# Humanities Computing as Digital Humanities

Patrik Svensson  <patrik_dot_svensson_at_humlab_dot_umu_dot_se>, Umeå University

## Abstract

This article presents an examination of how digital humanities is currently conceived and described, and examines the discursive shift from humanities computing to digital humanities. It is argued that this renaming of humanities computing as digital humanities carries with it a set of epistemic commitments that are not necessarily compatible with a broad and inclusive notion of the digital humanities. In particular, the author suggests that tensions arise from the instrumental, textual and methodological focus of humanities computing as well as its relative lack of engagement with the "digital" as a study object. This article is the first in a series of four articles attempting to describe and analyze the field of digital humanities and digital humanities as a transformative practice.

## Introduction

The humanities are undergoing a set of changes which relate to research practices, funding structures, the role of creative expression, infrastructural basis, reward systems, interdisciplinary sentiment and the emergence of a deeply networked humanities both in relation to knowledge production processes and products. An important aspect of this ongoing transformation of the humanities is humanities scholars' increasing use and exploration of information technology as both a scholastic tool and a cultural object in need of analysis. Currently, there is a cumulative set of experiences, practices and models flourishing in what may be called digital humanities. The research presented here explores the scope and direction of this emerging field as well as the role of humanities computing in this enterprise. [1]

In this article, the first in a four-part series, I explore the discursive shift from humanities computing to what is now being termed the digital humanities, examining how this naming is related to shifts in institutional, disciplinary, and social organization. Materials such as the Humanist email list, journals, conference materials, principal texts, professional blogs and institutional websites provide an important empirical basis for the analysis. Academic fields are partly produced, represented, reinforced, changed and negotiated through these modes of discourse. As will be evident from the analysis, the renaming of humanities computing to digital humanities brings with it a set of epistemic commitments that are not necessarily congruent with a broad and inclusive notion of the digital humanities. I suggest that interesting tensions arise from the instrumental, textual and methodological focus of humanities computing as well as its relative lack of engagement with the "digital" as a study object. [2]

In the second article, I explore the broader landscape of the digital humanities through a discussion of digital humanities and digital humanists, associated traditions, personal encounters and importantly, through a suggested set of paradigmatic modes of engagement between the humanities and information technology: information technology as a tool, an object of study, an exploratory laboratory, an expressive medium and an activist venue. [3]

The third article discusses cyberinfrastructure for the humanities more broadly — and for the digital humanities in particular — in relation to the current discourse of cyberinfrastructure, models of implementation and possible directions. The article also presents a fairly extensive case study of HUMlab — a digital humanities center at Umeå University. Finally, tentative advice as to implementing and strategizing humanities cyberinfrastructure is offered. [4]

In the fourth article, I explore the multiple ways in which the digital humanities have been envisioned and how the digital [5]

humanities can often become a laboratory and vehicle for thinking about the state and future of the humanities at large. Some foundational issues, including the role of the humanities and changing knowledge production systems, are discussed and related to the development of the digital humanities. Furthermore, a tentative vision of the digital humanities is presented. This vision is grounded in the article series as a whole as well as in the important collaborative possibilities and challenges that lie ahead of us.

Together these four articles constitute an attempt to outline and critically discuss how the humanities interrelates with information technology in multiple ways, to understand the historical, conceptual, and disciplinary aspects of this interrelation, and to present an expansive model for the digital humanities.

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## Background

One of things that has fascinated me for a long time is the range of origins, approaches and traditions associated with different varieties of digital humanities, ranging from textual analysis of medieval texts and establishment of metadata schemes to the production of alternative computer games and artistic readings of nanotechnology. An important rationale for this article series is to facilitate a discussion across various initiatives and disciplines and to make connections. There are many humanities scholars involved in what may be called digital humanities who have no or little knowledge of humanities computing, and vice versa, many humanities computing representatives who do not engage much with current "new media" studies of matters such as platform studies, transmedia perspectives or database aesthetics. Few people will engage in activities across the board, of course, but it is important to have a sense of the growing disciplinary landscape, associated methodological and theoretical positions, and emerging collaborative possibilities. To me, this is an integral part of digital humanities as a project.

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There are several good reasons for giving humanities computing the particular attention it receives in this article: its rich heritage, historical and current accomplishments, the sheer number of people involved, and the apparent discursive transition to "digital humanities." Furthermore, any attempt at mapping an emerging field presupposes a discussion of disciplinary territory and ambitions, and humanities computing provides a particularly good starting point as it is relatively established and well-defined. And as we will see, many of the issues, considerations and parameters relevant to humanities computing are also relevant to digital humanities more generally.

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In the following, we will start out from a particular example of humanities computing as digital humanities and associated epistemic commitments. Some of these commitments are traced in the subsequent historical, institutional and contextual description of humanities computing. We will then move on to look at the renaming of humanities computing to digital humanities, which in turn will lead to a critical discussion of humanities computing with a particular focus on some points of tension between traditional humanities computing and an expansive notion of digital humanities. In conclusion, humanities computing will be briefly juxtaposed with a very different kind of digital humanities tradition.

