

NFAIS Miles Conrad Lecture 2009

Challenges for great libraries in the age of the digital native Dame Lynne Brindley, Chief Executive, The British Library

Introductory remarks

Firstly I want to thank NFAIS most sincerely for the great honour bestowed on me to be selected as the Miles Conrad lecturer for 2009. Looking back over the list of my distinguished predecessors and their lecture themes I feel somewhat daunted by the challenge of living up to their seminal contributions.

It also reminded me that, like it or not, I have been around for quite some time in this broad information world – which might suggest that (i) I have gained some wisdom – unlikely, as I see little evidence of an age/wisdom correlation; or (ii) I might not be around much longer – hopefully that will not be the case!

Whatever conditions apply, I am delighted to have this opportunity to be here with you at the 51st annual NFAIS meeting and share some thoughts on the challenges facing research and national libraries in the 21st century.

A personal perspective

Certainly I have been a participant in the digital library journey, perhaps for more years than I care to recollect and the challenges of libraries and information technologies, information and knowledge management have certainly shaped major parts of my career. So let me look back a little before I set out the challenges before us today.

In the late 1980s I was involved in early initiatives around the now quaint sounding ‘electronic campus’ developments and an important national conference of the same title was held in the UK in 1998, bringing together key players at that time, sharing experience of trying to bring the electronic campus to reality¹. At Aston University we installed the first ubiquitous broadband network on campus, preparing a richer technology infrastructure upon which the electronic library might begin to flourish. We were working at wiring up campuses, wiring up student residences, preparing for desktop delivery of information, and being prepared to consider new methods of teaching in this context.

The concept of the information strategy was emerging, whereby information and libraries were seen as important knowledge resources to be harnessed and increasingly treated as a strategic asset – to underpin teaching and learning, research and knowledge transfer activities – which needed to be valued and managed.

Information strategies emerged in the 1990s in universities, with more or less enthusiasm, and beyond universities the focus was on the discipline of knowledge management, the concepts of knowledge exploitation for competitive edge. There was recognition of the increasing economic value of information - of knowledge, both tacit (in people’s heads) and explicit (more formal), as a key element of the corporate, assets of the business. A strong proponent in this recognition of the emerging knowledge-based economy and its key elements was Thomas Stewart, who said, ‘Intellectual capital is intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth’²

In this context the universities and their libraries in the UK, under the auspices of JISC were initiating major programmes of innovation. I was fortunate to be deeply involved in the **eLib** programme which

¹ The electronic campus: an information strategy: proceedings of a conference held on 28-30 October 1998 at Banbury, edited by Lynne J Brindley. Library and Information Research Report, 73.

² Stewart, Thomas A. Intellectual capital: the new wealth of organizations. London, Brearley, 1997

ran from its early planning in 1993 to 2002, a programme which defined the scope and set the pace for leading work on developments and projects to create the electronic library.

The UK's ability to work at a national level in a coordinated programme of development, which at the same time fostered a cadre of people with new and highly relevant skills, was I think the envy of the world. An excellent recent account of the programme and its influence is to be found in Reg Carr's recent book, *The academic research library in a decade of change*³. In parallel with this development programme the JISC was spearheading impressive work on national shared services and national site licences for electronic content delivery (to our newly wired up campuses).

Equally important to my professional outlook was a period I spent in the private sector, as a senior consultant for KPMG. The learning curve was fast, furious and sometimes painful but the experience was invaluable, providing a breadth of opportunity in a range of IT/IS settings which confirmed the understated value of knowledge and information management in its widest sense. This led me back to a senior leadership position, as PVC at the University of Leeds, which gave further insights into academic organisation, culture and behaviours.

Since 2000, when I took up the role of Chief Executive of the British Library my primary digital library lens has been focussed on the changing role of a great national library, bringing new issues to the fore, at the same time as leading a transformational change programme across the organisation to ensure a greater understanding of and engagement with our users and stakeholders; modernisation of our product and service portfolio; exploitation of an iconic, flagship building; and high profile advocacy for the role of libraries in the economy and as facilitators of innovation and creativity.

