We've been here before: repeating patterns of re-invention of librarians' roles in academic libraries

by Rónán O'Beirne

Introduction

The shift we are currently witnessing in the university in response to the global knowledge economy is remarkable because it coincides with two significant movements. The first is well documented and represents the move from «elite to mass to universal» higher education [1].

The second is the wider movement, greatly assisted by technology, from an information scarcity to an information abundance model of scholarship, most evident in the digitisation of printed resources [2]. Both movements are identified in the librarianship literature as being key to changes within that profession. Also from a librarianship perspective there is a strong sense of a shift in the locus of control - a move from a "top down to bottom up" approach to knowledge management. The shift from a rigid taxonomy, managed by the library, to a more flexible folksonomy, where content creators, and indeed users, assign their own keywords and classifications to knowledge provides a good example of an operational issue that indicates a changing role for the librarian.

Academic libraries are in a state of flux as a consequence of the changes taking place across the sector, many of which are externally driven. The increasing requirements of students and researchers to manage complex and large amounts of knowledge are becoming more difficult for the university to satisfy. There are no longer clear boundary markers; new technology allows the traditional boundaries of knowledge to transcend the walls of the university. Looking at the library in the light of these shifting boundaries it becomes apparent that technology allows for some profound changes in education and of course the library needs to respond to these changes if it is to remain relevant.

The notion of a changing educational environment is not new, but perhaps the pace has quickened. Reviewing the decade for UK academic libraries up to the year 2000, Naylor identifies four factors that contributed to significant and dramatic change [3]. The first of these four causes was predictably the growth in student numbers. The second cause identified was the development of information technology, which he noted showed no signs of stabilizing. Third was the change to infrastructure within the UK higher education sector, specifically the merger of the polytechnic and university sectors which took effect in 1994 following the Education Act 1992. Naylor notes that

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these three changes were in fact driven by an external agenda: «All three of these change factors were driven from outside the libraries themselves, and the libraries' task was to assimilate the consequences and respond accordingly. In structuring their response the libraries were guided - driven might not be an inappropriate word - by the outcome of the fourth factor, a special committee of investigation set up by the higher education funding authorities of the four (UK) home countries» [3, p. 83].

That special committee led by Professor Brian Follett produced their report which became known as the Follett Report [4]. The significant shift in academic librarianship which is identified in the literature can be attributed to the findings and subsequent recommendations of the Follett Report. Although it was conceived as a response to various external drivers that essentially equate to a changing political economy relating to knowledge production, librarians were equally focused on direct local issues such as buildings and budgets.

Themes that emerge from the library and information science (LIS) literature relate to the physical sense as space and to the library's symbolic presence as gatekeeper of knowledge retaining a central role to store and manage knowledge. While there is an acceptance in the theory that the position will change, on an operational level the identity and role of the librarian needs to be explored further in relation to emerging concepts of knowledge production and research. Given the scale and pace of change, it is not uncommon for a tension to exist between the library professionals' understanding of the academic library and the understanding and expectations of academic staff and most importantly university administrators, of that same library.

Nowadays in terms of how library services fit into the organizational structure the theme of convergence is one that is familiar to libraries with many having expanded, contracted or shifted shape in the light of changing demands, Dempsey suggests: «The library has a persistent institutional role; however we have seen other areas emerge with overlapping, similar or converging functions. These have included IT, e-learning, publishing, e-research and digital humanities support, writing centres, research and publication administration. As the information management function becomes integral to more activities, and these activities are unified by the network, then the university may realign information management support» [5].

In one sense the literature argues [6] that the library has lost its monopoly on information and knowledge management; the creation, management, manipulation and disclosure of digital materials has become integral to a far wider range of university staff and their activities. In the realms of research, the requirements for research staff to manage large data sets such as survey data and for the dissemination process to require collaboration across a range of institutions and online digital repositories, indicates that the traditional tasks of the library are being performed more widely and so, it is suggested, the role of the library is being transformed. These shifting boundaries, leading to new service configurations and new professional skills represent key themes at the forefront of the profession.