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## Setting the Stage

The Call for Proposals for Digital Humanities 2009, the principal humanities computing conference, provides an illustrative example of how the disciplinary territory of digital humanities is being defined in relation to the tradition of humanities computing and how epistemic commitments can be manifested discursively.

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Epistemic cultures, as defined by [Knorr Cetina 1999, 1], are "those amalgams of arrangements and mechanisms – bonded through affinity, necessity, and historical coincidence – which, in a given field, make up *how we know what we know* " (original emphasis). We are thus concerned with ways in which knowledge is created, represented and defended. Epistemic cultures are constructed and maintained through, among other things, the epistemic commitments of participating scientists as part of the means by which alignments are made between academic disciplines, the fields of enquiry that they represent, and shared notions about what constitutes valid research [Ratto 2006]. In the following, the epistemic commitments of humanities computing and digital humanities are mainly traced through looking at different modes of discourse. While these modes may have different functions and intended audiences, they collectively add to the analysis.

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The Digital Humanities 2009 Call is divided into three parts. The first part provides a broad and relatively open definition of the digital humanities.

> The international Programme Committee invites submissions of abstracts of between 750 and 1500 words on any aspect of digital humanities, broadly defined to encompass the common ground between information technology and problems in humanities research and teaching.
>
> As always, we welcome submissions in any area of the humanities, particularly interdisciplinary work. We especially encourage submissions on the current state of the art in digital humanities, and on recent new developments and expected future developments in the field.

The invitation relates to "any aspect of digital humanities" which is loosely defined as the common ground between information technology and problems in humanities research and teaching. Interdisciplinary contributions are particularly encouraged. As expected, the second part provides a higher level of specificity.

> Suitable subjects for proposals include, for example,
>
> - text analysis, corpora, corpus linguistics, language processing, language learning
> - libraries, archives and the creation, delivery, management and preservation of humanities digital resources
> - computer-based research and computing applications in all areas of literary, linguistic, cultural, and historical studies, including electronic literature and interdisciplinary aspects of modern scholarship
> - use of computation in such areas as the arts, architecture, music, film, theatre, new media, and other areas reflecting our cultural heritage
> - research issues such as: information design and modelling; the cultural impact of the new media; software studies; Human-Computer interaction
> - the role of digital humanities in academic curricula
> - digital humanities and diversity

Here we are presented with a narrowing down of what was described in the first part. This is common in conference calls as a way of indicating the particular focus of the conference, of course, although it is difficult to discern any clear thematic delimitation in this particular case. We are thus concerned with a fairly broad range of possible topics. However, the ordering and phrasing of these topics suggest a specific tradition or framework, and an associated set of epistemic commitments. For instance, it is not by accident that text analysis comes first and that phrases such as "computer-based research" and "use of computation" are used. Even so it could be argued that much of what be included in a broad notion of digital humanities could be subsumed under these topics, and that particularly the sixth topic – research issues – opens up the scope to areas such as new media studies. But the placement, exact wording (e.g. "the cultural impact of new media") and the broader context may not make these potential conference participants feel targeted unless they already have a relation to the community and humanities computing.

In the third part of the call for proposals follows a much more precise definition of digital humanities and associated topics:

> The range of topics covered by digital humanities can also be consulted in the journal of the associations: Literary and Linguistic Computing (LLC), Oxford University Press.

The journal *Literary and Linguistic Computing* has been a key publication for humanities computing for a long time. However, defining digital humanities through the topics presented in LLC clearly excludes many other initiatives and developments in the intersection of the humanities and information technology and suggests a very particular tradition, institutional grounding and epistemic culture.[1] Moreover, this level of narrowing down is clearly not congruent with the description of digital humanities given in the first part of the call, which may be said to be less obviously situated in the tradition of humanities computing and associated epistemic commitments.

# History and Paradigm

The partial institutionalization of humanities computing has resulted in academic departments or units, annual conferences, journals, educational programs and a rather strong sense of communal identity. These are all qualities that are typically associated with the establishment of a new discipline (cf. [Klein 1996, 57]). The following excerpt from a description of a 1999 panel organized by the Association for Computing the Humanities seems to confirm this analysis:

> Empirically, humanities computing is easily recognized as a particular academic domain and community. We have our professional organizations, regular conferences, journals, and a number of centers, departments, and other organizational units. A sense for the substance of the field is also fairly easy to come by: one can examine the proceedings of ACH/ALLC conferences, issues of CHum and JALLC, the discussions on HUMANIST, the contents of many books and anthologies which represent themselves as presenting work in humanities computing, and the academic curricula and research programs at humanities computing centers and departments. From such an exercise one easily gets a rough and ready sense of what we are about, and considerable reassurance, if any is needed, that indeed, there is something which we are about.[2]

Communal identity, of course, is built over time, and history and foundational narratives play an important role in this process. Father Roberto Busa is typically cited as the pioneer of the field of humanities computing, and his work dates back to the late 1940s:

> During the World War II, between 1941 and 1946, I began to look for machines for the automation of the linguistic analysis of written texts. I found them, in 1949, at IBM in New York City.  [Busa 2004, xvi]

In this foundational story, two important epistemic commitments of humanities computing are established: information technology as a tool and written texts as a primary object of study (for linguistic analysis). Commitments such "computer as instrumental tool" and "text as object" end up helping decide what are legitimate types of questions and study objects for the field, and how work and relevant institutions are organized.

