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A literature review in Digital humanities computing

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Contents

Literature review's objectives

The research start from the necessity to define with clarity what is digital humanities considering that digital humanities comprise the study of what happens when computers are as a means of solving humanist's information problems. In the digital humanities, humanists play the role of both consumer and contributor and creator of intellectual works as digital libraries, seeking and using information in new ways and generating new types of products, many of which are specialized resources for access to research information, although many humanists haven't technical knowledge's and relevant faculties in computing. In fact computing and digitisation are transforming not only the condition of work for humanists, but also the ways in which humanists think and their disciplines are configured. The digital world has grown radically in the last few years and become part of what most humanists do and both enable and compel the way of research and create new instruments to work for them. So the ongoing revolution in information and communication technologies (ICTs) has fundamentally altered the work of scholars and researchers[1] and the humanist now populate Internet with many discussion groups that address the specialised needs of the non-technical disciplines, including their uses of computing. It is important study humanities users, and their interactions with digital information, and in virtual environments, to gain a fuller understanding of the nature of their information work, their corpus-based informative resources. These initial studies will be useful in the development of scenarios and personas but especially the context within which the scholars work and

[1] For many this is true of what they research, but for almost all it is true of how they research. ICTs have transformed the way in which scholars conduct literature reviews; access research libraries; collect, store and mine research data; publish written research outcomes; communicate with editors and publishers; apply for grants; exchange preprints and reprints; and maintain informal networks with their peers (Genoni, Merrick, Willson, 2006).

begins with a research of changing habits of scholarly communication; it is particularly interested in extrapolating from these, data, in order to understand the way in which changes to scholarly communication are influencing the notion of a scholarly community, how this might in turn impact upon academic librarians (Genoni, Merrick, Willson, 2006).

To address this issue, I must first answer at the difficult question: Which is the context within which the scholars operate? I could suggest the field: the humanities computing, but what is "humanities computing"? Unfortunately, I am not quite sure I know the answer to that. However, I shall try to construct an answer which will serve the purposes of this review. After that, I will examine the useful articles, chapters and books trying to understand the relations between the Humanities and "Humanistic computing" as best I can, and from my limited perspective on the subject. Finally, I will suggest some areas and topics where the field is in a special position to develop a body of knowledge, which so far has been sometimes marginalized and neglected by other humanistic fields, sometimes connected and linked with humanistic disciplines. The reason I bring up the question of identity is of course not to make boring the readers with these personal or professional problems, but to illustrate what seems to be a very prominent dilemma for many researchers in Humanities computing: that is, what kind of field are we in, anyway? Is it a field?

Can we say about it what Ole Johan Dahl said about computer science, that "One may wonder whether [it] is really a discipline of its own, or whether it is merely a set of loosely connected techniques drawn together from different sources" (1970). If humanities computing are merely a rag-bag collection of techniques, then why spend precious resources on it? If it is not, then what forms its core? Computing is simply too well integrated into all kinds of research to be isolated in one place or to be combined with many humanities disciplines? So, one may well ask,

should not the same conclusion be drawn for the Humanistic field(s) of computing? Do we need a separate field for digital humanities? Looking at the humanities computing activities in universities, we find a very rich diversity of computer-based research: Computational linguistics, historical informatics, corpus-based linguistics, computational art-history, classical philology, machine translation, and textual criticism by exploratory data analysis, computerized teaching methods, and much more. In the 2002 an interdisciplinary seminar organized by IATH (Institute for Advanced Technology in the Humanities) questioned “Is Humanities Computing an Academic Discipline?" So how can we support a profile for digital humanities and humanities computing? Now we define the topic of this review trying to understand if humanities computing or digital humanities, how we see after, are comparable or equivalent and through the literatures we “stress” the contribution to the research design.

Topic definition: Digital Humanities is as Humanities Computing

A Humanities Computing is a relatively new, and small, field of academic activity. Although the community is growing, with an expansion of tools, techniques, and activities which identify themselves as ‘Humanities Computing’, no shared definition of the subject exists, and very few academic institutions have dedicated Humanities Computing department whit different missions. In fact it should be noted that ‘Humanities Computing’ can also be referred to as Digital Humanities, Digital Resources for the Humanities, Digital Resources in the Humanities, Cultural and Heritage Informatics, Humanities Computer Science, and Literary and Linguistic Computing. So academic activity associated with Humanities Computing typically revolves around specific applications, such as the development and analysis of large textual corpora, the construction of digital editions of works of literature, the creation of digital

artefacts through the process of digitization, the use of 'Virtual Reality' for reconstruction of architectural models, etc. New techniques and technologies are continually being developed and applied to Humanities data. However, defining Humanities Computing as an academic field is problematic also because Humanities Computing 'units' or 'centres' that often provide technical support facilities for Humanities Divisions in universities, mean that Humanities Computing is habitually viewed as a base to 'proper' academic research. Then scholars using Humanities Computing are 'too technical' to be eligible for funding from the Humanities sector, and 'not technical enough' to secure funding through Engineering and Computing Science channels (Robery, 2003). This situation may be changing as computers and Internet technologies become more pervasive and embedded in everyday and academic life, but an interdisciplinary scholar is often battling different cultures and regimes to succeed in either, or both, disciplines (Terras, 2006). So, for not being mistaken I speak about digital technologies in the humanities, meaning information technologies and a corresponding growth in the use of ICT resources for research and teaching in the humanities. In fact ICT and digital technologies have a profound impact in the research of humanities scholars. Once a text is digitised, even the simplest search facilities allow users to interact with and study texts in entirely new ways. Electronic media open new modes of dissemination and new ways of thinking about texts; scholars can use interactive music scores, dynamically generated maps, or other multimedia elements to communicate information in ways that are very different from prose print on a page. At the same time, such electronic resources can radically change the audience and reach of the work undertaken by humanities scholars (Rydberg-Cox, 2006). While the cultural practices surrounding print have contributed to the creation of research libraries that serve clients in specific geographic locations, digital libraries that are available