Supporting e-learning

The expectation that through the use of technology students would enjoy a more learner-focused approach capable of realising a socio-constructivist learning has yet to be fully realised. Despite the many education policy changes and the associated introduction of new technologies attempts to shift pedagogy in order to place the learner at the centre, there remains a teaching-focus supported by institutional structures that advocate transmission models of teaching. The introduction of

virtual learning environments (VLE's) provided a glimpse of the potential for learners to construct and refine knowledge in a social context. Yet in many instances this potential has been overshadowed by teachers' more pragmatic use of VLE's to manage teaching resources to support the transmission model of teaching.

It can be argued that a significant barrier that impedes the movement towards technology use for learner-focused approaches is the lack of understanding of the need for a new literacy, an information or digital literacy that empowers the learner to exploit the technology tools to enhance their learning experience. In developing such literacies new roles for academic librarians need to be recognised. Yet to do this requires librarians to be full partners in multidisciplinary approaches to educational design, delivery and innovation in an increasingly networked environment. Also, and perhaps more challenging, a true learner-focused approach, requires academic teaching staff to confront digital literacy and to reconsider their understanding of teaching in a networked environment.

With social networking and Web 2.0 technologies there is the potential to take the initiative away from the teacher and the academy leaving the learner empowered to generate their own content and context for learning. This potential, if supported effectively through appropriate information and digital literacy, may deliver a shift towards a socio-constructivist learning which, up until now, has remained theoretical.

Levy and Roberts [7] note that the introduction of new technologies has not necessarily developed student-focused pedagogies, a transmission model still prevails and, citing research undertaken in 2001 suggest that most approaches to using the web for learning remain essentially teacher-focused: «Despite the compelling body of evidence, from the early years of research into HE (higher education) learning, of the importance of student-focused pedagogies, transmission approaches to teaching are very much alive in universities including in the area of e-learning» [7, p. 28].

We are able here to observe how technology has been used to drive policy and how policy has informed the use of technology. One useful example is JISC (Joint Information Services Committee) whose primary mission is: «To provide world-class leadership in the innovative use of information and communications technology to support education, research and institutional effectiveness» [8].

JISC have provided a clear policy steer for HE and this has been augmented by grant funding to pump-prime some initiatives and to provide research, experimentation and implementation funding across the sector. The imperative for JISC is to embed technology "thinking" and technology use into the wider policy and strategic-level planning within institutions.

Another reason for implementation is the improvement of teaching and learning; this is perhaps the most contested area. The benefits most often cited by those who eagerly support policies of technology for learning are the temporal and spatial advantages. Essentially this is the notion that one can learn at any time and in any place so long as the technology is sufficiently set up.

A further rationale for the introduction of technology is its use in support functions that are related to learning: «Efficiency will be a major driver for the continued implementation of large scale technology-supported learning. The agenda to widen participation will increase diversity amongst the student population. More students will enter higher education without formal qualifications and increasingly will have substantial part-time jobs in order to fund their education. The issue of retention will consequently be significant and technology-based solutions will be required to deliver learning and support to wherever students are and wherever they want it» [9, p. 44].

This type of grant funding from JISC «its innovation programmes have invested funding in over 170 institutions in the last five years», has been one of the key enablers for universities to embrace technology use. In addition it is worth noting that JISC has supported many initiatives for libraries and digital literacy. However JISC sounds a note of caution: «Scaling-up from small pilots to achieving institutional or national take-up is a significant challenge. Change takes time - even proven technical innovations can the considerable time to be adopted by large institutions as the strategic and cultural change is much slower» [10, p. 32].

It is precisely this challenge that has left institutions facing sustainability issues particularly as the benefits of e-learning are yet to be fully realised or in some cases regarded as only partially beneficial and often only amounting to initiatives that run out of steam. Gunn's work for example, on sustainability of e-learning initiatives observes that they are «typically not well supported». Her research found that there were issues around «supportive organisational structures, a vision shared by all and staff accountability» [11, p. 89].