The journal *Computers and the Humanities* was started as early as in 1966 and, interestingly, it seems as if early issues were not as textually oriented as one might have assumed. Early articles include "PL/I: A programming language for humanities research," "Art, art history, and the computer" and "Musicology and the computer in New Orleans" (all from 1966-1967). Thirty years later we find articles such as "The design of the TEI encoding scheme," "Current uses of hypertext in teaching literature," "Neural network applications in stylometry" and "Word frequency distributions and lexical semantics" (all from 1995-1996). In 2005, this journal was renamed *Language Resources and Evaluation*, and had by this time lost its status as one of the "official" journals for humanities computing. In one of the obituaries, Willard McCarty applauds the first 25 years of the journal and comments on the editors' final statement (which points the difficulty of maintaining the broad scope of the journal):

> CHum's astonishing denial of a future for humanities computing comes in the same year as the Blackwell's Companion to Digital Humanities. […] If anything, the development of CHum since then suggests rather the opposite — a narrowing down from the breadth of humanistic interests, across the full range of disciplines, to a sharp focus on material often closer to computational linguistics than anything else — and often too technical for all but the specialist to read. This narrowing does not reflect the field.  [Humanist 18.615]

In other words, *Computers and the Humanities* was seen as having taken a direction not fully compatible with the epistemic tradition of humanities computing. Indicatively, in a Call for Papers from 1998,[3] there is a special invitation for state-of-the-art surveys, and the only example given is "Current Approaches to Punctuation in Computational Linguistics." Also, this happened at about the same time as the Alliance of Digital Humanities Associations (ADHO) was formed, and another important reason for the "demise" of *Computers and the Humanities* was that it was strategically, financially and institutionally advantageous to make *Literary and Linguistic Computing* and not *Computers and the*

*Humanities* the principal humanities computing journal.[4] Indeed, these reasons were probably more important than the perceived incompatibility between humanities computing at large and *Computers and the Humanities*. Nevertheless, the result was that for a few years, humanities computing only had one principal journal.

The journal *Literary and Linguistic Computing* has from its inception focused on textual and text-based literary analysis – as you would expect from its title. It was established in 1986 by the Association for Literary and Linguistic Computing (itself established in 1973). This journal has clearly played an important role in establishing the field of humanities computing – not only in offering a publication venue, institutional structure and academic exchange but also in publishing self-reflective articles on the role, organization and future of humanities computing. As we saw earlier, the journal has even been used to define the digital humanities – thus in a sense transferring the epistemic culture of the journal and associated field to the "new" field.

As important as these printed journals have been for establishing humanities computing as a field, humanities computing representatives were also early adopters of communication technologies such as email lists. The first message on the *Humanist List* was sent on May 13, 1987 by founding editor Willard McCarty, making it one of the first academic email lists to be established. Currently about 1600 people subscribe to the Humanist list[5] which is an email list with consistently high quality, carefully organized threads and an often lively discussion.[6] Although the range of topics is very broad it is fair to say that there is persistent and fundamental interest in textual analysis and related matters. As McCarty himself points out, *Humanist* facilitates an ongoing, low-key and important discussion:

> We're always worrying ourselves about whether humanities computing has made its mark in the world and on the world. It seems to me, however, that quiet change, though harder to detect, is sometimes much better and more powerful in its effects than the noisy, obviously mark-making, position-taking kind. If during these 17 years Humanist has contributed to the world, it has done so very quietly by nature, like conversation, leaving hardly a trace.  [Humanist 18.001]

Here it is also rather obvious that "humanities computing" serves as an identifying label and collaborative sentiment for the Humanist community. We will soon return to this label (and an ongoing relabeling process) as well as the worry or concern that McCarty mentions but first a brief look at another major institution in this field.

One of the most important venues for humanities computing have been the annual conferences jointly organized by the Association for Literary and Linguistic Computing (ALLC) and the Association for Computers and the Humanities (ACH). Originally these organizations ran their own conference series, but from 1996 they started a joint conference series. From 2008, the Society for Digital Humanities/*Société pour l'étude des médias interactifs* (SDH/SEMI) became a third organizing association. These three associations are all members of the Alliance of Digital Humanities Associations. It is quite clear that these conferences predominantly address textual analysis, markup, retrieval systems and related areas. A simple frequency analysis based on titles of papers and sessions from 1996 to 2004 shows us that frequent non-functional words include *text* (56), *electronic* (53), *language* (30), *markup* (28), *encoding* (27), *TEI* (23), *corpus* (22), *authorship* (18), *XML* (18), *database* (13) and *multimedia* (11). In comparison there is one instance of *game* and two instances of the plural form *games*. This is a rather crude measurement, of course, but it does give us a sense of the overall orientation. A more careful look at the 2005 conference (at University of Victoria, BC) does not seem to contradict this sketch. For instance, the themed sessions that extended more than one program slot were "Authorship Attribution," "Libraries, Archives & Metadata," "Computational Linguistics and Natural Language Processing," "Encoding & Multiculturalism," "Scholarly Projects" and "Visualisation & Modeling." One-slot themed sessions included "Automation," "Text & Technology," "Textual Editing & Analysis," "Interface Design" and "Hypertext".[7] Yet another example is the 2008 Digital Humanities Summer Institute [Humanist 21.469]. Here the focus is on text encoding, transcription, and corpus text analysis in five out of the eight offerings in the curriculum. The other three sessions take up digitization fundamentals, multimedia and large project planning.