on the Internet can reach audiences far beyond these university libraries, extending into schools, public libraries, workplaces and private homes. Broad access without limitations imposed by geography or the need to be affiliated with an academic institution allow scholarship in the humanities to play new and different roles in the lives of students, professionals scholars and the general public alike. More importantly, tools and techniques that have been designed by scholars in the humanities to work with electronic texts allow readers to ask and answer question about text that they simply could not pose using traditional print materials. A digital library designed to take advantage of the computational work undertaken by scholars in the humanities has the potential to dramatically change how and why broad segment of the public read, study and interact with literary, historical and archival materials. The central challenge faced by digital library practitioners is to construct system that brings these tools to a broad reading public (Rydberg-Cox, 2004). It is tempting to claim that the study of the humanities in the university has undergone a massive sea change in the past decade as a result of the large-scale implementation of digital information processing and retrieval (Rydberg-Cox, 2004). However, such an assertion is not historical, because it tends to perpetuate precisely the set of assumptions regularly interrogated by those scholars in the humanities who study technology, technological change, and the production of knowledge. Without doubt, the computer revolution has profoundly affected the study of the humanities, but that is only part of the story of the relation between the two. Thinking about technology and the humanities leads to replacing the conjunction in favour of a preposition: technology *in* the humanities, technology *of* the humanities, and even technology *by* the humanities (Green, 2000), which is just to say that the issues are multiple and densely interwoven and it is possible to draw that technology is of course an object of humanistic inquiry but

the same humanities community doesn't leave out of consideration apart from the knowledge of technology for researching and teaching. Consequently humanities computing it is preceded *by* computing and the humanities (as in the name of the professional journal) and computing *in* the humanities. It would be pleasing to discover that and preceded in, giving way to it as computing became increasingly assimilated into the disciplines concerned (Mc Carty, 2002) and we cannot say more computing *and* humanities because this terminology is disappearing.

So the various type of activities associated with Humanities Computing describes the problems associated with trying to ascertain its discipline status. Really, Humanities Computing has not yet been accepted as a subject by the majority of institutions, and this can cause problems to scholars undertaking research in this area. This review raises points about the acceptance of Humanities Computing by both academics and students, whilst demonstrating that there is an identifiable community operating in the field of computing and the arts, from various traditional academic subjects. Further studies need to be carried out to additional analyse and define the Humanities Computing community who create and/or use digital resources[2]. A quotation analysis could be carried out to see which texts are cited by peers in the field: are they Computing Science professors, or pure Humanities teachers? Which journals are most popular? Who would be the most cited author(s)? So the community must continue to develop to be more and interdisciplinary in the cross-faculty sense, encouraging work between the sciences and the arts. Humanities Computing are an emergent discipline, which may or may not flourish into an emergent academic subject if the community does not work to extend its focus, scope, and relevance (Terras, 2006).

[2] It could be stressed in the final dissertation of the master

Identify and record the sources

Finding scholarly or other material online is in some respects no different from the analogous process with printed sources in a conventional library. In both you use a combination of three finding-aids: keyword-searches, hierarchical lists and an assortment of clues you pick up along the way. In the library, these finding-aids take the form of the catalogue, giving access by author, subject and title keywords; bibliographies, in which references are organised according to the agreed-upon divisions of the subject; and a number of secondary references you select in review journals, articles and books located during the search. Mostly when looking online for resources in aid of academic work we think of the products of research, and so look by subject, keywords or name, e.g. “Digital humanities”, “Digital libraries”, “Humanities Computing”. Another approach to locating knowledge about a subject is, however, to look for researchers in the chosen area by properly names or through their institutional affiliations. Many publishing scholars now put versions of their work online. Finding their home-pages can often yield great riches in the form of articles in digital form, e.g. as PDF or HTML files. Their CVs will yield bibliographic references to articles and books you can locate in libraries—or, sometimes, on the Web-sites of others if you search by the name of the article. In many cases where an author has not put his or her articles, book chapters, and other sources online, these will be available via “electronic journal” offerings such as the Nora at Northumbria University. Articles I find in digital form, either when researching their topic or by chance when looking for something else, are easily downloaded and collected. The basic strategy for locating resources through other resources has much in common with older, pre-digital techniques: find one good source on a subject; look at its notes and references; look these up; find their notes and references; continue iteratively until you begin to find the same items and authors' names

mentioned again and again. looking for other things the authors have written. Then three approaches to the problem are currently implemented:

1. Google is the simplest—but perhaps the most effective. It relies on the behaviour of users: pages are ranked from the most to the least probable according to the number of other pages which link to them. Its accuracy is often startling. Though the basic interface is very simple, more sophisticated searching is also offered. Similar facilities are offered by AltaVista and numerous other search engines.
2. a9.com, which uses a web-search engine but adds several other features, notably amazon.com's “Look inside the book” feature, Wikipedia and parallel display of images.
3. For the humanities, somewhat more focused lists are also available. The most notable ones are given in the course Bibliography. Academic departments at King's and elsewhere tend to offer more specialised lists, as do many individuals. This is the result with Humanities computing:

1. Busa, Roberto. 1980. "The Annals of Humanities Computing: The Index Thomisticus", in *Computers and the Humanities* 14:83-90. A seminal article by a leading scholar [X] on what is commonly regarded as the first humanities computing project, with reflections on the nature and purpose of the field.
2. McCarty, Willard. 2005. *Humanities Computing*. Basingstoke: Palgrave.
3. Schreibman, Susan, Ray Siemens and John Unsworth, eds. 2004. *A Companion to Digital Humanities*. Oxford: Blackwell. See the full text online at the ADHO site [X].
4. Unsworth, John. 2002. "What is Humanities Computing and What is Not?", in *Jahrbuch für Computerphilologie* 4. [X].

Those lists that is maintained frequently and carefully can be very helpful, since they offer the convenience of subject classification and, one hopes, judicious filter. They are, however, perhaps the best way of getting some idea of what is available in a field.

I started from the keywords “Digital humanities”, “Digital libraries”, and “Humanities Computing” in *Google* where I found 28.500 items about

Digital Humanities, 68.700 about Digital Libraries, 1.960.000 about Humanities Computing.

The first items in Google about Digital Humanities is first the Alliance of Digital Humanities Organizations (ADHO), an umbrella organization set up initially to coordinate more closely the activities of the Association for Computers in the Humanities (founded in 1978) and the Association for Literary and Linguistic Computing (founded in 1973), second the *Digital Humanities Quarterly* (DHQ), an open-access, peer-reviewed, digital journal covering all aspects of digital media in the humanities, third the wikipedia definition, four the *Digital Humanities Initiative* created by NEH (National endowment for the humanities) that has launched a new digital humanities initiative aimed at supporting projects that utilize or study the impact of digital technology.