There are of course counter arguments not necessarily against the deployment of technology, which is seen by many as an inevitable consequence of change and progression, but rather they question the underlying principles that a widespread move towards technology will improve learning.

«Despite all the rhetoric to the contrary, institutions seem unable to take concerted steps towards the conception of the "new university" that so many have insisted is needed to accommodate a full flowering of the technology and knowledge revolution» [12, p. 10].

Despite the body of research carried out on evaluation of the impact of e-learning and the use of technology in its delivery, according to Conole, there are still some key questions left unanswered, she suggests these question are: «How effectively do these kinds of systems support learning? Are they more effective than face-to- face learning? Which aspects of learning are best suited to online learning and which to face-to-face? How much time does the development and implementation of online courses take? What skills do teachers and students need in order to use online learning environments effectively?» [13, p. 1].

One of the most frequent criticisms of technology is the lack of a strategic approach to its introduction to teaching. This was highlighted in the recently published *Collaborate to compete* report from the HEFCE (Higher Education Funding Council England) Online Learning Taskforce:

«Standing still is not an option if the UK HE sector is to maintain its quality and competitiveness, and meet the future expectations of students. In order to support collaboration and enable economies of scale, it is essential that institutions take a strategic approach to embedding online learning provision, and adapt their organisational structures and processes appropriately. This may require a significant change in academic and organisational culture» [14, p. 17].

Improvements in teaching are underpinned by different values brought to the education system by different players: these can be understood in terms of social, economic and institutional values. Invariably they provide a context for not just the way the technology is introduced but also influence its continued use. Drawing on evidence provided by the ongoing UCISA [15] longitudinal survey of the use of technology in HE it is possible to trace trends and issues in the use of technology enhanced learning. Where the development and use of technology has been embedded into practice the resulting landscape is uneven. The investment and the infrastructure and ultimately the need to change culture have been part response

and part driver for a more technology engaged university, characterised by the recent development and wide uptake of the virtual learning environment.

For the university the movement to the VLE has been a strategic response that has bridged the gap between policy and practice. Yet while it may appear to be the solution in terms of strategy the VLE has had a profound impact, in that it represents a shift in the locus of control from teaching to learning. The "traditional" deployment of technology by the university, prior to the VLE can be seen in terms of retaining the power on behalf of teachers in their relationship with learners. The VLE, by overcoming the temporal and spatial barriers of timetabled classroom based delivery has delivered flexibility and efficiency for the business of education. At the same time it has altered the pedagogical balance between the learner the teacher and content of learning. It has, in short, signalled the empowerment of the learner to manage aspects of their learning independently of the university.

Looking at the VLE and its impact on the organisational structure it can be seen that support services within universities have been instrumental in its development and indeed its success. Yet there is little representation of this within the core literature on higher education. Frye notes in more general terms the changes required in information and knowledge management that technology has prompted: «And of course information technology is dramatically changing how those in higher education handle information and how we generate, organise, preserve and disseminate scholarly knowledge in teaching and research. Perhaps most significant of all information technology is quickly rendering obsolete the traditional disciplinary boundaries around which the college or university is organized and through which academicians organize and access knowledge» [12, p. 11].

However more specifically the impact on the librarian role of factors such as convergence of service and the blurring and crossing of professional boundaries is something that remains a key concern to many in professional practice. One aspect of this has been the information literacy agenda which has opened up a new vista for many librarians by redefining the terms of engagement between the academic the learner and the information and knowledge that underpins the digital content and process of learning.

Literacies for Web 2.0

Outside the walls of the university the rapid and widespread adoption of social media, social networking and Web 2.0 technologies effectively provides learners with an infrastructure, independent of the university, offering them the opportunity to learn outside of and in many instances beyond what is offered by the university and its VLE. This ability of learners not just to retrieve knowledge but also to create new knowledge in cyberspace and to share it with each other or more widely, is of immense significance. It compounds issues of pedagogy and raises further issues of digital and information literacy. In particular, with the development of social networking, many learning technology models, such as those developed by Salmon [16] and by Laurillard [17], are challenged because the locus of control has not just shifted further than with the introduction of the VLE, but the student is now further empowered to create and share content through a range of avenues, for example Wikipedia.

