2-3 July 2013, Manchester

Simon Barron, The British Library

Rise of the cyborgs: the growth of librarian-it hybrids
Beyond Information Matters

Technology changes us. As part of the information world's continual adaptation to technological advance, a new category of information worker is emerging: the librarian-IT hybrid. These individuals

have different roles and different skills than either the traditional information professional [1] or the traditional IT support worker. Examining the evolution of librarian-IT hybrids allows us to see the future of library and information management.

1.0. INFORMATION AND TECHNOLOGY

Libraries, archives, and museums used to contain information in the same way a cage contains a prisoner: the information was in books, books were in the library, and so, by definition, the information was in the library. Around the time of the development of the telegraph, 'information' became divorced from the physical objects containing it and our language and thinking adapted accordingly: "people needed consciously to divorce their conception of the message from the paper on which it was written" (Gleick, 2011, p. 151). Technology has changed our concept of 'information' and now information exists in an ethereal digital network: a parallel world of the invisible and the intangible with which we interact unthinkingly every day.

As our defining commodity changed, information professionals changed. Information ranges freely in the vast, untamed wilderness of the digital network and resides outside our institutions, collections, or buildings [2]. Information professionals corral digital information into digital collections that are an integral part of hybrid libraries rather than an addendum to physical collections. Librarians – and our users – have smartphones, tablets, and other mobile computers from which they can access a vast network of information. Librarians interact with digital information and technology on a daily basis: providing tech support to users of PCs and other library equipment; organising online resources and building digital collections; using the Web to answer reference questions; using RFID to issue and return books; etc. There are information professionals who do their jobs without interacting with print books, physical journals, or paper of any kind.

2.0. LIBRARY AND IT

The technology of information provision is an amalgamation of library and IT. In the same way that the OPAC is a combination of machine-readable catalogue metadata and computer software, a mix of library and IT is becoming apparent in the people of information provision as they become hybrids of library skills and IT skills.

Often, library staff and IT staff are separated in different departments of the same overall organisation. In public libraries, IT support usually comes from the governing local authority's IT department that has the needs of all council services to consider. Libraries embedded in organisations – law libraries, commercial libraries, etc. – generally receive IT provision from the organisation's IT department. In Higher Education libraries, the IT department usually belongs to the

---

1   In order to avoid the whole thorny question of job titles, nomenclature, and self-definition in LIS, hereafter the terms 'information professional' and 'librarian' will be used somewhat interchangeably [1a]. This grouping contains librarians, non-library-based information professionals, library assistants, other library staff, and more or less anyone in information work [1b].

1a   Depending largely upon which is more aesthetically and linguistically pleasing in a particular sentence. Your opinion may vary.

1b   Apart from IT staff for reasons which will become glaringly apparent. This nested footnote and the drawing of this sharp distinction are somewhat ironic given the overall *raison* of this paper.

2   The use of the words 'ranges' and 'resides' are technically category mistakes but the linguistic circumlocutions required to make this paper 100% metaphysically accurate would be tedious to write and tedious to read so please forgive the occasional slip-up in the name of readability [2a].

2a   While we're clearing up terminological issues: the term 'librarian-IT hybrid' was chosen purely because it sounds better than such ugly portmanteaus as 'cybrarian', 'Webrarian', or 'digibrarian'. I kind of wish I'd used 'digital librarian' because it's a lot less clumsy-sounding but I submitted the abstract for this paper months before thinking of that term.

entire university with the library as only one area of their remit: university libraries may have a few dedicated IT staff or a Systems Librarian overseeing library software and systems. Research libraries or larger libraries may have a dedicated IT team: however, such teams are labelled as 'IT' [3] and explicitly distinguished from library staff.

The separation between library and IT departments can lead to antagonism between the two. Anecdotal evidence suggests that many libraries have strained relationships with their IT support. At a Digital Skills Sharing Event on 17 January 2013, teams of public librarians and publishers presented reports of new digital approaches for public libraries. A recurring theme was the difficulty many libraries encountered working with their council IT departments. Tasks as simple as setting up an account on a social media platform were hindered by council restrictions on communication, IT departments unwilling to support new tech, or librarians' lack of understanding of the technology's requirements. In relation to the event (hashtagged as #digiskills), Mick Fortune (2013a and 2013b) tweeted: ""Difficult" rapidly becoming the word of the day when describing relations between corporate ICT and library service aims. #digiskills"; "Wondering how public libraries can deliver a service that will depend so heavily on connectivity without better ICT support? #digiskills".

