

Digital Humanities : The Emerging Domain for Humanity Researchers

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Abstract:

Change is the only constant in our universe. Any formal subject is not the exception. At the end of 20th century, we have entered into the networked environment. The Information and Communication Technology (ICT) is slowly and steadily becoming the integral part of our life and society. It also has modified connotation and denotation of all subject including humanities. Various domains of humanities are experiencing the impact of ICT in the context of education and research. This paper is an attempt to explore the scope and origin of the new domain 'Digital Humanities (DH)'. It also stated some important tools to be included in DH. This study will help the humanity professionals to understand the scope of DH for their further study and research.

Keywords: Digital Humanities; Humanities computing; Google Ngrams; Methodological commons; Voyant Tools; VOSviewer; Open Refine

1. Introduction:

Humans are becoming so increasingly dependent on technology over the years, from personal computers to simple things such as glasses, that we consider them the part of ourselves rather than tools. The line between human and machine is becoming blurred, in other words we exist as 'human-technology symbiotes' or simply "Syborg" (SYBermetric ORGANism). Similarly, these technologies have tremendously influenced the understanding, education, and research of every subject field and humanities are not the exception. Over time, these tools are gradually becoming the integral parts of the subjects (Shah, 2013).

Now we should delineate the scope of 'humanities'. Therefore, at first, we should know the difference between humanities and social science (Graham, 2019).

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- The research on humanities requires a more critical and analytical approach, whereas research on social science involves a more scientific approach.
- Humanities are a branch of science that deals with the heritage and question of what makes us human.
- Social science is deemed a branch of study between humanities and natural sciences as social science deals with scientific approaches.
- Humanities are more subjective, but social science is more objective.
- Humanities are considered more philosophical than social sciences.
- Humanities is a much older subject discipline, whereas, Social Science is a modern branch of the discipline.
- Still, there is no such razor-cut boundary between humanities and social science.

We include subjects Anthropology, Archaeology, Classics, History, Linguistics and languages, Law and politics, Literature, Performing arts, Philosophy, Religion, and Visual arts etc under discipline 'humanities'.

Digital humanities, what used to be called 'humanities computing', is an emerging, collaborative field in which digital tools and technologies are applied to traditional objects and methods of humanities. The digital humanities (DH) falls in the area of intersection of computing or digital technologies and the humanities. It includes the systematic use of digital resources in the humanities, as well as the reflection on their application. Therefore, DH should be considered new ways of study that encompass collaborative, interdisciplinary, transdisciplinary and computationally engaged study, research and publishing. It brings digital tools and methods to the study of the humanities with the recognition that the printed word is no longer the main medium for knowledge production and distribution (Kirschenbaum, 2010).

2. Mode of formation of the subject "Digital Humanities":

Here I will try explaining the genesis or mode of formation of subject DH from different viewpoints. Three viewpoints are described as follows-

2.1 Viewpoint-1: Intellectual and Disciplinary Map:

McCarty explained the genesis of DH with the help of diagram (Figure-1). Here, he used the term "Methodological Commons" or "Humanities-Computing" in spite of DH. The

subjects within octagons above the Methodological Commons in figure 1, he explained in his book “*Humanities Computing*” well-demarcated disciplinary groups of application. However, the domains within indefinite cloudy shapes below the commons “permeable bodies of knowledge” that are constituted socially, even though lacking departmental or professional aspects. Not all disciplines, however, have the same kind of relationship to the field. McCarty designates history as the primary discipline (especially history of science and technology), along with philosophy and sociology. All the rest are secondary (McCarty, 2005).

