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Citation: Robinson, L., Priego, E. & Bawden, D. (2015). Library and information science and digital humanities: two disciplines, joint future?. Paper presented at the 14th International Symposium on Information Science, 19-21 May 2015, Zadar, Croatia.

This is the accepted version of the paper.

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Library and information science and digital humanities: two disciplines, joint future?

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Summary
The relationship between the disciplines of library and information science and of digital humanities is analysed, in terms of common topics, issues and perspectives. A model to integrate the two, based on the components of the communication chain of recorded information is proposed. It is suggested that a partial integration of the disciplines, to the extent that their concerns are reflected by this model, would be positive for the future of both.

Introduction
The purpose of this paper is to examine aspects of the relationship between the disciplines of library and information science (LIS) and of digital humanities (DH). It is evident that there are close links in several respects, but the rationale for, and nature of, such links and synergies is unclear. We attempt here to use a simple model to clarify one aspect of the relations between the two disciplines, and to suggest how this may affect the future development of both. Although firmly rooted in literature sources, the analysis is selective rather than comprehensive.

We will discuss the somewhat contested definitions of both disciplines below. For purposes of this paper we understand LIS to be the discipline which studies the communication chain of recorded information, underlying the practice of librarianship, information management and similar professions [Bawden and Robinson, 2015], and DH to be a field at the intersection of computational technology and traditional humanities disciplines, comprising a set of conceptual and practical approaches to digital engagement with cultural materials (Drucker, Kim, Salehian and Bushong, 2014).

Links between LIS and DH
We can identify a number of aspects in which the two disciplines are linked.

1. It is evident that much DH research takes place in, or in close collaboration with, libraries, archives, records centres, museums, and other collection institutions; see, for example, Green (2014), Drucker, Kim, Salehian and Bushong (2014), Rockenbach (2013), Sula (2013), Vandegrift and Varner (2013), Clement, Hagenmaier and Knies (2013) and Buchanan (2010). Application of DH may help libraries to provide better services, and may serve as a change agent within library and information services (Galina, 2011A; Rockenbach, 2013; Adams and Gunn, 2013). These environments and issues are, of course, the primary focus for study within LIS.

2. Both LIS and DH are academic disciplines which emerged, at least in part, from service functions associated with the academic use of recorded information: LIS from library and information services, and DH from humanities computing, typically in university computing services. Both therefore still have a tension between their status as an academic discipline in their own right and as a support function for research in other disciplines (Warwick, 2012).

3. They have a general focus of study and practice in recorded information and documents, using ‘documents’ in a broad sense to encapsulate all ‘constainers’ of recorded knowledge;

see, for example, Svensson (2010), Dalbello (2011), Galina (2011B) and Burdick, Drucker, Lunefeld, Presner and Schnapp (2012).

4. Certain specific topics are agreed to be of common interest to both. Examples, taken from the cited references, are: searching and retrieval; digital libraries and archives; metadata and resource description; ontology, classification and taxonomy; publishing and dissemination; open access; linked data; collection management and curation; portals and repositories; bibliography; digitization; preservation; interactivity and user experience; interfaces and browsing; cultural heritage; information visualization; big data and data mining; and bibliometrics; (Drucker, Kim, Salehian and Bushong 2014; Koltay, 2013; Beaudoin and Buchanan, 2012; Sula, 2012; Sula 2013; Warwick, Terras and Nyhan, 2012; Gold, 2012; Galina, 2011A; Svensson, 2010; Buchanan, 2010). These topics are, for both disciplines, the focus both of practical activity and of theoretical analysis.

5. Institutionally, LIS and DH are often, though by no means always, located together in academic units (see, for example iSchools n.d.; Sula 2013), and have been so since the inception of the DH discipline; see the analysis of institutional 'homes' of contributors to a 2005 humanities computing conference by Terras (2006). While there are commentators who argue that DH is best pursued in independent units devoted to the subject (see, for example, Burdick, Drucker, Lunefeld, Presner and Schnapp (2012)) or in humanities departments (see, for example, Kirschenbaum, 2010), the institutional link between LIS and DH is significant. [An anonymous referee rightly points out that such institutional links may reflect organizational or other factors not associated with the nature of the disciplines. While this may well be true in some particular cases, the frequency of this kind of linkage suggests a more fundamental underlying cause.]

6. Educational programmes in LIS are increasingly including DH material, while DH courses have always included some LIS-related material; see, for example, Warwick (2012), Sula (2013) and Koltay (2013). LIS accrediting and professional bodies are explicitly including DH-related issues in their concerns and skills and competence specifications; see Sula (2013) for examples.