While, journals, conferences and academic associations play an important role in creating and maintaining an academic field and community, another important factor is the ways in which a field has been institutionalized. In the case of humanities computing, this has been a long and partly uncertain process, which has clearly shaped the field.

# Institutional Models

In organizational terms, humanities computing enterprises have been institutionalized in many different ways. And, of course, institutions develop over time. A useful resource is Willard McCarty's and Matthew Kirschenbaum's "Institutional models for humanities computing" [McCarty & Kirschenbaum 2003]. Here a number of questions or criteria are used to list and categorize humanities computing institutions. The first category incorporates academic units that do research, teaching and collegial service. Also "[s]ome members of these units hold academic appointments either in or primarily associated with humanities computing." Examples include the Center for Computing in the Humanities, King's College London, and the Institute for Advanced Technology in the Humanities. Even though it is said in the document that "[n]o judgement is expressed or implied as to the worth of the centres under consideration," it could probably be argued that this first category serves as a role model (based on the way criteria are created and presented, the ordering of the categories and a broader humanities computing context).

Historically, and to some extent contemporarily, it would seem that a prototypical organizational form is a humanities computing unit or center affiliated with a school of liberal arts or humanities. Often such units provide service to the rest of the school and this rather instrumental function has typically been primary. Of course, there might have been development in many other directions over time, but this basic function cannot easily be dismissed. A prominent example would be the Humanities Computing Unit at Oxford University whose roots go back to the 1960s and which was closed (or transformed) in 2002. [Burnard 2002] describes the final stages of this development:

> At the start of the new millenium, the HCU employed over 20 people, half of them on external grants and contracts valued at over 350,000 annually. With the advent of divisionalization, however, it faced a new challenge and a new environment, in which OUCS, as a centrally-funded service, must take particular care to meet the needs of the whole University, in a way which complements the support activities funded by individual divisions, rather than competing with or supplanting them. Our strategy has been to focus on areas where the HCU's long experience in promoting better usage of IT within one discipline can be generalized. In 2001, we set up a new Learning Technologies Group, to act as a cross-disciplinary advocacy and development focus for the integration of IT into traditional teaching and learning. This new LTG is now one of four key divisions within the new OUCS, additionally responsible for the full range of OUCS training activities. [Burnard 2002]

The status of such academic units, of course, is not normally on the same level as (traditional) departments which tend to be the privileged academic organizational unit. In many cases humanities computing units have been seen as service units with a rather instrumental role and representatives find themselves having to present their field in such a way as to maintain financial support as well as their share of integrity and independence. Frequently, like in the case above, academic units which are seen as having a technological service function are susceptible to different kinds of organizational changes and budget cuts. For instance, the central university administration might question whether the most efficient organizational structure is to have departments and faculties run their own computer support functions or whether it is more efficient to adopt a more centralized model. Also humanities computing units that have several functions might have to cut back on the more research-oriented activities because, after all, technical support is more instrumental (and sellable/buyable) and there might not be enough explicit interest from humanities departments to motivate a more research and methodology focused function. There are many examples of changes like these (see [Flanders & Unsworth 2002] for some other examples and a further discussion). Several prominent service-based units, including the Humanities Computing Unit at Oxford University and Centre for Computing in the Humanities at University of Toronto, have been closed down (or radically reformed) over time and this vulnerable position is part of the shaping of humanities computing.

While it is fair to say that the present institutional landscape is rather diverse and expansive, it is also important to acknowledge that the ratio of thriving humanities computing environments and initiatives at universities in Europe and the United States is still very low in relation to the whole of the Humanities; something that may or may not be seen as a problem. Taking Sweden as an example, there seems to be only one traditional humanities computing unit in the

country (at Gothenburg University) at present. Most of the growth seems to happen in places where there is no or little humanities computing legacy (Blekinge Institute of Technology and Södertörn University College). My own environment, HUMlab at Umeå University, does relate to humanities computing, but also to many other influences, and most of the Ph.D. students, for instance, would probably not see themselves as primarily involved in humanities computing. Most of them do subscribe to the *Humanist*, however.