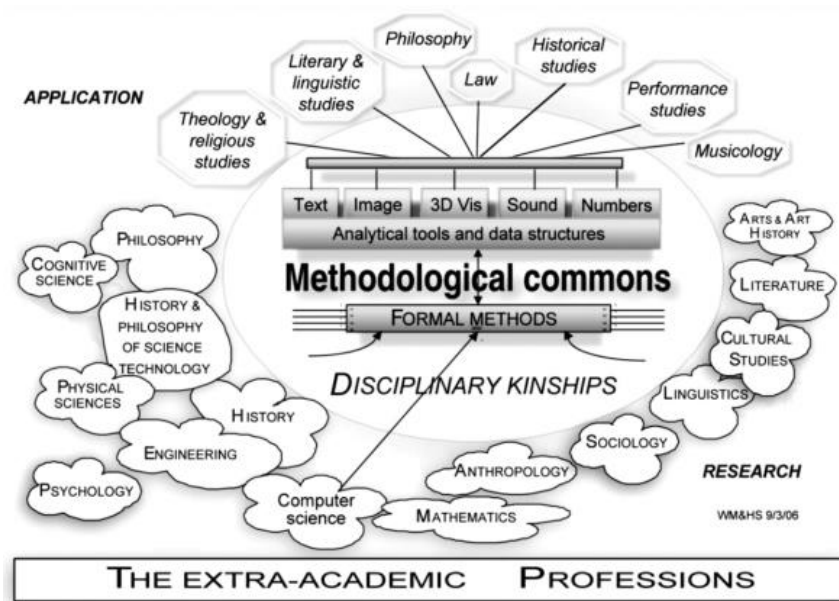


Figure 1: An intellectual and disciplinary map of Humanities Computing. (Adapted from Willard McCarty's, *Humanities Computing*, London and New York: Palgrave Macmillan, 2005)

2.2 Viewpoint-2: Library and Information Science:

From the Library and Information Science (LIS) viewpoint, the mode of formation of the subject “Digital Humanities” is shown in the figure-2. In the first order, researchers of multiple disciplines of humanities used to apply computational techniques as a tool for conducting research in their respective fields and computer science researchers used to apply humanities data in their fields. These have given rise the new areas through the phase relations. Again in the second order, the computational aspects of these new areas are distilled enough to crystallize as “Digital Humanites” as a new subject through the process of distillation.



Figure 2: Mode of formation of the subject “Digital Humanities” from LIS viewpoint

2.3 Viewpoint-3: Relational Architecture :

Paul S. Rosenbloom, Department of Computer Science and Institute for Creative Technologies, University of Southern California, first explained the conceptual framework and relational architecture of DH in his article “Toward a Conceptual Framework for Digital Humanities.” Here the humanities was viewed as a part of science, in fact, as part of the social domain, and at the framework that this yields for understanding the space of relationships between computing and the humanities. Such an exploration requires some understanding of computing, the humanities, and the philosophy of science. He has come to accept the notion that any enterprise that tends to increase our understanding of the world over time should be considered as essentially scientific, and thus part of science.

Since the 2nd half of 20th century, the process has come, a new conception of what a great scientific domain is immersed, the Computing. Computing now forms the fourth such domain, with the physical, life, and social sciences. This domain has a strong influence over other existing domains. These relationships and influence on humanities i.e. DH has been explained by the relational architecture. At the top level of the relational architecture, the four great scientific domains are denoted by their initial letters: P(hysical), L(ife), S(ocial), and C(omputing). The discipline of digital humanities then concerns the relationships between two of these domains: the social sciences (S) and the computing sciences (C). If the

addition symbol (+) is used to denote that there is some form of relationship between two domains, we can express the digital humanities as S+C. However, we can also introduce a new initial for H(umanities), with H understood to be a sub-domain of S ($H \subset S$) to specialize in the overall expression more particularly for digital humanities to H+C. The relational architecture further partitions the generic notion of across-domain relationships (+) into two general types: implementation (/) and interaction (\leftrightarrow).

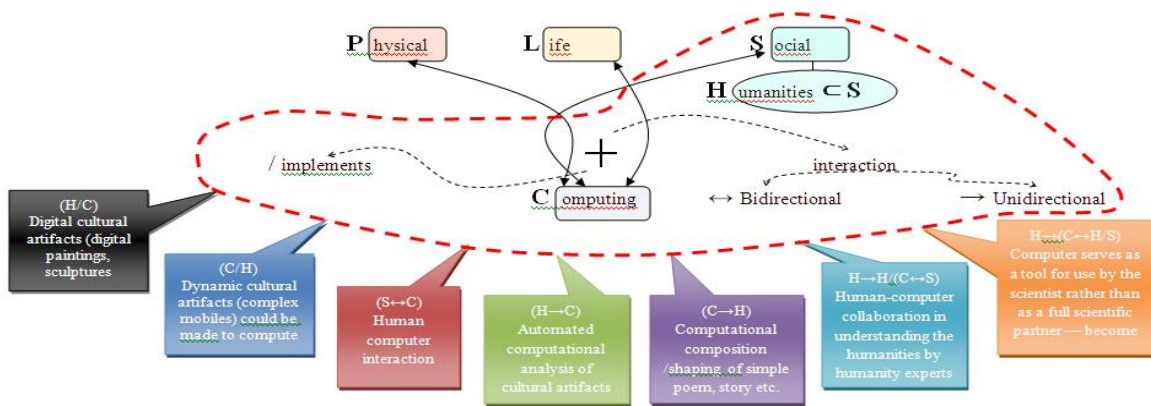


Figure-3: Relational architecture of DH

An implementation relationship (/) exists between two domains when multiple structures and processes in one domain combine to bring into being elementary structures and processes in the other. The physical domain implements the life domain (L/P) when molecules and forces combine to yield cells and their processes. Similarly, the life domain implements the social domain (S/L) when neurons in the brain combine with each other to implement thoughts in the mind, and the brain joins with the rest of the body to yield human behavior.