Looking for Digital Library first we found *D-Lib Magazine*, a solely electronic publication with a primary focus on digital library research and development, including but not limited to new technologies, applications, and contextual social and economic issues; second the IFLA Digital libraries: resources and projects; third the Digital Library Federation (DLF) a consortium of libraries and related agencies that develop the means of creating, maintaining, expanding, and preserving a distributed collection of digital materials. Finally, for Humanities Computing the first item is the articles by Unswoth *"What is humanities computing and what is not? a*nd the Tito Orlandi's : *Is Humanities Computing a Discipline?;* the second the web page of ARCH Web (Association for computers and the humanities) and then the Masters of Arts in Humanities Computing with an interdisciplinary programme of the Faculty of Arts at the University of Alberta[3].

[3] It is symptomatic that only in the firsts fourth items of a Google research emerge the necessity to understand what is Humanities Computing. Moreover for the Master is specified that the program integrates computational methods and theories with research and teaching in the Humanities.

In every web page I found many resources and I could observe that exist many possibility to research information and literature about my field of interesting.

In *Nora* I found many articles, citations, and books in the following data base:

Arts & Humanities Citation Index

Business Source Premier (Ebsco)

LISA: Library and Information Science Abstract (CSA)

Science Citation Index

Social Sciences Citation Index

Swetswise [Full text ejournals]

Wiley Interscience

ZETOC

Ebsco EJS (Electronic Journals Service)

BUBL Information Service

Emerald

IngentaConnect

Northumbria University Library Catalogue

Some articles were no so much interesting but from many others I could enlarge the research investigating the subjects of my review and discovering many others resources in the bibliographies. I retrieved some authors in many cited articles and on the web. Then I tried to explore them personal web pages and there I could found many interesting sources: articles, organization they work, or worked for, digital libraries they created and events they participated or they organized. I tried to structure my identification and recording sources using index cards to store the data manually and splitting them in categories:

1. Articles

2. Books
3. Web-pages
4. Organizations
5. Seminar and events

In these types of resources I have identified the right sources for understanding of the field I was looking for.

Evaluation of sources

In the research process I encountered many types of resources including books, articles and websites. But not everything you find on your topic will be suitable. How do you make sense of what is out there and evaluate its authority and appropriateness for your research? Once I have carried out the search I examine the information I have retrieved using the following criteria: authority, scope, and purpose.

Authority: Who is the author? What are his or her academic credentials? What else has this author written? Sometimes information about the author is listed somewhere in the article. Other times, you may need to consult another resource to get background information on the author. Sometimes it helps to search the author's name in a general web search engine like Google. I consider the authority of the creators of the document in order to appraise the reliability of the information provided. I consider the author's previous research, their stature, their organization affiliation, political stance, credibility and reputation among their peers. For example in the article written by Jennifer Edmond (University of Nottingham, UK) "*The Role of the Professional Intermediary in Expanding the Humanities Computing Base*" (2005) I found the principal authors of this field and them contributors at the Humanities Computing:

- Busa Roberto is an Italian Jesuit priest and one of the pioneers in the usage of computers for linguistic and literary analysis. He

is the author of the Index Thomisticus, a complete lemmatization of the works of Saint Thomas Aquinas and of a few related authors. I could establish his importance because in 1998, the Association for Literary and Linguistic Computing (ALLC) and the Association for Computers in the Humanities (ACH) founded the "Busa Prize", which honors leaders in the field of humanities computing. He is considered the founder of Literary and Linguistic Computing and is honorary members of ALLC. In 2005 he published an article: *Foreward. Perspectives on the Digital Humanities*. Schreibman, S., Siemens, R., and Unsworth, J. (eds), A Companion to Digital Humanities. Oxford: Blackwell Publishing.

- McCarty Willard : he is professor of Humanities Computing and he is a member of the Centre for Computing in the Humanities King's College London. In 2005 he won an award for Outstanding Achievement, Computing in the Arts and Humanities from the Society for Digital Humanities / Société pour l'étude des médias interactifs, Canada. McCarty is best known as a theoretician of the digital humanities. I could note that because is ever quoted in the articles and he wrote many thing about the field of my review.
- Unsworth John. He is a dean and professor at Graduate School of Library and Information Science University of Illinois, Urbana-Champaign. In his personal web pages he listed publications, conference papers and presentation in the fields of humanities computing.

Scope: What is the breadth of the article, book, website or other material? Is it a general work that provides an overview of the topic or is it specifically focused on only one aspect of your topic. Does the breadth of the work match your own expectations? Does the resource cover the right time period that you are interested in?

In September 1964 was probably the first conference on computers and humanities research, the so-called Literary Data Processing Conference organized by Harry Arader of IBM and chaired by Syephen M. Parrish of Cornelland Jess B. Bessinger of NYU. Among the others speakers, Roberto Busa expatiated on the problem of managing 15 million words for his magnum opus on Thomas Aquinas.

With Roberto Busa's groundbreaking work on the Index Thomisticus, the field of 'humanities computing' (or 'digital humanities', as similar methods and outputs are also alternatively called) can be said to be more than a half a century old (Busa 1964). In 1973 professor Antonio Zampolli, Busa's collaborator, was one of the founders of the ALLC (Association for Literary and Linguistic Computing) with the purpose of supporting the application of computing in the study of language and literature and he was a major pioneer in the application of computational techniques in literary and linguistic research from the 1960s. Zampolli was also director of Istituto di Linguistica Computazionale del CNR (Italy). In his article "Humanities computing in Italy" (Zampolli, 1973) he investigated the humanities computing activities in Italy and he said that 'the various Italian institutes concerned with the electronic elaboration of texts have achieved this unification of methods and procedures'. He couldn't determine the importance of humanities computing at all but only identify that 'Italy's researchers, and perhaps not only them, seems to put to common use in their activities some instruments already studied in depth by other computational disciplines'. By 1975, Bob Dilligan of the University of Southern California, began a series of International Conference on Data Bases in the Humanities and Social Sciences. The growing number of attendees at these conferences seemed to require a permanent organization to sponsor them, and in 1978 at the annual MLA (Medical Library Association) meeting was created the Association for Computers and the Humanities (ACH). Since its establishment, it has

been the major professional society for people working in computer-aided research in literature and language studies, history, philosophy, and other humanities disciplines, and especially research involving the manipulation and analysis of textual materials.