## The Question of Autonomy

A related and much-discussed issue – highly relevant to digital humanities generally and to humanities computing as digital humanities – concerns whether humanities computing should be independent and possibly an academic discipline in its own right or whether it should primarily interrelate with existing humanities departments. This discussion has partly been fueled by the need for academic status to create academic positions and a sense of not wanting or needing to be reliant on traditional and slow-moving departments and disciplines.[8] In fact, these disciplines may not even be considered suitable for dealing with relevant study objects and research issues, or appropriate methodologies:

> To study the effects and consequences of digital technology on our culture, and how we are shaping these technologies according to our cultural needs, we can now begin to see the contours of a separate, autonomous field, where the historical, aesthetic, cultural and discursive aspects of the digitalisation of our society may be examined. That way, the field of Humanistic Informatics may contribute to the goal of the Humanities, which is the advancement of the understanding of human patterns of expression. We cannot leave this new development to existing fields, because they will always privilege their traditional methods, which are based on their own empirical objects.[9]
>  [Aarseth 1997]

Another argument for not involving all of the Humanities may be that it is not seen as an efficient model. [McGann 2001, 7] tells us about strategies adopted when the Institute for Advanced Technology in the Humanities (IATH) at University of Virginia was started. Alan Batson, Department of Computer Science at UVA, argued that trying to involve everyone (distribute resources evenly) would be to replicate 30 years of failure; providing IT resources to people who are not interested in them or do not want to explore them does not work.

> IATH was founded as a resource for people who had already made a commitment to humanities computing, a commitment defined practically by an actual project with demonstrable scholarly importance.  [McGann 2001, 9]

The tension between trying to involve as many as possible and making a difference through engaging people who have already shown an interest is basic and recurrent. Naturally, any enterprise of this kind is dependent on the local environment. There is obviously a significant difference between being an autonomous academic unit and a service-based or organization. In practice most humanities computing units are probably somewhere in between. Also, the "service" function can, of course, be very complex and should not be trivialized. McCarty talks about "practice" and "practitioners," and such terminology might be more suitable for many of the service-like functions more directly related to the humanities computing enterprise. He stresses the importance of methodological knowledge and says that "[t]he practitioner learns a specific but generalizable method for tackling problems of a certain kind"  [McCarty 2005, 120]. This focus on methodology and associated tools is common in humanities computing, and arguably part of the epistemic commitments of the field that fundamentally shape the way humanities computing relate to the rest of the humanities and to other work in the humanities and information technology.

## Approaching the Digital Humanities

As we noted earlier "humanities computing" has been a strong common denotation for much of the work and community described above. In his *Humanities Computing*, Willard McCarty describes the development from "computers and the humanities" via "computing in the humanities" to "humanities computing." He characterizes these three denotations as follows: "when the relationship was desired but largely unrealized" (computers and the humanities), "once entry has

been gained" (computing in the humanities) and "confident but enigmatic" (humanities computing) [McCarty 2005, 3]. I have argued elsewhere [Humanist 17.111] that juxtaposition (as in the first stage) does not necessarily have to indicate separated entities and that "humanities computing" has an instrumental ring to it. Also, "humanities computing" does not necessarily seem to include many of the approaches and materials that interest many humanities scholars interested in information technology (and computing). Of course, these arguments are related to the ambitions and scope of the field you are trying to denote.

From this point of view, it is interesting to note that humanities computing representatives currently seem to be appropriating the term *digital humanities*. Prominent examples of use of the new identifier include the relabeled ALLC/ACH conference (from 2006 onwards entitled "Digital Humanities"), a new book series called "Topics in Digital Humanities," a new comprehensive website http://www.digitalhumanities.org sponsored by the major humanities computing associations, the peer-reviewed journal *Digital Humanities Quarterly*, the massive, edited volume *A Companion to Digital Humanities* [Schreibman, Siemens & Unsworth 2004], and the recent renaming of the Candian Consortium for Computers in the Humanities into The Society for Digital Humanities. The denotation has certainly been used before (at University of Virginia among other places), but it seems to be employed more broadly now and in a more official and premeditated fashion. An important indication of the spread of the term and institutionalization of the field can be seen in the establishment of the Office of Digital Humanities by the National Endowment for the Humanities (US) in 2008. A broader analysis of different varieties of digital humanities will be returned to in the second article in this series.

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Looking at issues 1-20 of the *Humanist* [10] and instances of *humanities computing* versus *digital humanities*, the following figures emerge: 304/2 (1997-1998), 343/3 (2000-2001), 566/16 (2001-2002), 283/15 (2002-2003), 280/19 (2003-2004), 363/45 (2004-2005), 130/44 (2005-2006) and 110/90 (2006-2007). The first instances of *digital humanities* in issues 11 and 14 (1997-1998 and 2000-2001 respectively) refer to nominal constructions such as *digital humanities object* and *digital humanities environment*. While we should be careful about how to interpret crude quantitative data like these, it is fairly clear that *humanities computing* for a long time was the predominant term and still is frequent, but that we are moving towards an increased use of *digital humanities* (relative to *humanities computing*). The retained and frequent use of the older term points to a discrepancy between the over-the-board institutional renaming of the field described above and the community's use of the term as evidenced in the *Humanist* material.