My reflections on this range of experience are that this zigzagging, boundary spanning career has had many benefits, enabling me to challenge professional shibboleths, embrace mixed team working, and articulate the societal and economic benefits of great libraries in a political environment.

The emergence of digital natives

Over the past couple of days I have listened with fascination to the range of excellent papers on our timely conference theme – the realities of life and the expectations of the digital native in relation to future information service provision. I am pleased to have been involved in the sponsorship of the 'Google Generation' study spoken about by Ian Rowlands.

I would also like to share with you that JISC and the BL have also commissioned a follow-up study on the research behaviour of the Generation Y scholar, the cohort of postgraduate research students born between 1982 and 1994. The aim of the new study is to gain insights into their information seeking and research behaviour and also to establish a benchmark of researcher behaviour against which future scholars from the Google Generation can be measured. This is a three year study.

So what does it all mean for great libraries? In principle it is simple. Libraries and information services must step up to the plate to provide services which meet the needs of this new generation, and ones which add value well beyond the search engine. Libraries must work to understand the needs and expectations of the virtual schoolchildren and virtual scholars, and swiftly move their emphasis to the digital reality and future. The alternative is to risk becoming obsolete, or simply 'museums of the book'.

What in practice does this mean?

Let me share with you some of the issues which I think libraries really need to pay attention to ensure that they are strategically positioned for continuing relevance. I wish to touch on six issues, in no particular priority order.

³ Carr, Reg. *The academic research library in a decade of change*. Oxford, Chandos, 2007

Issue 1 – e-science and e-research – life beyond the document

e-science, e-research and the related data deluge clearly have major implications for libraries, but it remains to be seen how quite what their impact will be and how different library and information services will respond to the enormous challenges.

A major study is underway in the UK assessing the feasibility and costs of developing and maintaining a national shared digital research data service for the UK Higher Education and research sector and is likely to lead to a number of pathfinder projects and increasing join-up in provision between a range of existing data archives, libraries and data centres, including the BL which envisages a navigational role to quality, validated source.

Rick Luce (Director of Information Services at Emory University) is a key advocate for real engagement of libraries in this area. Near the top of his list he includes repositories, workflows and data archiving, which together enable group to group interactions in sustainable electronic spaces, and within an overall context of intelligent grids, collaborative support tools, new kinds of evaluation methods, specialist social software, and access to a rich range of resources and tools.

The challenge of the data deluge is most closely associated with e-science at present, but is increasingly relevant to all disciplines – the scale of the challenge now being faced is enormous and without precedent. It represents huge technology, metadata and digital storage challenges, and of course raises issues of long term retention and reuse of data, needing skills of data curation which are currently in short supply and certainly not present in many research libraries.

There are many examples of the challenge across disciplines: systematic biology and botany; bioinformatics and molecular biology; climate change and environmental change modelling, and so on.

Research libraries – and indeed publishers and aggregators - will have to decide whether and how to engage with these areas of science and increasingly social science, and humanities.

In my view libraries do have a role to play in dataset curation, and therefore an active involvement in dataset creation and its metadata and taxonomies. There is clearly a cost and risk from engagement – even assuming you can persuade scientists that digital libraries and librarians have the relevant skills, but if data librarians and data scientists could prove their value then their costs could be built into relevant grant applications. Such investment could in turn attract successful science practitioners into libraries, something which is now very difficult.

This goes well beyond the licensing of scientific information, which currently appears to be a central research library role – site licences, national licences, individual publisher licences, document delivery services –and does involve more risk, expense and investment in skills development and new roles and partnerships. In other words, the goalposts for what constitutes adding value are shifting rapidly. Documents are increasingly regarded as commodity services; data curation and integrated services supporting data, software tools, and applications are becoming more central.

The British Library has recent experience of revitalising our role in science, and we are continuing the process of renewing our engagement with researchers, particularly using digital content and new online services embedded in research workflows. Let me give you a couple of examples.

UK PubMed Central is a core BL offering to bioscience researchers. It provides a stable, permanent and free-to-access online digital archive of full-text, peer-reviewed research publications. Launched in January 2007, it has some 1.4 million articles, and an average of 36,000 publications are downloaded each month. We are working in partnership with the National Institute of Health in Washington and the European Bioinformatics Group, thus gaining new skills and experience in data mining, taxonomies and informatics.