This period also saw the introduction of courses on various aspects of humanities computing. Some courses were given by staff within academic computing centers and concentrated mostly on the mechanics of using specific software programs. At the International Conference on Computing in the Humanities (ICCH) in Columbia, South Carolina, in spring 1987 a group of people, mostly working in support roles in humanities computing, has become central to the maintenance and development of community and has made a significant contribution to the definition of humanities computing. After that two volumes of the *Humanities Computing Yearbook (HCY)* were published. The first, edited by Ian Lancashire and Willard McCarty appeared in 1988 with some 400 pages. The second volume, for 1989–90, has almost 700 pages with a much better index. For several years, until it began to get out of date, the *HCY* was an extremely valuable resource, fulfilling the role originally taken by the *Computers and the Humanities.* In the years following the expansion of access to electronic resources fostered by the Web led to other areas of theoretical interest in humanities computing. Then the introduction of academic programs is another indication of the acceptance of a subject area by the larger academic community. For humanities computing this began to happen by the later 1990s although it is perhaps interesting to note that very few of these include the words "Humanities Computing" in the program title. Meanwhile the ALLC and ACH continued to organize a conference every year with a predominance of papers on markup and other technical issues. An attempt to produce a roadmap and new directions for humanities computing for the 2002 conference in Germany produced a useful survey

(Robey 2002) but little new, and would perhaps have benefited from more input from a broader community[4].

So, from 60s the people discussed about digital humanities and tried to define the discipline. But is Humanities Computing (as it shall be referred to from here on) an approach that varies according to the discipline to which it applies, or are its component methodologies better understood as technical, rather than disciplinary variations?[5] We start from the experts' perspectives. Humanities computing isn't general-purpose academic computing – isn't word-processing, email, web-browsing (Unsworth, 2002), is a practice of representation[6] […], mimicry.

In 2002 at the seminar "Is Humanities Computing An Academic Discipline?" organized by IATH (Institute for Advanced Technology in the Humanities) Willard McCarty offers the following answer to the question: "What is Humanities Computing?"

> Humanities computing is an academic field concerned with the application of computing tools to arts and humanities data or to their use in the creation of these data. It is methodological in nature and interdisciplinary in scope. It works at the intersection of computing with the arts and humanities, focusing both on the pragmatic issues of how computing assists scholarship and teaching in the disciplines and on the theoretical problems of shift in perspective brought about by computing. It seeks to define the common ground of techniques and approaches to data, and how scholarly processes may be understood and mechanised. It studies the sociology and epistemology of knowledge as these are affected by computing as well as the fundamental cognitive problem of how we know what we know. Its tools are derived from practical work in computer science, but like that work its application of them uses models of intelligence developed in cognitive science and philosophy of mind. It tests the utility of these models to illuminate particular objects of study by direct involvement in the fields of application. Its object of knowledge is all the source material of the arts and humanities viewed as data. Like comparative literature it takes its subject matter from other disciplines and is guided by their concerns, but it returns to them ever more challenging questions and new ways of thinking through old problems.

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[4] For an thorough overview of both of these perspectives, see Schreibman, et al. (2005). A Companion to Digital Humanities.http://nora.lis.uiuc.edu/xtf/view?docId=blackwell/9781405103213/9781405103213.xml&chunk.id=ss1-2-1&toc.depth=1&toc.id=ss1-2-1&brand=default

[5] idem

[6] "What is Humanities Computing, and What is Not?" in *Jahrbuch für Computerphilologie 4*, Georg Braungart, Karl Eibl & Fotis Jannidis, eds. Paderborn: mentis 2002.

Even at the most basic level, is Humanities Computing a process, as Jenny Fry's work (2004) implies[7], an approach, as Willard McCarty's work (2002) portrays it, or a product, as John Unsworth's arguments about 'mimicry' (2002) indicate?

The answer to these questions merely reflects different aspects or experiences of a larger and complex whole. On the most basic level, however, one thing upon which most of these scholars of humanities computing agree is that by its nature, work within this field, whatever it is, requires a high degree of institutional support and/or interdisciplinary between the humanities and the sciences (Katz, 2003; Unsworth, 2005; McCarty et al., 1999).

Purpose: Why the works of authors are reliable? Because the author's publish extensively in the area I'm interesting in and the articles, of author's I indicated as a principal, add value at the research about digital humanities. Conference papers and presentation, publications, citations, references, bibliographies in books, articles, association web pages, personal author's web page, and portals, prove the importance, the relevance of the author's in the field. Then, now a day, these authors are actively and they are hiring in develop of the topic. In the critical analysis I could try to deconstruct the argument about Humanities Computing in order to establish the robustness of that argument.

Critical analysis

The purpose for writing a critique is to evaluate this literature review in order to increase the reader's understanding of it. A critical analysis is subjective writing because it expresses the writer's opinion or evaluation of a text. Analysis means to break down and study the parts. Writing a

[7] She has been studying computer-mediated communication and collaboration from the interdisciplinary perspective of science and technology studies and information science for a number of years. Her work has been mainly concerned with the disciplinary shaping of networked digital resources and digital infrastructures.

critical paper requires to use some approaches. The combination of Toulmin (1958) and Fisher (1993) approach can identify the components of any argument in critical way.

I'd like use this template to take separate more of what I marked up in it providing a structure for making notes after reading an article or paper. I shared the template in four components to better establish the background to the argument:

- Claim : essence of the argument, the affirmation
- Qualifiers: is it unqualified or qualified claim?
- Evidence : the author supports the claims with previous works
- Reason: is the reason relevant to the claim it supports?