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This discrepancy or co-existence[11] is also evident if you look at the Blackwell's *A Companion to Digital Humanities* from 2004. There are about twice as many instances of *humanities computing* as *digital humanities* (139/68). The internal distribution of the terms is more interesting and can easily be explored using the online version of the companion. For instance, *humanities computing* is predominantly used in the section where the contributors are described, while *digital humanities* is much more common than *humanities computing* in the introduction (called "The Humanities Computing and the Digital Humanities: An Introduction"). These two texts represent very different genres. The Notes on Contributors section is largely a venue for self representation and presentation. The introduction is where the (new) field of digital humanities is being described and advocated (by the editors of the volume). In the history section (12 chapters in total) it is clearly the history of humanities computing that is told (58 instances of *humanities computing* versus 1 instance of *digital humanities*). The section on principles (7 chapters) is primarily humanities computing-focused (23/4) as the main topics are text analysis, encoding, classification and modelling. The final two sections – on applications and production, dissemination, archiving – contain fewer instances of either term. One possible reason may be because these sections are more grounded in actual practice. Also, it is clear that individual preference plays an important role. Again, we are concerned with simple, quantitative measurements, but there is definitely a picture emerging.

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A pertinent question is whether the discursive transition from humanities computing to digital humanities is mainly a matter of repackaging (humanities computing), or whether the new label also indicates an expanded scope, a new focus or a different relation to traditional humanities computing work. The editors of the book series "Topics in the Digital Humanities" indicate an ongoing change:

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> Humanities computing is undergoing a redefinition of basic principles by a continuous influx of new,

> vibrant, and diverse communities of practitioners within and well beyond the halls of academe. These practitioners recognize the value computers add to their work, that the computer itself remains an instrument subject to continual innovation, and that competition within many disciplines requires scholars to become and remain current with what computers can do.  [Humanist 19.052]

The book series announcement as a whole, however, maintains a focus on the computer as a tool and humanities computing methodologies. The epistemic commitment to technology as tool is also clearly evident from "[t]hese practioners recognize the value computers add to their work."

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Unsurprisingly, it is difficult, possibly irrelevant, to pinpoint the meaning of a term in change, but it is nevertheless relevant to look at how such terms are introduced and used by an academic community. It is obvious that the term *digital humanities*, as used by the humanities computing community, often serves as an overarching denotation in book and journal titles, etc., while *humanities computing* is often used in the actual narrative.

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The territory of the term is being defined and negotiated by institutional entities such as the journal *Digital Humanities Quarterly*. The following text, which also suggests ongoing change, comes from the very first editorial of DHQ in the inaugural issue:

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> Digital humanities is by its nature a hybrid domain, crossing disciplinary boundaries and also traditional barriers between theory and practice, technological implementation and scholarly reflection. But over time this field has developed its own orthodoxies, its internal lines of affiliation and collaboration that have become intellectual paths of least resistance. In a world — perhaps scarcely imagined two decades ago — where digital issues and questions are connected with nearly every area of endeavor, we cannot take for granted a position of centrality. On the contrary, we have to work hard even to remain aware of, let alone to master, the numerous relevant domains that might affect our work and ideas. And at the same time, we need to work hard to explain our work and ideas and to make them visible to those outside our community who may find them useful.  [Flanders et al 2007]

This is an inclusive and open definition which also suggests a particular community, associated history, changing boundaries and possibly some fence keeping (imposing a notion of centrality or non-centrality and through identifying "we" and "them"). Although no direct reference is made in the text, it is rather clear that the tradition implicitly referred to is humanities computing. The interest in dialogue indicated in the editorial is clearly important to the development of the whole field. Importantly, for a broad notion of digital humanities and a consorted effort, this dialogue must not only incorporate humanities computing as digital humanities and other varieties of digital humanities, but must also take place across a disciplinary landscape that additionally includes quite a number of initiatives and people that might not primarily classify what they do as *digital humanities*. Indeed, not even everyone associated with the enterprises being subsumed under the label digital humanities might be comfortable with that categorization.

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In any case, the new name definitely suggests a broader scope and it is also used in wider circles as a collective name for activities and structures in between the Humanities and information technology.[12] And as we have seen in this analysis, there are many examples of humanities computing as digital humanities claiming a larger territory.

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## Humanities Computing as Digital Humanities

If humanities computing is to be taken as a more general digital humanities project it seems relevant to carefully consider the scope, implementation and ambition of the paradigm. Also, regardless of this perspective, there are certain characteristics of the paradigm that deserve critical attention and discussion. The four issues presented below touch on some of the disciplinary boundaries and epistemic culture of humanities computing and may possibly challenge some established perceptions of humanities computing. In any case, what follows is not so much a criticism of a paradigm as an exploration of boundaries and possibilities. It should also be added that the points discussed here have a bearing on digital humanities more generally.

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First, humanities computing as a whole maintains a very instrumental approach to technology in the Humanities. In her introductory chapter in the volume *Digital Humanities*, Susan Hockey says that this is not the place to define humanities computing, and continues, "[s]uffice it to say that we are concerned with the *applications* of computing to research and teaching within the subjects that are loosely defined as 'the humanities,' or in British English, 'the arts' " [Hockey 2004, 3] (italics added). Hockey's description is indicative of a paradigm in which information technology is typically not seen as an object of study, an exploratory laboratory, an expressive medium or an activist venue. Rather, technology has this basic and epistemically grounded role as a tool and much of humanities computing is about using these tools, helping others to use them and, to some extent, developing new tools (and methodologies). Many of these tools, such as concordance programs, have a rather long and distinguished history, and there has not necessarily been a great deal of radical change over time (see [McCarty 1996]). It could be argued that the focus of traditional humanities computing is not innovating new tools, but rather using and developing existing ones. Also a fair proportion of the development seems to occur on a structural or meta-data level. Examples include text encoding and markup systems. Of course work on this level has fundamental implications for the development and use of tools.