The **Research Information Centre** workflow software supports researchers by providing a web-based information management tool. It enables researchers to collaborate throughout the life-cycle of their

research projects – from the initial idea to the dissemination of results. Based on Microsoft's SharePoint software, we developed it in partnership with the Microsoft External Research Team and recently conducted beta testing with 25 bioscience research teams in the UK and US. The positive reaction of the research community has led to a further phase of development and we expect an enhanced version to be available by the end of the year.

Issue 2 – Web 2.0 and Web 3.0 – beyond the technologies

The second issue I would like to examine is Web 2.0 and Web 3.0, and the deep changes which run beyond the technologies.

Many of us have become quite excited by the potential of Web 2.0, its new capabilities and opportunities for service development. Web 2.0 offers the chance to transform our interactions with the internet, from the Web 1.0 world of interactions between individuals and information to a world of sharing, or collaborative content development, of group working and social networking, with its blogs, wikis, twittering, user tagging and pod-casting, etc. etc.

Charles Leadbeater, a leading authority on change and innovation who has spoken and written much about the future of internet, addressed a recent meeting of The British Library's Board. His book, We Think⁴ is a catalyst for thinking of the Web as a platform for mass creativity and innovation. He suggests that the internet may give us radically different options for how we might organise ourselves - different ways that are likely to be more collaborative, with lower barriers to entry, and are more participative. The web offers innovation and knowledge sharing at huge scale, involving both professionals and amateurs. He challenges universities and libraries to re-invent themselves in this new environment.

We need to deal with the emergent genre of authorship that has come about because of the web, new ways of expressing things in an interactive space and how this becomes multi-way communication and engagement. All this challenges traditional views of peer review, authority, mediation, and authenticity and indeed the role of many of the players and professionals and the knowledge value chain.

Blogs, wikis, twitters, web-based community databases, Facebook groups - these are all part of the rich fabric of creation – everyone is an author, a commentator and a contributor – as much a part of the nation's memory, scientific outputs, and intellectual records, as traditionally authoritative and mediated formal publication. Or at least that is what is argued!

This is as much a challenge to the role of the academic community as it is to the Library, and we each have to find new roles and opportunities in this messier, more dynamic and democratic world. It challenges the brand of a research university and a research library - we are indelibly associated with authenticity, independence, and long term quality – all this does not sit comfortably with the wiki view and the beta mindset of the digital world, yet everything we learn about the digital natives suggests that this is exactly their world and where their information expectations at set, and where their engagement lies.

At the British Library we are increasingly offering Web 2.0 based services, or additions to services. Our curators blog around exhibitions – from inception through preparation and responses to shows; we are gradually involving specialist academic and expert communities in enhancing our catalogues, through comment, annotation, and enhanced metadata; we have a Facebook group for our business entrepreneurs (who incidentally much enjoyed a physical networking event recently as an adjunct to their virtual networking); we podcast lectures and panel events; we encourage interpretative content contribution within our schools and education programmes; and mashups and virtual debates around our exhibition themes. We have introduced community tagging in our catalogue, we are involving ourselves in the flickr commons initiative and also introducing user contributions and tagging in our Online Gallery and our Sound Recordings site. Our skills and enthusiasm base continues to widen,

⁴ Leadbeater, Charles. We Think: the power of mass creativity. Profile, 2008

while at the same time we work through issues of brand value associated with independence, quality and authenticity of content.

Issue 3 - the future of special collections is bright, or how do we ensure rich digital content provision?

Mass digitisation efforts by Google are well known, if controversial, and especially the US large scale engagement of Michigan and Stanford universities provide an enormous boost to digital content available. In addition there are many traditional players at work in this field, including the major aggregators, building on their historical microform services, the major university and commercial presses and of course the major journal publishers. We all seem to be in a frenzied race to ensure that legacy content is digitally available, and this is unsurprising given the changing expectations of users. The default assumption becomes to both access content digitally and to assume that all content can and should be available in digital form, without the necessity of going to physical library or requiring any less immediate forms of delivery. Mass digitisation provides comprehensiveness and opportunities for data mining and textual analysis.