Full citation	**Tito Orlandi** : Is Humanities Computing a Discipline? (2002) "It appears that most experts agree on the opinion that humanities computing is an ***independent discipline***, and as such it should be introduced into the faculties of humanities"		
Claim	Qualifiers	Evidence	Reason
humanities computing is an ***independent discipline***	Qualified	No	Yes

Full citation	**John Unsworth** : What is Humanities Computing and What is Not? (2002) “I'll give the short answer to the question “what is humanities computing? : it is foreshadowed by my two epigraphs. Humanities computing is a ***practice of representation, a form of modeling or,*** as Wallace Stevens has it***, mimicry***. It is also (as Davis and his co-authors put it) ***a way of reasoning and a set of ontological commitments***, and its representational practice is shaped by the need for efficient computation on the one hand, and for human communication on the other.”		
Claim	Qualifiers	Evidence	Reason
Humanities computing is a ***practice of representation, a form of modeling or,*** as Wallace Stevens has it***, mimicry***. It is also (as Davis and his co-authors put it) ***a way of reasoning and a set of ontological commitments***	Qualidfied	From 2000 he wrote many works about	Yes

Full citation	**Willard McCarty** : Humanities computing (2002) What is humanities computing? This, for the humanities, is a question not to be answered but continually to be explored and refined. The above is meant to advance the questioning through a rough, provisional map of the field as it now seems to be emerging from discussions and from related scholarly work. The map centres on a large methodological commons of techniques derived largely from and ***applicable across the other disciplines***. These techniques depend for their application chiefly on the kind of data in question (e.g. discursive or tabular text, numbers, images and sound) rather than subject matter.		
Claim	Qualifiers	Evidence	Reason
Humanities computing is ***applicable across the other disciplines***	Qualified	Preliminary draft entry for The Encyclopedia of Library and Information Science, New York: Dekker, 2003	Yes
Full citation	**Willard McCarty :** Humanities Computing: Essential Problems, Experimental Practice (2002) The ***application of computing to the disciplines of the humanities*** has two principal outcomes: useful results for the field of application and failures completely to demonstrate what is known.		
Claim	Qualifiers	Evidence	Reason
The ***application of computing to the disciplines of the humanities***	Qualified	From 1999 he wrote the most interesting contribution about humanities	Yes

		computing as interdiscipline	
Full citation	**De Smedt, Koenraad** : Some Reflections on Studies in Humanities Computing (2002) The most important issue is the question of what a humanities computing degree should offer, in view of the wide ***interdisciplinary of the field***. Different institutions have coped with this question in very different ways. […] humanities computing is bound to change both what and how humanities students learn.		
Claim	Qualifiers	Evidence	Reason
The most important issue is the question of what a humanities computing degree should offer, in view of the wide ***interdisciplinary of the field***	Unqualified	This article presents just some reflections on the status of humanities computing in higher education, in terms of curricula, degrees, and international student and staff mobility	So and so

Full citation	**Geoffrey Rockwell**: Is humanities computing an academic discipline? (1999) I propose in this paper to tackle the question whether ***humanities computing is an academic discipline from an administrative and instructional perspective*** by recasting is thus, "Who should humanities computing benefit and how should it be administered and taught to benefit them?" […] To ask if humanities computing ***is an academic discipline*** is anticipated by the question of whether it can be administered and taught as other disciplines are in the academy."		
Claim	Qualifiers	Evidence	Reason
… humanities computing is an academic discipline from an administrative and instructional perspective	Qualified	No	Yes
Full citation	**Melissa Terras** : Disciplined: Using Educational Studies to Analyse 'Humanities Computing' (2006) Humanities Computing ***is an emergent field.*** The activities described as "Humanities Computing" continue to expand in number and sophistication, yet ***no concrete definition of the field exists***, and there are few academic departments that specialize in this area.		
Claim	Qualifiers	Evidence	Reason
no concrete definition of the field exists	Qualified	Yes, she is general editor of Digital Humanities Quarterly, and executive of both the Association for Computers	Yes

		and the Humanities and the Association of Literary and Linguistic Computing	
Full citation	**Nerbonne, John** : Computational Contributions to the Humanities (2005) At the University of Groningen we have emphasized a simple view of humanities computing ***as computing in service of the humanities***. This means that we seek to answer scholarly questions in linguistics, history, and art history by using the computer, exploiting especially its ability to process large amounts of data and the transparency of its processing. […] the revolutionary idea that humanities computing is a discipline, preferring to think of it instead as a federation of disciplines, whose practitioners find it opportune to collaborate for reasons of some common problems. .		
Claim	Qualifiers	Evidence	Reason
… simple view of humanities computing ***as computing in service of the humanities***	Qualified	No	So and so
Full citation	**Espen Aarseth** : "From Humanities Computing to Humanistic Informatics: Creating a Field of Our Own (1997) […] even if humanities computing (as it used to be called) is still largely invisible, it is also ***omnipresent.*** […] But this poses a major problem: If computing is done in every field, then why do we need a separate field? Can there be a separate field?		

Claim	Qualifiers	Evidence	Reason
… even if humanities computing (as it used to be called) is still largely invisible, it is also ***omnipresent***	Unqualified	No. He is more cited for humanistic informatics	No
Full citation	**De Smedt Koenraad**: Advanced Computing in the Humanities: a network approach (1998) Humanities computing **is up and going**. Future scholars of language and literature, history, art, philosophy and culture will not just be using books. They will require real competencies in advanced information technology, in addition to traditional academic knowledge in their various disciplines. Computer literacy will be a necessity in order to be prepared for humanities research jobs as well as for jobs addressing multimedia applications		
Claim	Qualifiers	Evidence	Reason
Humanities computing **is up and going**	Qualified	No	So and so
Full citation	**Burnard, L.** Is Humanities Computing an Academic Discipline? or, Why Humanities Computing Matters (1999) […] Let me simply discuss some of the characteristic features of Humanities Computing which other speakers in this seminar have more eloquently argued for: for me, as for most of them, ***humanities computing is :*** ***intrinsically interdisciplinary*** ***methodologically focussed*** ***socially necessary*** ***historically grounded***		
Claim	Qualifiers	Evidence	Reason

humanities computing is : intrinsically interdisciplinary, methodologically focussed, socially necessari, historically grounded.	Qualified	No	Yes

Drawing conclusion from critical analysis

Once I have analysed the text I draw my own conclusion and formulate my argument to provide the framework for the synthesis. So what is Humanities Computing for the peers of the field? They answer how following:

