and learning materials. As well as developments in pedagogy roles were developed in staff and student training in the use of software.

A crisis of identity

But library professionals were perhaps the most affected group. The very title of ‘librarian’ had become very unfashionable. In the United Kingdom, even the

venerable name of the Library Association was changed to the anonymous and anodyne CILIP (The Chartered Institute of Library and Information Professionals), following merger with the Institute of Information Scientists. This lack of confidence in their name was, in turn, reflected in the professional library schools. Undergraduate courses soon all but disappeared from the UK, partly because of the impossibility of defining a credible shared corpus of knowledge for the discipline, leaving one-year Master's courses, while departments themselves underwent a Damascene conversion to departments of information science or merged with departments of computing or simply disappeared. Even postgraduate courses reduced greatly in number although courses in topics as varied as electronic publishing and information management appeared to flourish, taught by the same academic staff. These schools were typically too small to survive in a difficult economic environment and even the larger ones have had to follow this path of diversification with many of their graduates taking up employment outside the traditional library sector (Feather, 2003). The same experience is evident in other major countries from Australia to the United States, and there is a real fear that the next generation of professional managers of library services is simply not being created.

At first the tendency was to assume that this new type of converged information service would recruit or retrain a generation of Renaissance men and women armed with a copy of Dewey in one hand and a screwdriver in the other, capable of resolving any user need. When these paragons failed to appear, a more realistic approach emerged which created small teams of experts each with their own set of skills, albeit still with some understanding of how to resolve issues in computing or web searching. New mantras inspired by American business then began to appear and the wish was to become 'user-centered' and 'customer-focused'. So while the skills of the librarian

were again seen as relevant within converged services, these were to be presented in quite new ways. And so titles changed again.

A recent monograph (Oyston, 2003) offered case studies of what happened when libraries were recently replaced by or rebadged as learning resource centers at four quite different universities and reports what happened at Sheffield Hallam, Aberdeen, Lincoln and Leeds Metropolitan Universities. In Sheffield Hallam reorganization followed the creation of the new Adsetts Learning Resource Centre, where 'the most significant change was that of assistant librarian to information adviser'; in Leeds Metropolitan University the role of assistant librarian took on some computing support functions and became senior information officer; in the University of Lincoln, learning advisers were developed as multi-skilled individuals working to support curriculum design and delivery and the transmission of generic skills to students; in Aberdeen the faculty subject librarians became faculty information consultants while assistant librarians became site service managers.

These four cases are fairly typical of what has been happening in many universities. In the same way a brief analysis of four issues of a CILIP recruitment magazine revealed a whole range of new titles: Information Officer, Taxonomist, Heritage Information Manager, Learning Resource Centre Manager, Database Manager, e-Resources Librarian, Outreach Librarian, Web Services Manager and the rather more established Systems Librarian all featured, all with elements of more traditional skills and roles (Law, 2004).

Until the late 1980s librarians had a clear sense of professional identity and happily fell within Eraut's description of the characteristics of professionalism (Eraut, 1994). The profession prided itself on having a long tradition going back four thousand years

to Ashurbanipal's great library of tablets of stone. They fondly remembered Thomas Young, the natural philosopher and polymath, who when he died in 1829 was recorded as the last man who knew everything. Since then society had required intermediaries to manage and organize knowledge in all its published forms. The organization of knowledge, with cataloguing and classification as its core, provided the basic, but arcane, competences provided the set of skills and knowledge which defined the professional knowledge base. Eraut's list of the classic professional concepts of moral integrity, confidentiality and neutrality, as well as a service ethos, permeated the profession. A professional association and the attendant provision of qualifications, pupillage and a code of ethics were all in place late in the nineteenth century. A major research library might contain a million volumes and academic staff had little alternative to finding what they needed in the collections. Apart from visits to other universities or archives in the long vacation and inter library loan (again controlled by library staff) there were only vestigial alternatives to using these professional intermediaries to gain access to knowledge. Even abstracts and indexes were in a primitive state until the late 1960s and non-existent in some disciplines. Although not clearly understood by the profession, much of its professional skill rested in practice on a deep knowledge of the local collection and significant practical experience rather than on a set of generic rules or skills. There was a clear sense of partnership in the academic life of the institution. An unequal partnership no doubt, but nonetheless a partnership.

What one can see with hindsight is the paradox of an increase in 'professionalism' but a loss of public need for the core skills of the profession. Librarians now are much less clearly partners in the academic enterprise and much more a provider of services in an increasingly hierarchical relationship characterized by the division of university

staff into ‘academic’ and the very pejorative ‘non-academic’. Libraries have arguably never been better run. Professional skills have been blurred as more managerial competences have been eagerly acquired from other areas. Financial management, marketing, strategic planning, technology, training have all been eagerly adopted and practiced as research libraries grew in scale and complexity. This has led to a poor differentiation of specialist (information-related) skills from generic ones shared with other professions. At the same time the growth of the internet and its associated tools such as search engines have led to a growing public view that the library is only one of multiple sources of information, while there is a growing body of evidence that users would rather interact with search engines than people. Cataloguing and classification, the twin arks of the professional covenant, are increasingly seen as of little value, even by librarians, having in effect been replaced by natural language searching. Google is now seen as displaying the attributes of moral integrity, confidentiality and neutrality previously the hallmarks of the profession. We can see that this passing of trust has weak foundations as Google collects masses of information on individuals which have been passed on to government. Interestingly this is happening at a time when librarians in the United States display huge professional courage and resist the Patriot Act’s requirement to pass on user data to government agencies.