Interestingly some are beginning to argue that the availability of masses of digital content not only supports new forms of research and a much enriched educational experience, but also stimulates more interest in materiality, the artefactual value and context of the book and other traditional sources. Robert Darnton recently gave a spirited defence of the simultaneous value of Google digitisation and search services and the research library, preserving the past and accumulating energy for the future⁵.

I have much sympathy with the 'both/and' arguments, both in principle and through direct experience at the British Library. The primary associated challenge is more simply an economic one;

- 'both/and' costs;
- digital formats are not simply replacing more traditional formats;
- digital native behaviour is only one, but a significant approach to information seeking, regardless of age; and
- there appears to be a very long transition. But I digress from digitisation!

The British Library's partnership project with Microsoft to digitise 19th century literature and make it freely available via the Microsoft Live search portal was unfortunately brought to an early end when Microsoft decided to cease its book digitisation programme. It did however result in a good corpus of English literature (classics and hidden gems) becoming available through our catalogue and elsewhere.

A focus of the BL's new digitisation strategy⁶ is on digitising its newspaper collection. A competitive dialogue process is in progress, with the aim of creating a partnership with the private sector, working with imaginative business models for long term sustainability and scale – there are some 750 million pages of opportunity! JISC support for HE and FE communities has already resulted in three million pages 18th and 19th century newspapers being made freely available online to those communities, providing a rich information source, and fantastic search and interpretive opportunities.

BUT what about special collections? All research libraries have them and believe that they represent a distinguishing feature of research libraries and universities, and for individual institutions they are projected as a USP to attract the best faculty and students. We need to bring our primary source materials into the digital domain to enrich scholarship, particularly in the humanities and social

⁵ Darnton, Robert. The library in the new age. New York Review of Books, V 55, n 10, June 12 2008

⁶ www.bl.uk/aboutus/stratpolprog/digi/digitisation/digistrategy

sciences and to provide extraordinary access and research opportunities for global sharing and reconnection.

The British Library continues to look at new ways to exploit its unique collections for research, as teaching and learning resources, and for the public benefit.

Our hugely popular **Turning The Pages** digitised books have brought global prominence, visibility and public endorsement to treasures which were once for the eyes of the privileged few. The British Library's online gallery provides access to Mozart's musical diary (complete with 75 audio clips), the Diamond Sutra (the oldest printed book), Leonardo's notebook, Blake's notebook, Sultan Babar's Quaran, to name just a few.

Digitisation also enables the re-unification of collections and items that were conceived together, but have become physically separated across the world.

We have two great BL examples: the **International Dunhuang Project** which is a long-standing international project led by the BL to conserve, catalogue, digitise and research the materials and artifacts from 100BC – AD1200 which were found at Dunhuang and archaeological sites along the ancient Silk Road. It has centres in London, Beijing, Dunhuang, St Petersburg, Berlin and Kyoto – it is an unrivaled scholarly resource but one which is increasingly of interest to the general public as Silk Road modern day travellers become more fascinated by the culture and heritage of the region.

Secondly, the **Codex Sinaiticus Project** is re-uniting digitally this 4th century codex, one of the two earliest Christian Bibles, in Greek and containing the earliest surviving copy of the complete New Testament. This digital scholarship project, again led by the BL has partners at the National Library of Russia in St Petersburg, St Catherine's Monastery in Sinai and Leipzig University. This project includes major preservation work, provenance research, scholarly interpretation – which may well change the face of biblical studies across the world. The recent launching of the project Website has attracted enormous interest – on the day of its launch the website received 71,891 visits.

I could go on at length but my message is that opening up our special collections through major digitisation initiatives, individually and in collaboration with others is a critical contribution to new kinds of digital scholarship and research and will distinguish research libraries and their role in the 21st century.