Humanities computing is an ***independent discipline / Orlandi, T. (2002)***
Humanities computing is a ***practice of representation, a form of modeling or,*** as Wallace Stevens has it***, mimicry***. It is also (as Davis and his co-authors put it) ***a way of reasoning and a set of ontological commitments / Unsworth, j. (2002)***
Humanities computing is ***applicable across the other disciplines / Mc Carty, W. (2002)***
[Humanities computing is] the ***application of computing to the disciplines of the humanities/ Mc Carty, W. (2002)***
The most important issue is the question of what a humanities computing degree should offer, in view of the wide ***interdisciplinary of the field / De Smedt, K. (2002)***
Humanities computing is an academic discipline from an administrative and instructional perspective / Rockwell, G. (1999)
[For humanities computing] ***no concrete definition of the field exists / Terras, M. (2006)***

Humanities computing ***as computing in service of the humanities / Nerbonne, J. (2005)***
Humanities computing (as it used to be called) is still largely invisible, it is also ***omnipresent / Aarseth, E. (1997)***
Humanities computing ***is up and going / De Smedt, K. (1998)***
Humanities computing ***is : intrinsically interdisciplinary, methodologically focussed, socially necessary, historically grounded / Burnard, L. (1999)***

However, defining Humanities Computing as an academic field is problematic (Terras 2006), because it doesn't 'exist a concrete definition of the field'. So "What *does* computing have to do with the humanities?" One might think that this is a problem, and in some ways it is, but the problem is a very good way to begin this discussion. Since we ourselves do not fully understand what computing is to the humanities and vice versa, we profit from being reminded that there is a problem here to consider (Mc Carty, 1999). How Nerbonne suggests, 'humanities computing should focus on contributing to humanities scholarship'. He also suggest 'we view humanities computing as a federation of disciplines and sub disciplines' but 'naturally, humanities computing could develop into a discipline of its own' (2005). 'Humanities computing is much too mature as an academic activity to plea that it needs time to develop properly. In fact, humanities computing is rapidly approaching middle age. The journal Computers and the Humanities is scheduled to publish volume 39 in 2005. It is completely reasonable for a new field to ask for time in order to prove itself, but humanities computing has already had a comparatively extensively period. It is now time to produce a new identity for humanities computing. Is it then simply tautologous to regard humanities computing as the application of computing to research questions in the humanities?' He sees humanities computing 'as computing in service of the humanities' even if he believes in an evolution of the discipline. But are other views even possible? In

examining alternatives we proceed from the assumption that all humanities computing peers approach their work with special computational expertise, and that this is what sets us apart. Humanities computing is not the study of digital culture—even if we may wish to exploit our affinity with digital culture in engaging our colleagues in humanities (Nerbonne, 1998). The particular goal of understanding culture is naturally one which the humanities share with sociology, social psychology, anthropology and perhaps economics, and it is eminently worthwhile. But there is no primacy of place for culture which is specifically digital[8]. The interpretation of the most important scholars in this field, Mc Carty, confirms the role of humanities computing as an application across the humanities or better as an 'application of computing to the discipline of the humanities' (Mc Carty, 2005). Humanities computing is likewise not the cultivation of an applied branch of the humanities (Bijker and Peperkamp, 2002). To be fair, let us note that Bijker and Peperkamp urge a redirection of the goals of humanities scholarship in general, not those of humanities computing in particular. I think is strange that while Mc Carty insists on the strong relation between computing and humanities and the application of those at the humanities, Orlandi says, some years before: 'It appears that most experts agree on the opinion that humanities computing is an independent discipline, and as such it should be introduced into the faculties of humanities' What did he read? Where did he find these opinions?[9] De Smedt (2002) is convincing in his petition to give up pedagogical and business goals as primary in defining humanities computing curricula, pointing rather to the need to derive pedagogical goals from the scholarship of the field. De

[8] We should expect digital culture to be an attractive object of study, if only because it requires no digitalization of source material prior to analysis, but it is challenging to find examples of success where computational studies have contributed to the understanding of digital culture.

[9] See : Tito Orlandi: The Scholarly Environment of Humanities Computing. A Reaction to Willard McCarty's talk on *The Computational Transformation of the Humanities*. <http://RmCisadu.let.uniroma1.it/~orlandi/mccarty1.html>

Smedt has it exactly right: ‘the most important issue is the question of what a humanities computing degree should offer, in view of the wide interdisciplinary of the field’. And Bernard (1999) adds ‘Humanities computing is as much of a discipline as anything else in the academy’ underlining its ‘interdisciplinarity’ as a ‘consequence of the fact that digital technologies now interweave almost every aspect of our cultural life, but perhaps more to do with the simple observation that the digital medium both facilitates and encourages the breaking down of artificial barriers between studies which focus on the visual, aural, or linguistic aspects of artefacts, and thus the emergence of a new holistic vision of such objects’ and McCarty urges that humanities computing be taken to embrace common humanities methodologies (McCarty 1998). McCarty invites a conjecture about his views, noting of courses in humanities computing: ‘‘The ‘participants’ disciplinary diversity has taught me that the only possible academic subject is the methodologies we have in common’’ (McCarty 1999). McCarty may even be right about this, but we resist the conclusion that we need to find defining properties in methodology or foundational studies, preferring rather to emphasize the humanities and its research questions—even at the risk of having nothing more in common than what the larger humanities disciplines have in common. McCarty will certainly agree that we need to pursue solid research results, but while we have emphasized that refection on methodology and foundation follows naturally in conducting research, McCarty stresses the search for common methodology. We suggest that the ambition to determine a ‘methodological commons’ for humanities computing is ‘ill-directed vis-à-vis the challenges humanities computing now faces’. If we focus on research results, we will naturally turn to methodological and foundational questions as part of the scholarly process, and it will not matter whether we share these throughout humanities computing. Another interesting vision of the field is completely

different from the others. Rockwell questions about the administrative and instructional potential of humanities computing. He said that to ask if humanities computing is an academic discipline is anticipated by the question of whether it can be administered and taught as other disciplines are in the academy. He sets up a hierarchy of questions proceeding from the instructional question to the ontological, writing:

'This seems a good time to ask whether we should be offering such a degree -- but before we can answer that question, we need to have a clear idea of what the field is, and whether it is, in fact, a field of scholarly inquiry'