It might be considered that with learners' ability to construct knowledge and also the freedom of immediate and constant social interaction, the theory of socio-constructivist learning has materialised into a tangible, practical albeit virtual reality.

Yet, as with the deployment of the VLE, higher education is now struggling to come to grips with Web 2.0 technologies, a recent report commissioned by the

Committee of Inquiry into the Changing Learner Experience noted the following: «HEIs and their students find themselves in unchartered territories with respect to their use of Web 2.0 technologies. The historically more certain boundaries where information and communications were controlled by universities is being lost, and institutions are struggling to make sense of how to operate in this changed and permeable space. Students have yet to discover the full consequences of their public representations. The mindsets and frameworks of reference that we have used hitherto are no longer adequate. Many boundaries have become blurred; virtual and physical localities, professional and social lives, formal and informal learning, knowledge consumption and production» [18].

Considering the roles played by supporting services in the development of virtual learning environments where librarians took on extended roles, the most striking of which was, and continues to be, the championing and development of policies for, information literacy [7], there is a case to be made for digital literacy policies to be similarly developed in the emerging Web 2.0 era. Williams [19] for example outlines the case for the librarian's role to be more central to academic activity particularly as information and communication and the creation of knowledge are critical to the learning process. She notes the evolution of information literacy from a library skills and library user education base seeing this as both a strength and a weakness as it transforms into the competency set required in today's university. Certainly the concepts of the digital library and virtual learning environments had a synergy which was difficult to ignore. Out of this came models of information literacy such as that promulgated by SCONUL which produced a model known as the *Seven pillars of information literacy*. These pillars are as follows:

1. Identify (a personal need for information)
2. Scope (assess current knowledge and identify gaps)
3. Plan (construct strategies for locating information and data)
4. Gather (locate and access information and data needed)
5. Evaluate (review research process and compare and evaluate information and data)
6. Manage (organise information professionally and ethically)
7. Present (apply knowledge gained; presenting results, synthesising new and old information and data to create new knowledge and disseminating it in various ways) [20].

While there are few who would argue against the worthiness of information literacy there are a range of views about how it is best deployed across an academic institution. Some approaches see embedding IL into the curricula as the preferred approach while others see a separate IL function as a key aspect of library services. In addition there are toolkit approaches and online e-learning approaches to teaching information literacy. The Librarians Information Literacy Annual Conference [21] has for a number of years been a focal point for these various debates on information literacy.

It is interesting that those who are strong advocates of information literacy have struggled to sustain a definition that fits well with the library profession, from where it originally came, and with the development of "other" literacies such as media literacy and digital literacy, Williams notes this difficulty of definition: «Yet it could be said that there have been as many attempts to define the precise nature of information literacy as there have been learning theories. Indeed it is often difficult to distinguish between what might be seen as a description of the information process and as a description of the learning process» [19, p. 50].

A further complication can be seen within the literature associated with academic librarianship [22, 23], where there is considerable enthusiasm for the

librarian to be recognised for the role of supporting, e-moderating and facilitating learning in the Web 2.0 era. Yet there are those, who put forward a counter argument seeing the true nature of Web 2.0 as not being about information and the individuals' information literacy but rather the social aspect of social networking being based on abilities to develop and sustain relationships, for example Lankshear & Knobel write: «A dispassionate assessment of the impact of digital technologies on popular culture, financial markets, health care, telecommunications, transportation and organizational management, yields a simple observation: The biggest impact these technologies have had, and will have, is on relationships between people and between organizations» [24, p. 49].

Lankshear and Knobel are perhaps over-simplistic in their evaluation in that they are selective in their view of the most recent "social" technologies; these social aspects of course have their origins in and are based on information and communications technologies. As technology and its use develops the definition of literacies will also develop Williams notes: «Thus information literacy has moved on, in definition at least, from a skills-based approach focusing on sources of information to a concept that encompasses skills, knowledge, values and attitudes towards the educational and social use of information» [19, p. 54].