At the same time we must consider what the special collections of the future will be and how we will handle them. At the British Library we are involved in an important project called **Digital Lives**⁷, working with partners from SLAIS at UCL and the Centre for IT and Law at the University of Bristol. This major, AHRC funded research project is focussed on personal digital collections and their relationship with research repositories. It is studying how modern personal digital collections are being created, managed and made accessible; it is exploring the needs and views of potential scholarly users of future personal digital collections, such as biographers and historians, and is assessing how to manage the challenges associated with all aspects of curation, methods of transfer from individuals to long-term repositories; confidentiality and professional ethics involved, and access and long term preservation of these new kinds of primary source materials.

This project is discovering the kinds of information management behaviour professionals and individuals adopt in their personal lives. There is plenty of work around the management of knowledge and data in a corporate context (with high profile data loss stories providing the impetus for improvement) but little attention has so far been paid to how individuals manage their own digital assets – initial findings do not indicate that we lead orderly digital lives! - which implies the need for more attention to digital information proficiency, a new digital information literacy agenda.

⁷ www.bl.uk/digital-lives

Issue 4 - Information literacy for the 21st century.

My thinking about the importance of the digital literacy agenda and how it should be shaped has developed recently in the context of the study you have heard about from Ian Rowlands⁸, the related book on digital consumers⁹ and the seminal work that we have heard about by John Palfrey¹⁰.

Although young people demonstrate an apparent ease and familiarity with computers, they rely heavily on search engines, view rather than read and do not possess the critical and analytical skills to assess the information that they find on the Web. These behavioural traits are also increasingly becoming the norm for all age-groups, from younger pupils and undergraduates through to professors. The ability to concentrate deeply appears to be a dying skill.

First, there is need for good research and information handling skills at all levels – from cradle to grave. Most people including serious scholars tend to think that ‘most’ material is available on the web – our search engine, two clicks mentality, will not serve us well as the basis for a digital future. Meantime, conversely, e-content is disappearing from the web as ephemeral information such as websites, blogs etc are not being saved. New research techniques and newly enabled learning possibilities opened up by the richness of multi-media capabilities are emerging, but as yet there appears to be slow take-up of the opportunities opened up by such content.

At the British Library this is an important activity. The focus for our endeavours is on post-16 study – including research skills, creativity, critical thinking and visual, verbal, media and information literacy. We continue, however to be shocked at the number of PhD candidates who appear to be all at sea when confronted with the need to engage with complex, competing and diverse information sources.

Second, we need to support the development of skills at all levels of critical thinking, judgement skills against simple propaganda, and the appreciation of the authenticity and provenance of the information they find. We need to ensure that we are all skilled to be able as citizens, professionals and researchers to make our own assessments about competing truths and views, to distinguish between quality audited and misleading information, vanity publishing and collaborative efforts, to be able to cross-check sources for authenticity and bias.

Third, there is need to develop a broader understanding and appreciation of the critical information issues and debates that are at the centre of our digital future. Intellectual property and copyright in the digital age are central areas of policy debate, with strongly held views and arguments on all sides. Getting the balance right is intrinsic to a healthy economy and our education sector, for without reward there is nothing to be gained in innovation and without access to the ideas that have come before there is no inspiration for the future.

Issue 5 - Digital preservation and long-term access

I have already referred to the transitory nature of much information held on the Web. One of the major emerging roles for research libraries, and especially national libraries, is taking responsibility for digital preservation, for ensuring perpetual digital access, or access for ever.

Digital preservation as a topic of importance has moved into the public realm of interest – through digital photography, digital memory, digital lives. Digital preservation affects everyone, whether they know it or not. Every citizen, enterprise and institution is now, to a greater or lesser extent, an information producer or aggregator. For most businesses digital processes are the norm, with everything from correspondence to the company accounts held only on computer servers. For

⁸ <http://www.bl.uk/news/pdf/googlegen.pdf>

⁹ Nicholas, David and Rowlands, editors. Digital consumers: reshaping the information profession. Facet publishing, London, 2008

¹⁰ Palfrey, John and Gasser, Urs. Born digital: understanding the first generation of digital natives. Basic Books, New York, 2008/

individuals this might include the digital family photo collection or the switch to on-line bills and bank statements.