In conclusion, at a conference on "Transforming Disciplines: Computer Science and the Humanities", held at the National Academy of Sciences in January 2003, John Unsworth, chair of the ACLS Cyber infrastructure commission, remarked that in spite of ten years of tool-building for humanities computing, very little progress has been made. The problem, he states, is that: "We need (we still need) to demonstrate the usefulness of all the stuff we have digitized over the last decade and more – and usefulness not just in the form of increased access, but specifically, in what we can do with the stuff once we get it: what new questions we could ask, what old ones we could answer (Unsworth, 2003)". Unsworth notes that the tools that have been developed in the past decade have been specialized and self-contained, whereas what is needed is a standards-based toolkit that is open, modular, and extensible. Humanists, he states, need tools that facilitate more than just searching and browsing digital collections, tools that enable data-mining, annotation, comparison, and sampling, and an interoperable architecture that facilitates networked collaboration and sharing of data. Thus far, the best-case scenarios are digital library collaborations that recognize that the humanities present computing problems that can engage the interests of computer scientists, and correspondingly, computer

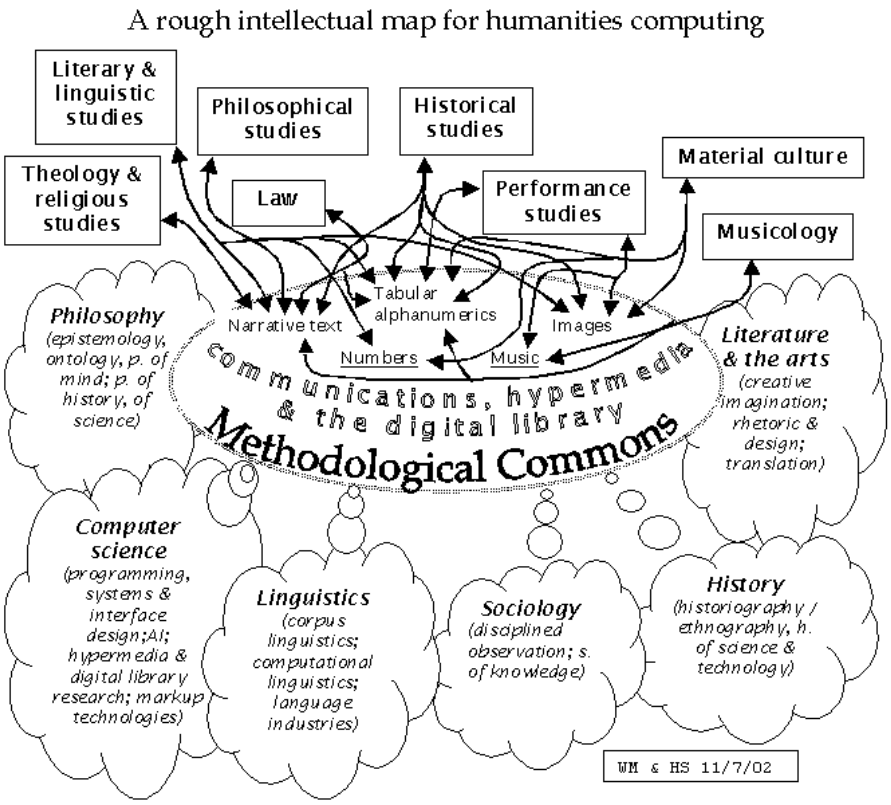
scientists can provide technical solutions to these problems, leading to the development of new tools and technologies for humanities scholars.

The future

The view of humanities computing as a federation of disciplines (Nerbonne, 1999)[10] carries a burden with it. Just as in other loosely interdisciplinary endeavours, results in humanities computing really need to be reviewed twice, once by the disciplinary experts, i.e. the linguists, historians or archaeologists, and once again by the computing experts. For humanities computing to survive as an academic field, it needs to prove its value to our peers in humanities. We can do this best if we provide answers to research questions they are asking. The answers need to be convincing, they need to resist critical scrutiny, and they need to generalize to new areas of investigation. Naturally, the dynamic of investigation will not stop there. Instead, we will naturally be challenged to defend our claims, to analyze our methods, and to reflect on our successes and on our limitations. Continuing the analysis, it would then be useful to return to individual scholars in Humanities Computing and analyse where they publish their articles: what is the publication scope of Humanities Computing? How could this be measured, and what could it tell us about the field? Do Humanities Computing scholars publish in 'traditional' Humanities single-subject journals, or is there a cross-over with Computing Science? Looking at publication records would show the impact factor that Humanities Computing scholarship has in the wider academic field, and so could illuminate some of the boundaries that the discipline operates within (Terras, 2006). Also someone speaks about Digital Humanities intending the same thing. Why? Who distinguish from Digital Humanities and Humanities Computing? Who not? I'll try to

[10] See : http://www.iath.virginia.edu/hcs/nerbonne.pdf

answer to these questions in the next essay, announced as a final dissertation.



The image is created by Willard McCarty and Harold Short [11]

Synthesizing the research: developing a theoretical framework

I'm in a position to formulate a theoretical framework for my investigation. Is humanities computing disciplines? (Orlandi, 2002). This is the fascinating question with is interesting to syntheses the debate concerning the science of a growing number of disciplinary areas of humanities. To clarify what we meant with Humanities Computing, we needed to focus what methodologies and tools use the discipline, as we place the Humanities Computing in the science or we fit, in the opinion of Ferrarini (2003), in the "information humanities disciplines". The relationship between computing and humanities disciplines seems to have acquired a specific dimension. Each disciplines in humanities area, has developed different computational strategies, in the form directly proportional to the needs of field of expertise (linguistics, history, library,