Though larger libraries often have more advanced technology and better interactions with IT, relationships can still be fraught. Iris Jastram (2012) is a librarian in a US Higher Education college: "the question is… how to have a truly collaborative relationship when the library is about 90% customer of IT and 10% collaborator with IT. We have complex systems that they support. We have weird old fashioned printers (i.e. label printers) that we really need but that don't work most of the time. Our web presence is complicated. Our need for public technology infrastructure (and bandwidth) just keeps increasing. Some of us want to tinker with all kinds of geeky stuff, and some of us need help copying and pasting. I don't know if we're their most complicated customers on campus, but we're probably right up there."

Library staff and IT staff have an unusual symbiotic relationship: a "weird power dynamic" (Jastram, 2012). The two groups respect and require one another and yet have an unspoken antagonism [4]. Similar to the two cultures identified by C. P. Snow (1993), library and IT can represent a fundamental dichotomy of human psychology: the division between humanities and sciences; between emotion and logic; between human and computer.

3.0. TECHNOLOGY AND CHANGE

Now, as technology becomes a more vital part of LIS, the dynamics of this relationship are changing. Rather than tech skills being restricted to a subset of information professionals – Systems Librarians, E-resource Librarians, Technical Specialists, etc. - more librarians at all levels in all sectors are using more technology. Information professionals need IT skills in order to provide information effectively and hence to do their jobs. "As IT continues to pervade how patrons access and utilize library resources, librarians continue to look more like IT professionals." (Mathews & Pardue, 2009, pp. 257-258)

---

3   Or similar acronyms: in Durham University, they are 'CIS'; in the British Library, until recently, 'eIS'. There's usually an 'I' for 'information'.
4   The relationship is made more complex by informal evidence of a growing stereotype in the library community in which library staff have an apparent tendency to romantically pair with IT staff. Investigation of this phenomenon holds the promise of fascinating research but is, unfortunately, well beyond the scope of this paper.

In a 2009 study, Mathews and Pardue (2009) performed a content analysis of randomly selected job advertisements from ALA's online JobList over a five-month period. They discovered a "significant inter-section between the skill sets of librarians and the skill sets of IT professionals." (Mathews & Pardue, 2009, p. 256) 72% of the job ads contained at least one IT skill and 57% of the ads requiring one IT skills asked for at least one more in addition. Skills in Web development, project management, systems development, and systems applications were in particular demand. Mathews and Pardue (2009, p. 257) conclude that "as technology has changed, so too have the skill sets required of librarians." Significant overlaps are developing between the roles of information workers and IT workers.

Further evidence of this overlap comes from the rise of the 'shambrarians'. This LIS subculture consists of IT and other systems workers embedded within libraries who have not had formal librarianship or information management training. Falling within the traditional boundaries of both librarianship and IT, they self-identify as shambrarians – a particular breed of librarian-IT hybrid.

More informally, increasing numbers of information professionals are becoming 'everyday cyborgs': people whose lives are integrated with and supplemented by the technologies they use everyday [5]. The growth in the adoption of near-ubiquitious computing (smartphones, tablets, etc.) and the development of fully ubiquitous computing ('everyware' (Greenfield, 2006) like Apple's iWatch or augmented reality products like Google's Project Glass) will lead to further technological and informational integration. Information professionals integrated with IT become "creatures of nature and culture, biology and technology..." (Dery, 2013)

As well as the informal development of IT skills and technological ubiquity for information workers, a number of libraries have formalised this development by embarking on joint recruitment initiatives with IT departments. I have worked in two joint library/IT positions [6]: both were the first of their kind at the institution in question; both were in Higher Education institutions; both were jointly funded by the library and the university IT department.

4.0. SKILLS AND CHALLENGES

Formally and informally, librarian-IT hybrids are becoming more common as technology changes the information world. These individuals face unique challenges and need skills which are different to those of traditional librarians or traditional IT support. Customer service, organisational skills, teamwork, etc. remain important in library work but a whole range of other skills are required by librarian-IT hybrids. I conducted an informal email survey of six individuals [7] who self-identified as working in "joint library/IT role[s]" in response to a tweet published on 11 January 2013 (Barron, 2013). These individuals do "a mix of IT and library work. [N]o longer... "pure IT" or "pure library." They identified a range of skills required of librarian-IT hybrids and outlined some of the challenges they face.

---

5   You may prefer, as I do, the more subtle and less science fiction-y concept of Luciano Floridi (2007) in which "[w]e are all becoming connected informational organisms" or 'inforgs' [5a]. "This is happening not through some fanciful transformation in our body, but, more seriously and realistically, through the reontologization of our environment and of ourselves."