The implementation relationship yields multiple flavors of digital humanities. When computing implements the humanities (H/C) we get digital cultural artifacts, such as digital paintings, sculptures in virtual environments, immersive experiences, and digital books. Given the dynamic nature of computing, we can expect an ever-larger fraction of the future of H/C to involve active rather than static artifacts, whether they are thought of as digital plays, videogames, or simply interactive experiences. Sometimes H/C artifacts are digital reproductions (simulations) of existing non-digital artifacts and at other times they are unique artifacts in their own right.

In the other direction, the largely static nature of humanities means that it cannot generally yield a full implementation of computing (C/H) — a book or a painting simply cannot compute all by itself — although special classes of dynamic cultural artifacts, such as complex mobiles, conceivably be made to compute, and thus to provide a full implementation. What a book or a painting can provide a depiction or representation of a computer, essentially yielding a limited form of static simulation. In addition, if we extend the notion of digital humanities from the overlap between computers (i.e., hardware and software) and humanities, to the overlap between computing (as a great scientific domain) and humanities, the representation of information in general by cultural artifacts, which is also denoted as C/H, be absorbed within the digital humanities.

The interaction involves a peer relationship between two domains. For example, in human computer interaction ($S \leftrightarrow C$), there is a bidirectional flow of information and influence between entities from the social and computing domains. However, the relationship can in general either be bidirectional, as in this example, or unidirectional. In digital humanities, flow from the humanities to computing represents the automated computational analysis of cultural artifacts ($H \rightarrow C$); for example, determining clustering of authors based on their literary styles even be considered to include recent work on machine reading, where computers automatically extract meaning from the text. In the reverse direction, a flow from computing to humanities represents the computational composition ($C \rightarrow H$). This is an area still in its infancy, but that already includes, for example, computational composition of simple poems, stories and drawings; and is to eventually include novels, plays, movies and interactive experiences.

These two directions of interaction can loosely be considered as representing computational understanding of humanities ($H \rightarrow C$) and computational shaping of humanities ($C \rightarrow H$). In both cases, it is the computing domain that should be the active partner in the interaction because of the static nature of the content of humanities. However, one way to remove this limitation is to shift the focus from the static structures of humanities to those active scholars and scientists who study it. In the relational architecture, scientists are typically represented as members of the social domain (i.e., people) who internally represent and

simulate part of their domain. For the humanities, this yields H/S. We can then represent the analysis of computing artifacts by humanities scholars, as is for example studied in critical code studies, by $C \rightarrow H/S$. However, if the scientist is an expert in the combination of humanities and computing — denoted as $(C \leftrightarrow H)/S$ — such studies should actually be denoted as $C \rightarrow (C \leftrightarrow H)/S$ instead. Either way, this is a compound relationship involving both implementation and interaction. It also includes the full social domain to represent the scientist in addition to humanities and computing.

Other complex variants of digital humanities can also be represented analogously. For example, human-computer collaboration in understanding the humanities becomes $H \rightarrow H/(C \leftrightarrow S)$, signifying analysis of humanities ($H \rightarrow$) by a human-computer entity ($C \leftrightarrow S$) with expertise in the humanities: $H/(C \leftrightarrow S)$. Similarly, more traditional forms of informatics within the humanities where the computer serves as a tool for use by the scientist rather than as a full scientific partner — become $H \rightarrow (C \leftrightarrow H/S)$, where the humanities expertise is now limited to the human participant. These relationships can also go in the reverse direction for shaping or be bidirectional to represent the interplay between understanding and shaping. However, either way, they involve two forms of interaction between computing and the humanities: the interaction of computing with the humanities researcher and the interaction of this pair with the humanities subject matter.

As a final comment on digital humanities it is worth noting that while Svensson's list is cast in terms of engagement with information technology — i.e., the more applied tool-building aspect of computing — computing as a great scientific domain is much more than just a set of tools. It is also theoretical results about information and its transformation algorithms for transforming information, and a wealth of interdisciplinary topics involving interactions with one or more additional domains, from artificial intelligence (S/C) and robotics ($L/(P \leftrightarrow C)$) to the automated construction ($C \rightarrow P$), brain computer interfaces ($L \leftrightarrow C$), quantum and biological computers (C/P and C/L), online social networks ($S \leftrightarrow C$)*, where the star (*) represents interactions among arbitrary numbers of human-computer pairs, and the simulation or possibly even implementation of everything (Δ/C , where Δ denotes all domains) (Rosenbloom, 2012).