Text encoding is typically seen as a core element of humanities computing. Koenraad de Smedt says that "Text encoding seems to create the foundation for almost any use of computers in the humanities" [de Smedt 2002, 95].[13] Classifications such as the major Text Encoding Initiative (TEI) involve very basic theoretical and methodological challenges [McGann 2006] and there have also been calls for the development of more innovative tools based on these and other schemas [Rockwell 2003]. Rockwell stresses the importance of moving beyond existing personal tools, making community and server based tools more available, allowing for playful exploration and encouraging critical discussion of tools. Clearly there is a need for such a development, and while there are some exemplary projects there is a need for further development, discussion of best practice and further critical analysis. For instance, it would be interesting to see more integration with web 2.0 thinking and platforms.[14] work in interaction and participatory design as well as methodologies such as rapid prototyping. An interesting, current example of methodological innovation is Rockwell's and Sinclair's work on extreme text analysis.[15]

It might also be argued that traditional humanities computing has not primarily been concerned with interface and how things look and feel – the materiality of the tools. Kirschenbaum says that "the digital humanities have also not yet begun […] to initiate a serious conversation about its relationship to visual design, aesthetics, and, yes, even beauty" [Kirschenbaum 2004, 532]. McGann asserts that "[d]igital instruments are only as good as the interfaces by which we think through them" [McGann 2006, 156–7]. There have also been calls for tools with more far-reaching and radical scope than the ones that humanities computing typically provides. Drucker and Nowviskie point out that "[w]e are not only able to use digital instruments to extend humanities research, but to reflect on the methods and premises that shape our approach to knowledge and our understanding of how interpretation is framed" [Drucker & Nowviskie 2004, 432].

Second, it has often been pointed out that what brings humanities computing together is largely a common interest in methods, methodology, tools and technology. This partly follows from an instrumental orientation, of course, and there is no reason to question the methodological commons as a valuable interdisciplinary focus and productive collaborative sentiment. However, this strong methodological focus fundamentally affects the way humanities computing operates and relates to other disciplines. The most serious implication is that a predominantly methodological link to other disciplines may not integrate many of the specific issues that are at the core of these disciplines. It could be argued that this makes it more difficult for humanities computing to reach out more broadly to traditional humanities departments and scholars. While there will always be interest in methods and technology, the actual target group – humanities scholars with an active interest in humanities computing tools and perspectives – must be said to be relatively limited. [16] In an interesting and provocative paper, [Juola 2008, 83] argues that the emerging discipline of "digital humanities" has been emerging for decades and that there is a perceived neglect on the part of the broader humanities community. While he is appreciative of the work done in humanities computing, he also finds that

> For the past forty years, humanities computing have more or less languished in the background of traditional scholarship. Scholars lack incentive to participate (or even to learn about) the results of

humanities computing.

Looking at text analysis, Rockwell points out that "text-analysis tools and the practices of literary computer analysis have not had the anticipated impact on the research community" [Rockwell 2003, 210]. Juola's analysis shows that citation scores for humanities computing journals are very low and he also points out that the American Ivy League universities are sparsely represented in humanities computing publications and at humanities computing conferences. It could be argued, however, that the lack of citations is partly due to the fact that humanities scholars who use humanities computing tools might not be inclined to cite the creators of these tools. This is especially true if no written work on associated methodology (or theories) has been employed in the research.

A relevant question, of course, is whether humanities computing wants and needs to reach out to the humanities disciplines.[17] This relates to the earlier discussion of autonomy and discipline or not. There seems, however, to be rather strong support for expanding the territory and for achieving a higher degree of penetration. Furthermore, if the methodology and tools are central to the enterprise it seems counter-intuitive to disassociate yourself from many of the potential users (and co-creators) of the tools. It is evident from his discussion of possible high-profile "killer applications" that Juola shares an interest in the development of a new or evolved kind of tools with Drucker and Nowviskie and others. It could be argued that it would be beneficial to have tools or applications that relate more directly to some of the central discipline-specific challenges of the various humanities disciplines. Such a development would probably lead to somewhat less focus on methodology, a tighter integration of humanities computing and humanities disciplines[18] and possibly more tools and applications with a rich, combined theoretical, experiential and empirical foundation.