5a   Which raises the question: why is the paper called 'Rise of the cyborgs' and not 'Rise of the inforgs'? I had to come up with the title before writing the paper and hence before I came across Floridi's work. Plus 'cyborg' sounds cooler and I think we can agree that that's more important than philosophical accuracy.

6   Roving IT Support in Manchester Metropolitan University's Sir Kenneth Green Library and E-collections and Service Analyst in Durham University's Queen's Campus Library.

7   Thanks to: Lauren Bradley, Patrick Berry, James Fox, Elizabeth Psyck, Hugh Rundle, and Julia Stark.

The first group of skills are traditional library skills. Several respondents mentioned cataloguing skills ("MARC, AACR2/RDA, Dublin Core") as important for their role. Also mentioned was understanding of library licenses, software licenses, copyright, etc. and understanding of technical library services eg. interlibrary loan.

The second group of skills are what Rogers (2013) calls "crunchy tech skills". These range from the ability to troubleshoot users' computer problems to programming skills. Lauren Bradley, based in New York, USA, referred to "Core Technology Competencies… [which include] everything from basic computer skills to Microsoft Office to our ILS." At one end of the spectrum, librarians can be called upon to help users set up email accounts, configure tablets to connect to WiFi networks, search large-scale databases like Westlaw, or other tech-related everyday tasks to help users. At the more advanced end, Goddard (2003) identifies the following 'high-demand skills' for systems librarians: "networking protocols (TCP/IP, HTTP, telnet, ftp and Z39.50), UNIX and Windows/NT operating systems, hardware troubleshooting, database design and administration, Web design and development, and programming in SQL, PERL, C/C++."

Of particular focus – especially for US librarians in the Higher Education sector – are coding skills. Initiatives such as Codecademy, the code4lib community, the Library Code Year Interest Group, and the ALA's ACRL TechConnect blog (Enis, 2013) are enabling and empowering librarians to learn programming skills that help them develop digital services for users. Yelton (2012) discusses the utility of coding for librarians: "Librarians do a lot of work with data processing and web stuff, frequently involving repeated, predictable, or systematic steps. Edit this whole pile of MARC records to a particular standard. Provide more context in your chat widget. Anything of this nature is amenable to improvement through code, and a lot of the improvements are surprisingly low-hanging fruit — things that could be implemented with a dozen lines of code."

The third group of skills are personal skills: skills or personality traits that help one succeed in an environment merging library and IT. These include: research skills and the ability to analytically extract information from sources; curiosity and a willingness to learn; "a strong interest in learning new things" and "an enquiring mind". The ability to self-teach was identified as a necessary skill in response to a particular challenge. Multiple respondents stated that there was no formal IT training in place for library staff within organisations. Hugh Rundle, a public librarian in Melbourne, Australia, said, "I've learned about networking, CSS and XML at work because I simply need to in order to fix things." Lauren Bradley said, "I come from a cataloguing/technical services background, so I had to learn all the tech skills on the job." Rogers (2013) identifies the lack of formal training in 'crunchy tech skills' as a challenge for libraries of the future: "our current cohort of librarians ready to move, stretch, and fiddle with interesting projects weren't taught to be software developers…" Even though such skills are valuable and necessary, Rogers says that new librarians are not taught them and it is not being made their job to learn them. "The problem, in re: tech skills, is that we have not, by and large, made it librarians' job to do, learn, and know these things."

The fourth group of skills again relate to a challenge faced by librarian-IT hybrids. Every respondent mentioned challenges related to communication and/or relationship management. As mentioned, the relationships between libraries and their assigned IT departments can often be strained. In my roles spanning two teams, I found it difficult to foster communication between the two groups. "Systems librarians often act as a liaison between the library and the main computing department." (Goddard, 2003)

In order to deal with the communications difficulties of a joint library/IT environment, librarian-IT hybrids need communication skills and people management skills. Goddard (2003) argues that technologically-minded librarians can break down the technical language barrier that divides library and IT departments. Gordon (2003) refers to this as "translating IT-speak to librarians and library-

speak to IT staff" and one of the email respondents similarly "refer[s] to myself as a "translator"; I frequently have to translate between library jargon and IT jargon..." Similar bridging of communications barriers comes with learning how to code: "The ability to understand code, even if you don't write it, comes with the ability to talk about it intelligently." (Enis, 2013)

As in all areas of LIS, the ability to communicate with people is imperative. Librarian-IT hybrids need to be able to talk to people clearly, explain technical concepts, and manage relationships between groups of stakeholders. The stereotype of the uncommunicative IT support worker [8] does not apply to librarian-IT hybrids who need to work with users and other staff, promote their service, and promote the importance of their role.