3. Digital Humanities Tools:

There are so many DH tools for humanity researchers. Some of the important tools are given below with a brief annotation (Liu, 2017).

3.1 Voyant Tools:

It is an open-source, web-based application for performing text analysis. It supports scholarly reading and interpretation of texts or corpus, particularly by scholars in the digital humanities, but also by students and the common people. It is used for analyzing online texts uploaded by any users.

3.2 Google Ngrams:

The Google Ngram is an online search engine that charts frequencies of any set of comma-delimited search strings using a yearly count of n -grams (an n -gram is a contiguous sequence of n items from a given sequence of text or speech). The program can search for a single word or a phrase, including misspellings or gibberish.

3.3 Inklewriter:

It is an interactive fiction writing tool and platform. It is perfect for writers who want to try out interactivity, but also for teachers and students looking to mix computer skills and creative writing. It also allows export of stories to Kindle with hyperlinks for the interactive features of a story.

3.4 Popcorn Maker:

An animation & storyboarding tool that creates interactive videos; "helps to easily remix web video, audio and images into cool mashups that we can embed on other websites.

3.5 Audiotool:

It is a free, web-based application for electronic music production. It is meant to serve as a fully functioning virtual studio. Here users can drop and drag synthesizers, drum machines, sequencers, filters, samples, and note sequences into the workspace from a toolbar.

3.6 Scalar:

It is an authoring/annotation/editing/publishing platforms and tool. It is a free, open source authoring and publishing platform designed to make it easy for authors to write long-form, born-digital scholarship online. It helps users to assemble media from

multiple sources and juxtapose them with their own writing in a variety of ways, with minimal technical expertise required.

3.7 Thematic Mapping Engine (TME):

The tool that enables us to visualize global statistics on Google Earth. The primary data source is UN data.

3.8 Debate Graph:

It is a collaborative mind-mapping platform that allows individuals or groups to facilitate group dialogue, make shared decisions, report on conferences, make and share posters, tell non-linear stories, explore the connections between subjects, etc.

3.9 Google Fusion Tables:

It is used as social network analysis tool. We can create fusion table from a spreadsheet or csv file holding social network data, and select a chart type to visualize it as a network graph.

3.10 Juxta Commons:

It is a tool that allows to compare and collate versions of the same textual work.

3.11 OpenRefine:

This tool is working with messy data, cleaning it, transforming it from one format into another, extending it with web services, and linking it to databases like Freebase.

3.12 YouTube Tools:

It is basically a collection of simple tools for extracting data from the YouTube platform via the YouTube API v3.

3.13 Open Heat Map:

It is used to create "heat map" visualizations from spreadsheet data.

3.14 VOSviewer:

It is a Java-based software designed to create maps based on network data, especially bibliometric networks, e.g., network maps of publications, authors, or journals based on a co-citation network or to create maps of keywords based on a co-occurrence network.

3.15 Texttexture:

It is an online tool that allows users to visualize any text as a network. The resulting graph can be used to get a quick visual summary of the text, read the most relevant excerpts, and find similar texts.

4. Conclusion:

Digital Humanities (DH) are the need of this digital age. In the information/knowledge society every scholar of the humanities subjects should have, digital information literacy otherwise digital divide should widen the gap between scholars those have and have not well acquaintance to Digital Humanity tools. Again, DH tools have also broadened the scope of the subjects under 'humanity' discipline. Therefore, we should develop DH in developing countries like India. In this regard, different universities and education institutes should introduce centers and departments to offer digital humanities course.

References:

- Graham, M. E. (2019, April 5). *What is the difference between humanities and social science?* Retrieved April 22, 2020, from Abstract: <https://www.airtract.com/question/What-is-the-difference-between-humanities-and-social-science>
- Kirschenbaum, M. G. (2010). What Is Digital Humanities and What's It Does in English Departments? *ADE Bulletin*, 150, 55-61.
- Liu, A. (2017). *Digital Humanities Resources for Project Building — DH Tutorials*. Retrieved May 19, 2020, from DH Toychest started 2013: <http://dhresourcesforprojectbuilding.pbworks.com/w/page/69244314/Tutorials%20for%20DH%20Tools%20and%20Methods>
- McCarty, W. (2005). *Humanities Computing*. London: Palgrave Macmillan.
- Rosenbloom, P. S. (2012). Towards a Conceptual Framework for the Digital Humanities. *Digital Humanities Quarterly*, 6 (2).
- Shah, N. (2013). *The Technosocial subject: cities, cyborgs and cyberspace*. PhD Thesis, Manipal University.