7. Although DH now has its own journals, and DH work may appear in journals of the humanities or computer science, DH research is often published in journals and other outlets which are primarily regarded as LIS sources; although the opposite is not generally true, except for studies specifically addressing the interaction between DH and libraries. Sula (2013) shows a steady increase in DH-related publications in the LIS sources in the Library and Information Science and Technology (LISTA) database between 2005 and 2012.

To bring this up to date, a search for the phrase 'digital humanities' in title, abstract or index terms in the Web of Science and LISTA bibliographic databases was carried out in early January 2015, for papers published in 2013 and 2014. This found DH papers in a wide variety of LIS journals, including Profesional de la informacion, Australian Library Journal, Primerjalna Knijzevnost, Zeitschrisft fur Bibliothekswesen und Bibliographie, Library Quarterly, Theory and Practice of Digital Libraries, Online Information Review, Aslib Journal of Information Management, Electronic Library, Information Research, Information Communication and Society, Journal of Librarianship and Information Science, Informacios Tarsadalom, Australian Academic and Research Libraries, Journal of Documentation, Journal of Library Administration, Serials Librarian, International Journal on Digital Libraries, New Review of Information Networking, D-Lib Magazine, Information Services and Use, CILIP Update and Journal of Map and Geography Libraries. This emphasizes the continuing relation between the disciplines.

The commonalities seem clear. As Sula (2013, p. 14) puts it, "given this significant overlap in interests, competencies and institutional structures, we are left to wonder not whether but how

libraries can join in the work of digital humanists". In order to find a clear explanation of these commonalities, we will need to consider the nature of the two disciplines.

The DH and LIS Disciplines

DH has, from its origins, been a discipline whose nature has been contested; see Terras (2006) and contributors to Terras, Nyhan and Vanhoutte (2013). There have been many and diverse conceptions of the field, and it has been categorized as, inter alia, a field of study, a loose set of practices, a methodology, a general approach, a community, and the application of computational tools to humanistic enquiry; see, for example, Svensson (2010), Burdick, Drucker, Lunefeld, Presner and Schnapp (2012), Rockenbach (2013), and by the contributors to Schreibman, Siemens and Unsworth (2004), to Gold (2012) and to Terras, Nyhan and Vanhoutte (2013).

In order to examine the relations between DH and LIS, it is necessary, rather than focusing on any one of the rather specific understandings of DH, to take the increasingly popular broad 'Big Tent' understandings. Typical of these are that DH is "the study of what happens at the intersection of computing tools with cultural artefacts of all kinds" (initially proposed by DH researchers at Kings College London, and widely quoted (see, for example, Svenson, 2010 and Coleman, 2007) and "a broad spectrum of academic approaches, loosely bound together with a shared interest in technology and humanistic research, in all its guises" (Terras, 2013, p. 266). Indeed, one might go further, noting that some commentators argue that DH is not only about the digital, or about the humanities (Burdick, Drucker, Lunefeld, Presner and Schnapp, 2012). There is an interesting echo here of Paul Gilster's (1997) original concept of 'digital literacy', which was also scoped to encompass material other than the digital. This is another respect in which DH perspectives overlap more than might have been expected with those of LIS.

Particularly relevant to a DH/LIS interaction are those perspectives on the broad understanding of DH which emphasise its focus on documents and recorded information; for example that DH is "an array of convergent practices that explore a universe in which print is no longer the primary medium in which knowledge is produced and disseminated" (Burdick, Drucker, Lunefeld, Presner and Schnapp, 2012, p. 122), or the idea that DH is located at the intersection of humanities research and teaching, information technology and library collections and services (Rockenbach, 2013; Prescott, 2014).

The nature of the LIS discipline has also been contested, though not to the same extent as DH; see, for example, Vakkari (1994), Dillon (1997) and Robinson and Bawden (2013). To consider its relations to DH, it is again sensible to take a broad definition of the subject, based around the idea that it associated with the study of the whole communication chain of recorded information; with all aspects of the creation, organization, management, dissemination and use of recorded information (Robinson, 2009; Bawden and Robinson, 2015).

Using these conceptions of the two disciplines, and recalling that both are academic disciplines with a theoretical/conceptual basis which support practical activity, we now consider how they inter-relate.

Modelling the inter-relation of DH and LIS

It has already been noted that there is are numerous intellectual and institutional overlaps been the two disciplines, that there is a perspective on DH which considers that its central focus is on libraries, recorded information and documents, and that there is a perspective on LIS which sees it as centred on the information chain. We will take these perspective to be the most fruitful starting point, noting that we are not attempting to seek an overlap, or strong

interaction, between all conceptions of DH and of LIS. We will attempt rather to give a more specific account of their inter-relations, based around a common interest in the study of the communication chain of recorded information.