5.0. CYBORGS AND THE FUTURE

Technology gives us the ability to surpass the limitations of our frail bodies and change the world around us. It allows us to communicate, to learn, to transcend the physical, and to expand our collective mind [9]. Technology changes us and we continue to adapt remarkably quickly to exponentially more frequent technological advances. "So, we are in a crisis of knowledge at the same time that we are in an epochal exaltation of knowledge. We fear for the institutions on which we have relied for trustworthy knowledge, but there's a joy we can feel pulsing through our culture... It comes from the networking of knowledge." (Weinberger, 2011, p. 11)

The reontologization of information will continue and librarian-IT hybrids – everyday cyborgs integrated with and augmented by technology – will rise in every area of information work. However the particular skills they need are not currently taught as part of library school curricula or on-the-job training. The day-to-day work of librarians has become integrated with technology but the training of librarians has not advanced at the same pace. Library schools and institutions need to acknowledge the technologizing of information and the changed nature of information work.

Over the next few years, those individuals equipped with the skills and technology to succeed in hybrid library environments will surpass librarians tied to old paradigms. The future of information is digital information linked in expansive networks: the future of the information profession is digital librarians.

6.0. REFERENCES

---

8   "Have you tried turning it off and on again?"
9   Quote-that-I-really-like-but-which-didn't-fit-anywhere-in-the-main-text: "Today we have extended our central nervous systems in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly, we approach the final phase of the extensions of man – the technological simulation of consciousness, when the creative process of knowing will be collectively and corporately extended to the whole of human society." (McLuhan, 1965, p. 3)

Barron, S. (2013, 11 January) Does anyone work in a joint library/IT role or have joint library/IT roles in their organisation? Would you talk to me about it? Please RT. [Twitter post] Available from: https://twitter.com/SimonXIX/statuses/289739252797939713 [Accessed 7 April 2013]

Enis, M. (2013) Cracking the Code: Librarians Acquiring Essential Coding Skills. *The digital shift* [Online] Available from: http://www.thedigitalshift.com/2013/03/software/cracking-the-code/ [Accessed 6 April 2013]

Floridi, L. (2007) A Look into the Future Impact of ICT on Our Lives. *The information society: an international journal*, 23 (1), pp. 59-64.

Fortune, M. (2013a, 17 January) "Difficult" rapidly becoming the word of the day when describing relations between corporate ICT and library service aims. #digiskills [Twitter post]. Available from: https://twitter.com/mickfortune/status/291920747549560832 [Accessed 26 January 2013]

Fortune, M. (2013b, 17 January) Wondering how public libraries can deliver a service that will depend so heavily on connectivity without better ICT support? #digiskills [Twitter post]. Available from: https://twitter.com/mickfortune/status/291921864119439360 [Accessed 26 January 2013]

Gleick, J. (2011) *The information: a history, a theory, a flood*. London: Fourth Estate.

Goddard, L. (2003) "The integrated librarian: IT in the systems office." *Library hi-tech*, 21 (3), p. 281.

Greenfield, A. (2006) *Everyware: the dawning age of ubiquitous computing*. Berkeley: New Riders.

Jastram, I. (2012) Libraries, IT departments, and complex relationships. *Pegasus librarian* [Online] Available from: http://pegasuslibrarian.com/2012/03/libraries-it-departments-and-complex-relationships.html [Accessed 26 January 2013]

Mathews, J. M., & Pardue, H. (2009) The Presence of IT Skill Sets in Librarian Position Announcements. *College & research libraries*, 70 (3), pp. 250-257.

McLuhan, M. (1965) *Understanding media: the extensions of man*. New York: McGraw-Hill.

Melchionda, M. G. (2007) Librarians in the age of the internet: their attitudes and roles: A literature review. *New library world*, 108 (3), pp. 123-140.

Rogers, J. (2013) Considering the librarian tech skills gap. *Attempting elegance* [Online] Available from: http://www.attemptingelegance.com/?p=1958 [Accessed 6 April 2013]

Snow, C. P. (1993) *The two cultures and the scientific revolution*. Cambridge: Cambridge University Press.

Yelton, A. (2012) Why should librarians learn Python? (a better answer). *Andromeda Yelton: across divided networks* [Online]. Available from: *http://andromedayelton.com/blog/2012/08/28/why-should-librarians-learn-python-a-better-answer/* [Accessed 6 April 2013]

Weinberger, D. (2011) *Too big to know: rethinking knowledge now that the facts aren't the facts, experts are everywhere, and the smartest person in the room is the room*. New York: Basic Books.