A further interesting blurring of identity has occurred through a convergence of interests around e-delivery, which has led to a blurring of functional and disciplinary boundaries leading to librarians – and others – beginning to encroach on teaching and research, the traditional domains of academic staff. Partly as a result of the very large funds made available both by the European Union and the JISC, a substantial cadre of young staff has emerged who undertake and publish research on areas related to

digital resources and their many uses. A significant amount of this activity has related to teaching. Much of the development of Managed and Virtual Learning Environments (MLEs/VLEs), the exploration of social networking and a variety of digitally based tools has been led from libraries and converged services. At least arguably, the reluctance of many existing academic staff to devote time and energy to such areas of teaching has left a vacuum which has been filled by these 'blended' or 'third space' professionals (Whitchurch, 2008a; 2008b) who straddle the academic and professional domains. Even conventional librarians increasingly see training students in information literacy and in research and discovery skills as being part of their core competences. The reaction of academic departments and faculties to this varies dramatically, ranging from harmonious partnerships to outright hostility.

International comparisons

The crisis in librarianship as a profession is found in every country. Converged services proved to be a peculiarly British response to the development of digital services and resources. Although the model was tried at individual institutions in many other countries it never really found the same degree of dominance as in the UK. In the United States a partnership approach between libraries and IT remains the dominant model. This was and is undoubtedly colored by the way in which US professional library staff enjoy tenured positions and are seen as much more analogous to academic staff. Nonetheless, American library schools are closing, and the same level of professional angst exists as elsewhere. There is more commonality of experience in northern Europe, in part because the development of IT-based resources and services works with, and is often based on, the UK JISC experience. There are notable comparisons with the Dutch experience for example. While converged services are not as common as in the UK, links between library and IT

services are strong. The European Union has also proved a very effective mechanism for sharing experience and practice. Much joint work has also gone on with Australia and Hong Kong, which also resonate with UK experience.

The future

The pace of change shows no signs of abating. The sheer wealth of information now available on the web dwarfs the collections of even the largest library. In particular Google plans to digitize literally millions of volumes, while most scholarly journals are now available electronically. A recent major Guardian supplement (Guardian, 2008) collected a range of generally upbeat views from senior managers. It claimed that the technological developments 'have put the library back at the heart of teaching, learning and academic research'. This seems wildly optimistic given the general decline in many of the measures of library usage. A major issue for library managers is that most of the university no longer need to darken the library's doors. Funding and policy decisions are increasingly made by those who do not use the library. And yet one very common response has been to build new library buildings (often renamed resource centers) without any clear idea of their future purpose or function.

The same optimism can be seen in the professional literature. Some face the future with confidence and certainty:

> Librarians are professionals trained in the acquisition, organization, retrieval, and dissemination of information. In essence, the practice of librarianship in the virtual library environment will not be very different from that in the traditional print-based library. The librarian's role will continue to include

> selection of suitable resources, providing access to such resources, offering instruction and assistance to patrons in interpreting resources, and preserving both the medium and the information contained therein (Burke, 2002).

Pinfield (2001) makes the same point about subject librarians seeing their role as repurposing existing skills rather than developing entirely new ones. Others are less clear but still want libraries to remain:

> if these decisions [on the future role of libraries and librarians] are made wisely, the academy may be able to maintain much of the ineffable, inspirational value associated with academic libraries while retaining their practical value through altogether transformed activities and functions built upon a new mission designed for a more digital world (Campbell, 2006).

But there is a much darker alternative. Marc Prensky (Prensky, 2001a; 2001b) is perhaps best known for his formulation of the concept of digital natives and digital immigrants. Less well known but even more chilling is his proposition that the very nature of knowledge and information is changing:

> It seems to me that after the digital 'singularity' there are now two kinds of content: 'Legacy' content (to borrow the computer term for old systems) and 'Future' content. 'Legacy' content includes reading, writing, arithmetic, logical thinking, understanding the writings and ideas of the past, etc – all of our 'traditional' curriculum. It is of course still important, but it is from a different era. Some of it (such as logical thinking) will continue to be important, but some (perhaps like Euclidean geometry) will

> become less so, as did Latin and Greek. 'Future' content is to a large extent, not surprisingly, digital and technological. But while it includes software, hardware, robotics, nanotechnology, genomics, etc. it also includes the ethics, politics, sociology, languages and other things that go with them (Prensky, 2001a: 4).