The changing nature of electronic communications was recognised last year when the British Library joined with Microsoft to launch '**Email Britain**' – a one month campaign asking the public to make email history by forwarding a memorable or significant email from their sent mail or inbox, for inclusion in a digital archive that will be stored at the British Library for future generations. This captured the imagination of the public who chose to contribute in droves. No doubt a call for Facebook group 'archives' would be greeted with similar enthusiasm and engagement.

The British Library's ongoing **Web Archiving Programme** is focusing on the Library becoming the point of first resort for a comprehensive archive of material from the UK Web domain. Since 2004, the British Library has led and participated in the UK Web Archiving Consortium initiative, and worked with other key UK organisations to build, through permissions, an archive of web resources of scholarly, cultural, political and scientific importance. It is hoped that in the near future the legal deposit legislation will extend through the regulation process to include web publications, and the BL and other legal deposit libraries will be able to harvest .uk websites for the core purpose of archiving and long term preservation.

We have now I think moved into the mainstream public commons, where because of the importance of digital devices in their own world, citizens have much more interest in and engagement with the issues – they want their piece in family posterity at least. This is deeply encouraging and it is for each of us to decide upon and position our own libraries and institutions in the spectrum of roles needed to ensure that the intellectual memory of nations, institutions and individuals is preserved and accessible for the future.

It is also important I believe to ensure collaboration with publishers in this activity – the presence of global digital 'safe harbours', whether through digital legal deposit arrangements or through long-term institutional missions to preserve intellectual outputs of all kinds – seems to be a necessary part of our shared international infrastructure to underpin commercial, educational and other product development in the knowledge economy.

Issue 6 – inspiring spaces

Many people have predicted that the physical spaces of the research library will no longer be needed, that our virtual worlds will essential be our social and real worlds. That is not our experience at the British Library!

We are using and adapting our range of inspiring spaces to support creativity and innovation; to support networking; to support quiet and group interactions, and so on. Our Business and IP Centre has become an attractor for potential (mostly young) entrepreneurs; our late night and singles events attract people who wouldn't normally associate fun with a Library and our proposals to create a **Digital Research Centre** are receiving enthusiastic support from digital natives and digital immigrants alike. Libraries need to rise to the challenge of making their physical spaces inspiring, cool and happening places.

Closing remarks

I have touched on just a few aspects of the information environment we are moving in to – this complex, more visual, richer environment is becoming an expectation, a norm, and an integral part of world class research and scholarship.

We in research libraries have choices to make: leave it to others and remain boxed in; do print and print-like things, be good at traditional Special Collections, and leave someone else to take the risks and have the expense of real engagement with the new e-science and e-scholarship endeavour. The choices that library and information service leaders make now will critically shape their role and relevance for the growing numbers of digital natives and digital immigrants. This means immersion in unfamiliar territory for many, pushing the boundaries, leading debate and action.

These challenges are also relevant to the academy and the future university over the next 10 years or so. The CEO of the higher education funding council for England gave a speech¹¹ at the end of 2007 in which he raised the challenge of nothing less than the future of the university in an age of free open access to knowledge, including increasingly knowledge generated by the academy (MIT, OU, etc.).

He envisages a system which will evolve dramatically in the next decade, a system under immense pressure, a system in a context of democratization of knowledge, where knowledge has never been so freely available but (his words) **understanding** so tantalisingly elusive. If, as some think likely that all knowledge will be digital and freely available by 2025, what exactly is the role of the university, what is the role of the research library?

Opportunities exist for real and vocal leadership in shaping this emerging space, shaping the political economy of higher education, and shaping its interactions with knowledge creation, knowledge ordering and dissemination, and knowledge interaction. This is a role that I think the information profession should participate in very strongly.

I hope that in my lecture I have given you an insight into some of the major issues facing research and national libraries as we move into the roller-coaster of our digital future.

It is certainly a great time to be the Chief Executive of The British Library, and I hope that I have conveyed to you our commitment and enthusiasm to be active participants in creating and shaping this information rich world to support economic, social and cultural success.

Thank you for listening and for the honour of presenting this year's Miles Conrad lecture.

Dame Lynne Brindley
February 2009

¹¹ www.aua.ac.uk/events/annuallecture/tenth/