The extensive list given under (4) above of specific topics of common interest to the two disciplines lends credence to this, as all can be identified with components of the chain. And, while this is by no means a common way of understanding DH, there are some examples of DH authors suggesting this approach.

Most broadly, Burdick, Drucker, Lunefeld, Presner and Schnapp (2012, p. 122) consider that DH "understands its object of study as the entire human record, from prehistory to the present". More specifically. Galina (2011B), noting a close tie between DH and LIS, writes of the goals of DH as including "capturing, structuring, documenting, preserving and disseminating" information. Similarly, Coleman (2007), in discussing the partnership between DH and digital libraries, identifies a common interest in "the lifecycle of knowledge and content", with digital libraries concerned with issues of curation, management, access and standards, while DH focuses on aspects such data gathering, analysis, and generation of new formats. Urging greater collaboration between the disciplines, Ramsay (2010) identifies DH as concerned with "representations, the organization of knowledge, the technology of communication and dissemination" as well as with creation of resources.

The only explicit model for the relation between LIS and DH is presented by Sula (2013), who gives a conceptual model based on cultural heritage and cultural informatics. Using two axes, primary-secondary resources and human-computer processing, the model displays a map of the main concerns of the two disciplines, showing that they are engaged in complementary activities, with DH activities falling across a wide range of the map. The entities included include digitization, preservation, collection development, cataloguing, visualization, cataloguing and classification. This adds credence to the idea that the two disciplines can be envisaged as dealing in a complementary way with all components of the information chain.

It therefore seems clear that it is feasible to model DH (at least in some aspects and perspectives) and LIS as disciplines concerned with the study of the components of the communication chain.

It is not sensible to try to allocate studies parts of the communication chain unambiguously to LIS and DH, not least because much research in one of the disciplines could equally well be carried out in the other. However, as a rough guide, we could note that most DH work will fall at the extremes of the chain, with creation and use of information and documents, while most LIS work will fall in the central components, with organization, retrieval and management. This seems a viable model for an integrated DH/LIS multi-discipline, again with the caveat that these are not rigid boundaries.

There are two main distinctions between this outline model and the Sula's conceptual model. First, Sula addresses the practice of librarianship and of DH, whereas we consider the academic disciplines of LIS (broader than just libraranship) and of DH, Second, Sula's model uses a framework of cultural informatics, whereas ours is set in a broader framework of information communication and documentation.

Future prospects

Another similarity between the LIS and DH disciplines is that both seem in a permanent state of existential crisis about their future.

For LIS, the typical concern is that the activities of the LIS profession will become redundant due to changing communications technology and publishing and dissemination methods. An

engagement with DH has been suggested as one possible counter to this gloomy prospect; see, for example, Showers (2012).

For DH, these concerns usually emerge as a worry that the discipline will cease to exist, as its activities are absorbed by others who do not adhere to the disciplinary label, or necessarily share its values. This may be by simple absorption into the humanities themselves, as the work of all humanities scholars gains a digital dimension: "Are we all digital humanists? No. Are we carrying out the work of the humanities digitally? Routinely so" Burdick, Drucker, Lunefeld, Presner and Schnapp (2012, p. 102). Or it may be by an intellectual realignment, as, for example, DH scholars with a particular interest in big data analysis align more naturally with the quantitative social sciences Burdick, Drucker, Lunefeld, Presner and Schnapp (2012, p. 107.)

An integration between LIS and those strands of DH which have an explicit interest in the components of the information chain seems to offer a positive future for both disciplines. Not merely does it cement a natural alliance between disciplines with similar concerns and perspectives, as evidenced above, but it allows for new research approaches at the interface of the two disciplines. Examples of the latter are the extension of bibliometric studies with DH approaches to give greater insight (Sula, 2012) and analysis of social media, with the same benefits; see, for example, Priego (2015) and Williams, Terras and Warwick (2013). This is not to suggest that the two disciplines would merge, or that there would be a consistent form of partial integration in all cases; the two disciplines, DH in particular, have too amorphous a nature to permit that. But an acknowledgment that there certain topics of common interest, and that these can be represented by a model based on the information communication chain, seems a sensible place to start.

Conclusions

It may not be too premature to claim that we can see in London at the present time an emerging example of the benefits of an integration of LIS and DH. This is occurring in universities (University College London, King's College London, City University London, the School of Advanced Study at London University) and in other institutions (e.g. British Library, Wellcome Foundation). It points, we believe, to a bright future for the two disciplines.

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