The underlying trends are fortunately relatively clear. They are towards ubiquity and portability. Wireless technology, the convergence of PDAs, 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 higher education's 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 research. 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. Google (and others) have begun huge programs of digitization. There seems a certain inevitability that once thirty million or so volumes are available on the web, the question will be asked whether a university need a library at all. Already in institutions as varied as Bangor University and London University's School of Oriental and African Studies (SOAS) plans were proposed to shed library staff explicitly on the basis that the (so-called) easy availability of material on the web rendered the role of subject specialists redundant.

What is less well noticed is the uncontrolled growth of born-digital material in all institutions. A simple list would include:

Forms of e-content

- Research papers
- Conference presentations
- Theses
- Wikis
- Blogs
- Websites
- Podcasts
- Reusable Learning Objects
- Research data
- e-laboratory books
- Streamed lectures
- Images
- Audio files
- Digitized collections
- e-Archives
- e-mail
- HR Records
- Student/staff records
- Corporate publications
- National heritage artefacts

All of these are growing. No-one controls them all; policies for selection, preservation, curation and access are not in place or generally even discussed. There is an obvious role here for information services staff to develop new content systems and to revivify the fundamental skill of the organization of knowledge.

One perceptive commentator has remarked on this:

> Although these emerging, digital-age library services may be important, even critical, in the present era, there is no consensus on their significance to the future academic library—or even on whether they should remain as library functions carried out by librarians. In addition, at this point, the discussion of the future of the academic

> library has been limited to librarians and has not widened, as it should, to involve the larger academic community. Consequently, neither academic librarians nor others in the academy have a crisp notion of where exactly academic libraries fit in the emerging twenty-first-century information panoply. Because of the fundamental role that academic libraries have played in the past century, it is tremendously difficult to imagine a college or university without a library. Considering the extraordinary pace with which knowledge is moving to the web, it is equally difficult to imagine what an academic library will be and do in another decade. But that is precisely what every college and university should undertake to determine**.** Given the implications of the outcome, this is not an agenda that librarians can, or should, accomplish alone (Campbell, 2006).

And yet there is something of a paradox here. Institutions in general and libraries in particular have in recent years focused on client- and service-oriented approaches. This has led to services aimed particularly at students and in support of teaching. Service to academic staff has diminished in that many or most academics acquire their information at the desktop. Nor is it often obvious to the individual academic that the information has been acquired, licensed and managed by librarians. This focus on commercially available material has moved librarians well away from their roots. There is no debate on, no theory or philosophy of, the curation and preservation of born-digital resources. It is at least possible that some institutions will allow the management of digital resources to be diffused amongst a number of parts

of the university and that the library will cease to have any real function other than that of museum. There is a very real need for professional leadership and debate on this future. Some of this debate is emerging from within the professional educators rather than practitioners. For example Corrall (Corrall, 2005) has articulated three key questions:

- Will we see more explicit technical specialization emerging within LIS practice and education?
- How will future information management roles be divided between information professionals, IS / IT professionals and others with information-oriented backgrounds?
- Can we identify and define different levels of information-related competencies for 'specialist', 'intensive' and other types of information users?

She identifies two diverging paths for professional growth. Firstly there might be Technical 'infostructure' specialists who are charged with designing, developing, managing and supporting the organization's information infrastructure. Secondly there would be functional 'biz-focus' specialists whose task is to align information to business and personal needs, applying information solutions to client problems. Such a structure sits well with perceptions of what is happening in practice. It is then a matter of taste and perception whether one sees this as a rather rapid but natural evolution of the proud four thousand-year-old tradition of librarian or the replacement of a Neanderthal tradition by a more developed and new species.

Conclusion

Universities create and consume information and knowledge. The development of technology has both globalized and increased that creation and consumption while

quite plausibly creating routes which allow information users to bypass what were previously centrally provided services. Staff involved in the provision of information services have found the skill sets they require, on the one hand changing at an impossibly rapid pace and on the other merging and overlapping. Web managers, content management system managers, repository managers, VLE managers and so on can be employed by any or all of the units which constitute these information services. Perhaps oddly while the majority of universities have brought together all their information services in single management structure, only a very few have attempted to break down the traditional departmental boundaries. Linked to this is the absence of any emerging view of what type of staff should be employed and what skill sets they should possess. Career paths are no longer clear, but at least there is a general commitment to developing generic management and leadership skills. Personal and softer skills are perhaps more valued by interview panels than are specific professional competences, if only because the life-span of such professional competences can be measured in months rather than decades. The organization of knowledge will remain a key requirement for universities, but where and by whom it is organized is a much more open question. It can only be a question of time before a university outsources library provision to a third party as no longer being part of the core business. A more cheerful view is that the information profession, however defined, will move past its mid-life identity crisis and define a set of skills and competences in managing locally produced e-resources; for quality-assuring externally accessed data and for teaching information literacy. This provides the core of competences which would ensure a settled and satisfying career. How and where those skills will be taught and assured remains a much more problematic question.

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