Research Support

Before moving forward to look at the emerging and potentially increasing role of librarians in contributing to the research function through, for example managing research data, it is perhaps useful to summarise what is outlined above. This paper opened by arguing that librarians can be seen to have responded to shifts in the education agenda on a number of occasions, for instance through new digital technologies, through re-configured organisational structures and physically through changed library buildings and spaces. Specifically, in response to e-learning, librarians have developed information literacy and digital literacy programmes as a way of empowering both learners and academic staff to navigate through the new digital world. While this has kept pace with the development of e-learning it has also been held back because of the varied pace at which e-learning has been properly embedded.

What is now emerging is a need for libraries and librarians to respond to the new challenge of the changing research function within academia. This new challenge which is only now beginning to emerge in the LIS literature is yet again based on factors that are external to the library. The linkage between the emerging modes of knowledge production that support the university's position within the knowledge economy and the changing function of the library, need to be given more clarity. Moreover there is little linkage between the theoretical aspects in both knowledge production and LIS literature and the more pragmatic operational aspects of professional librarianship.

One obvious example is the emerging theme of the scholarly communication of research and its relation with the library function. Similarly the academic publishing and intellectual property rights (and copyright generally) seem set to continue to be contentious issues. Most recently, in the UK, leading from this, a further issue that has been of interest to librarians for many years is open access in scholarly communication, see for example Pinfield [25].

The open access (OA) issue is now emerging more widely as a result of the current debate following the Finch review [26] and the position of the UK government should be noted in relation to the wider EU position. Open Access in global terms is becoming a significant issue with varying degrees of interpretation across major economic areas such as the USA and Australia.

Peer-review of scholarly communications and the traditional publishing regimes which are the perceived bedrock of academic quality, are challenged by self-publishing and open-access approaches; the green, gold, gratis and libre publishing models need all to be considered within the changing role of the library profession.

Following on from this and focused more on research in the sciences; where initiatives such as that of the UK Royal Society [27] open access to science are beginning to have a significant impact, is the challenge of dealing with large often complex sets of research data. With increased use of crowd-sourcing in the scientific field and the everyday use of social networking tools such as Twitter by science researchers, scholarly output is becoming more difficult to manage. This may be seen to present an opportunity for certain growth for librarians. The management of large datasets within and across institutional boundaries will increasingly present considerable challenges such as; institutional repositories, access control, rights issues, archiving and preservation of data. Through these and similar tasks runs the necessary requirement for knowledge and information management skills of the highest professional standard.

One might expect the academic library to be the natural home for the organisation storage and preservation of research data. There are, as all librarians know, obvious similarities in approaches used to manage print or electronic resource collections in the academic library with those used to manage research data. However there are also significant differences. One of these differences is the extremely wide range of formats which can be used to represent research data. Perhaps of even more significance is the role of digital curation defined here by the UK Digital Curation Centre: «Digital curation, broadly interpreted, is about maintaining and adding value to a trusted body of digital information for current and future use» [28].

So far no great difference with the everyday responsibilities of the librarian; however this further elaboration may present some problems: «Digital curation is concerned with actively managing data for as long as it continues to be of scholarly, scientific, research and/or administrative interest, with the aim of supporting reproducibility of results, reuse of and adding value to that data, managing it from its point of creation until it is determined not to be useful, and ensuring its long-term accessibility and preservation, authenticity and integrity» [28].

The key question that faces the librarian following this definition is whether the dynamic aspects of data curation «supporting reproducibility of results, reuse of and adding value to that data» is in fact a task with which today's librarians are familiar and comfortable.

Unlike information literacy which as noted above was seen as exclusively the territory of the librarian, research data management has yet to be defined in terms of an exclusive relationship with librarianship. Can we say with certainty that it is the case that professionally qualified librarians have inherent skills in research data management? Perhaps not. For instance the area of data analysis is likely to be a contentious area where higher-order mathematical skills might be required above and beyond those of the librarian or, equally contentious, in qualitative datasets where methods such as discourse analysis would be seen as most appropriately the work of the researcher. Indeed the tripartite relationship between the researcher, the research data and the librarian during the research lifecycle appears to be potentially quite complex and somewhat uncertain.