[11] http://computerphilologie.uni-muenchen.de/jg02/mccarty.html

literature, etc.). But almost all disciplines share methodologies in automatic data management - from data sets and to data bases, from text encoding and texts to image annotation and recognition, from electronic publication and communication to global information systems, and from search engines and software agents to synchronous and asynchronous virtual communities, immersive computer environments and simulations (Joyce 2003) - and disagree on a purely instrumental use of technologies. A series informatics method runs across the humanities disciplines and provides a basis for computational intervention, affecting operations related to the study and conservation of sources, the modality of its manipulating and distribution. But this 'transversally' involves the notion of trans-disciplinarily: the skills for the use of information technology and telecommunication necessarily require a solid knowledge of scientific. If we look for projects of digital libraries available, for the centers specializing in the application of new technologies, for the products of digital humanities (as textual databases, systems analysis of the text, digital image archives), for courses in Digital Humanities or Humanities computing activated and the journals and publications on the subject, it is immediately clear that an independent disciplinary dimension is fully justifiable. Really it becomes urgent to clarify the meaning of a marriage (from humanities and computing) too often misunderstood or not shared. The goals of this theoretical framework are to review the field and it's across between disciplines. The most pressing goals in the humanities that network with computing, are identify areas of research that will benefit from cross-disciplinary applications conducive to new discovery and long term collaboration between the humanities and engineering sciences. Not long ago one might have been tempted to claim that multidisciplinary pursuits- or what we then called inter-disciplinary pursuits- offered us an otherwise unavailable viability, a set of renewed and renewing- which is to say

transforming- tools and practices, ones that disciplines heretofore and otherwise constrained. More recently with disciplinary boundaries in a networked age ever more permeable and with transforming tools and practices a matter of course (and courses), there is a consoling and encouraging reassessment of disciplinarily underway. So I think the brave new world of the field "humanities computing" is coming into existence, though we have far to go in order to bring it to maturity. We need much more money, many more trained humanities technologists, and new institutions both on campus and off. We need to educate scholars and raise their consciousness of the promise of the new world. But above all we need an articulated vision of where we are headed, and what we need to do in order to get there.

But to what end are we building a humanities computing world, or better an e-humanities project? I have already touched on the obvious answers to this question. At the very least, digitisation makes information more readily and available to many scholars. Digital finding aids make it much easier to identify relevant source and secondary material. Digital word-searching techniques not only facilitate the identification of specific information, but enable the researcher to compare and make connections across long periods of time and vast bodies of material. For most contemporary scholars, this level of technology suffices, and it enables them to do what they have traditionally done in a much more efficient and cost effective manner because information technology can play a significant role in the humanistic reflection.

In conclusion I want to support the field of digital humanities from interdisciplinary perspectives and although the breadth of fields covered is wide what is revealed is how computing has cut across disciplines to provide not only tools, but methodological focal points. I'm completely agreed with Mc Carty's definition:

‘We can nevertheless see easily that humanities computing is interdisciplinary by nature, which is to say that it divides naturally according to the types or ways of viewing data rather than by the disciplines of application.

And then at the seminar *"Is humanities computing an academic discipline?"*, held under the auspices of the Institute for Advanced Technology in the Humanities (IATH), at the University of Virginia, in the 1999 Mc Carty answered at the question of the seminar and said:

No", I say, "humanities computing is not a discipline, it is an interdisciplinary subject”

Summary reflection

This literature review process is a continuous one throughout the lifespan of the research project. I will not stop here and I will add to the review each time I locate a relevant piece of work that has a place in my theoretical framework because I have to considerate the ‘continuity and change in Humanities Computing’ (Bernard, 1999).

The aim of this research **was** understand if humanities computing that uses digital library, although substantial barrier remains between humanities that created digital library and humanities how use digital library, could be counted as a independent discipline or not and if as a discipline could be considered interdisciplinary or not. This gap has something to do with the most basic challenges define by the field of humanities computing or digital humanities. The problem is in the consideration that humanities faculties are often perceived as anti-technology, yet some of them are involved in important groundbreaking technological projects such as the Center for Electronic Texts in the Humanities, the Oxford Text archive, Perseus, the Text Encoding Initiative, and various technology experiments. Humanities faculty often exhibit a healthy scepticism toward technology, a refreshing difference from what librarians listen to on a daily basis, both from their peers and from technologically hungry users (Massey-Burzio, 1999). Then the

technologies carry out a different approach in many fields because the discovery of digital world renovates the modalities to operate. Two disparate uses of the technology are used to inform this debate because digital technologies have real potential as educational tools, but those technologies are not risk free.

After preliminary remarks in the next study I would utilize the focus group interview method to understand how humanities faculty view technology and its value to their research and teaching, ethnographic studies to recognize how use the digital library, usability testing to comprehend the humanities scholars' experiences with existing technology sought, and participant observation along with they view and use electronic text, electronic journals, the Internet, and other Web-based information. Another important step in the next study will be determinate exactly the categories that identify the subjects in the humanities to create a list of main categories and subcategories. Nowadays is not really clear what are the categories of humanities studies and if there are the same in every country and for that sometime became difficult delineate Humanities Computing fro all subjects of Humanities.

So from this review I can then move on the next stage in the research process that point on these goals:

1. Try to study humanities scholars' use of resources in context of the broader information task in relation with information technology (IT) tools. This concerned with the needs and behaviours of humanities scholars both in digital information environments.
2. Try to understand if information technology belongs with capabilities of humanists. In fact with the advent of the World Wide Web there has been a dramatic increase in the digitization of information and artefacts. The Scientific community has embraced the technologies facilitated by the World Wide Web, indeed creating and nurturing them. Humanities researchers have, in general, not been so quick to weave

these resources into their research repertoire, with the exception of generic tools such as Google and online library catalogues and bibliographic tools. Reasons for this could include a lack of comfort and confidence with information technology, a reliance on colleagues and networking events as a source of information, reliance on their own personal collections, and a slower, more opportune way of searching and formulating their research ideas (Green, 2000).

3. Try to comprehend why humanists produced by themselves digital resources. As well over these past few years the largest organisations (libraries, institutions, archives, and museums) have been competing to create impressive digital libraries will give the widest possible audience access to very large bundles of resources. On the other hand many Humanities scholars, teacher and so on has created "personal", "selective" digital resources for many reasons, first of all to serve the needs of research and teaching in the humanities. Actually the so-called scholar-produced digital resources are produced by particular scholarly communities rather than by institutions external to specialist communities such as commercial publishers, archives or libraries.

I add and conclude this review with a definition really of humanities computing, really missed by the peers:

"a useful integration of computing into the disciplines of the humanities and its transformation of them for new interdisciplinary knowledge"[12]

All that for answering in a more detailed way to the question : What is, What study the humanities computing? I'm convicted that field of digital humanities will comprise the study of what happens at the intersection of computing tools with cultural artefacts of all kinds and because there has been an increased uptake of technology-based outputs and methods in humanities research, the future of humanities computing will try to probe how these 'connections' tool may be used to create new discipline that

[12] Rinnovati, L. (2007)

could bring knowledge from our cultural heritage and from the contemporary world.

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