Two Research Data Management (RDM) projects in the UK that have recently been completed looked at the professional development opportunities and challenges for librarians. The first, RDMRose [29] was a JISC funded project set up to

produce taught and continuing professional development (CPD) learning materials in Research Data Management (RDM) tailored for Information professionals. The second, TraD [30] was a short-term project to enhance the management of research data through training.

The academic library, when supporting research goes beyond RDM and provides many other support functions. However it is imperative that those responsible for professional development within the profession in the UK are aware of the influence of RDM. The Chartered Institute of Library and Information Professionals (CILIP), is responsible for maintaining quality standards amongst its professional body. CILIP has recently undertaken a horizon scanning exercise, the Future Skills Project, to ascertain the future requirements of the professional body. This review developed a framework called the *Professional knowledge and skills base* (PKSB), a model for academic and vocational qualifications. The image below depicts the framework.

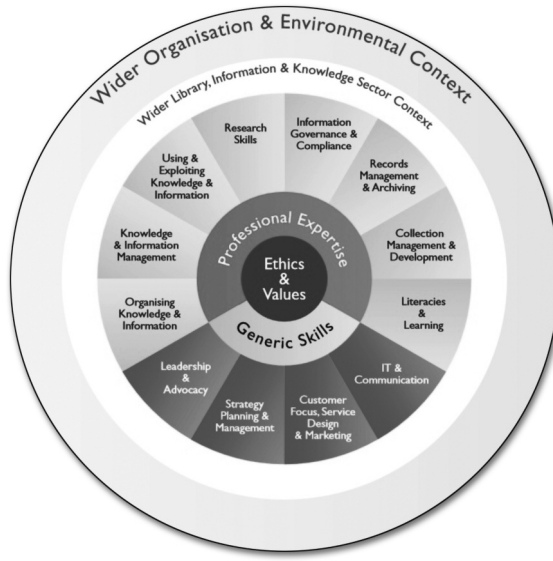

Figure 1. CILIP's *Professional knowledge and skills base*

The outcomes of the Future Skills Project are:
– The creation of a new Professional Knowledge and Skills Base which outlines the broad range of skills that are required by workers in the library, information and knowledge management community.
– The revision of the model for the accreditation of academic and vocational courses.
– The review of our suite of professional qualifications, including Certification, Chartership, Fellowship and Revalidation.
– Engaging with employers and developing strategies for continued employer engagement in the future [31].

This response by the professional body is certainly recognition that the library landscape it changing rapidly. However there are some within the profession who are concerned that the pace of change in areas such as RDM, and more generally in research support, is moving more quickly than the professional body.

Conclusion

In enabling education to move away from an often criticised transmission model, technology has opened up new vistas for teachers allowing them to use a range of social media applications to engage learners. While this is not to suggest that only technology has allowed the shift from transmission because education theorists were writing about new forms of pedagogy long before the internet, but their theories were not put into practice until the arrival of social networking in the internet age.

Although socio-cultural constructivism was theorised as an education approach that saw the learner being connected socially and with the ability to build and distribute knowledge in real-time, it is unlikely that those theorists actually envisaged the social networking revolution that currently unfolds before us.

«Academic research involves three steps: finding relevant information, assessing the quality of that information, then using appropriate information to try to conclude something, to uncover something, or to argue something. The Internet is useful for the first step, somewhat useful for the second, and not at all useful for the third» [32, p. 145].

This quote by Stafford has been used in various ways to describe the limitations of the internet however is it now somewhat jaded and perhaps untrue?

This brief overview of some of the key advances in learning and research demonstrates how librarians are required to constantly shift emphasis, re-appraising and recasting their skills in response to change. This requirement for agility makes the task of defining a body of professional knowledge and skills not only difficult but also rather risky.

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