Third, humanities computing has a very strong textual focus. Given the history and primary concerns of the field as well as the textual orientation of much of the humanities this is not very surprising. Traditional text is clearly a privileged level of description and analysis. In her analysis of humanities computing, which is partly corpus-based, Terras writes that "Humanities Computing research is predominantly about text" [Terras 2006, 236]. While this is true, there has certainly been an increased interest in multimedia and non-textual representation. This interest may, for instance, be manifested in the form of metadata schemes for visual material or, increasingly, the interest in using geographical information systems in humanities computing. Reference is sometimes made to different technologies and methods (3D-modeling, GIS, animation, virtual reality etc.) but these are not necessarily integrated in practice. For instance, Jessop says that "the research potential of working with digital tools for handling spatial data has been explored in only very limited contexts" [Jessop 2007, 4]. There are many exceptions and prolific scholars with a strong commitment to these issues but this cannot be said to be true of most of humanities computing. There is also a risk that other media are handled much in the same way as text (e.g. another object type to encode) or merely subservient to text following a very strong epistemic commitment to text as object. Here follows a rather text-focused discussion of images in relation to the history (and future) of humanities computing:

> There are of course many advantages in having access to images of source material over the Web, but humanities computing practitioners, having grown used to the flexibility offered by searchable text, again tended to regard imaging projects as not really their thing, unless, like the Beowulf Project [Kiernan 1991], the images could be manipulated and enhanced in some way. Interesting research has been carried out on linking images to text, down to the level of the word [Zweig 1998]. When most of this can be done automatically we will be in a position to reconceptualize some aspects of manuscript studies. The potential of other forms of multimedia is now well recognized, but the use of this is only really feasible with high-speed access and the future may well lie in a gradual convergence with television. [Hockey 2004, 15]

There is nothing wrong with a textual focus, of course, but it does have effects on the scope and penetration of humanities computing. The so-called "visual turn" [19] or research on multimodal representation does not seem to have had a large impact on humanities computing. One reason is probably because there is little interaction between these communities and because it is difficult to conceptualize and develop tools for these kinds of framework. More generally, there seems to be an increasing interest in non-textual and mixed media in the Humanities and elsewhere (see for instance research on remediation, trans- or crossmedia texts, digital art and the current interest in "mashups"). And,

needless to say, most native digital media are not pure text while humanities computing through focusing on text in its digitalized and encoded form could be said to privilege a rather "pure" (if annotated and structured) form of text. It seems that there should be considerable opportunities in this area for humanities computing – both for innovative tools and thinking – but also in relation to making a strong case for the need for considerable cyberinfrastructure in the Humanities.[20] Furthermore, there is clearly a need for people with expert competence and interest in structuring, annotating and managing data. It is exciting to see that interest in non-textual representation and analysis seems to be growing in humanities computing. It seems worthwhile to support this development – at least if the vision is an expansive and inclusive humanities computing/digital humanities. Such a development would not have to preclude a retained textual focus, of course.

My fourth and final point relates to data and material used in humanities computing – or, put another way, the objects of study of humanities computing and associated disciplines. McCarty distinguishes between four data types in his discussion of a methodological commons: text, image, number and sound [McCarty 2005, 136]. It is characteristic of the model that the source materials and approaches of the disciplines are reduced these four data types and a "finite (but not fixed) set of tools for manipulating them".[21] This touches on a tendency to subscribe to formal and science-driven models of knowledge production in humanities computing (where text is the principal object of study):

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> Applications involving textual sources have taken center stage within the development of humanities computing as defined by its major publications and thus it is inevitable that this essay concentrates on this area. Nor is it the place here to attempt to define *interdisciplinarity*, but by its very nature, humanities computing has had to embrace "the two cultures," to bring the rigor and systematic unambiguous procedural methodologies characteristic of the sciences to address problems within the humanities that had hitherto been most often treated in a serendipitous fashion. [Hockey 2004]

As we have already seen and as the above quote reinforces, text is a privileged data type in humanities computing. Furthermore it could be argued that humanities computing is mainly interested in digitalized texts (or in some cases, digitalized historical sites etc.) and not material that is natively digital. Born digital material would include computer games, blogs, virtual worlds, social spaces such as MySpace, email collections, websites, surveillance footage, machinima films and digital art. Most of these "objects" are studied and analysed within different kinds of new media settings and to me this is an interesting in-between zone. Would humanities computing be interested in engaging more with new media scholars? There is certainly a need for well-crafted tools for studying online life and culture. Why does there not seem to be any software for doing comparative analysis and interpretation of computer games, for instance? [22] How can machinima films be tagged and related to the cultural artefacts to which they reference? How do we systemize and contextualize email archives?[23] Can social software platforms be adapted to humanities computing needs? Can multimodal and multi-channel communication be tracked, tagged, interrelated and made searchable in any consistent way?

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I find the intersection between humanities computing and new media studies intriguing. There is some new media-like work going on in humanities computing but it is relatively marginal and there are few tools available. A more complete and multifaceted engagement might stimulate more theoretical work in humanities computing. Rockwell makes a case for the importance of such an engagement:

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> Digital theory should not be left to new media scholars, nor should we expect to get it right so that we can go back to encoding or other humanities disciplines. Theorizing, not a theory, is needed; we need to cultivate reflection, interruption, standing aside and thinking about the digital. We don't need to negotiate a canon or a grand theory, instead I wish for thinking about and through the digital in community. [Rockwell 2004]

Regardless of whether such an engagement involved theory or mainly methods and tools, it seems that there might be mutual gains. Not least would humanities computing be able to draw more on a growing interest in digital culture and the "technological texture" that Don Ihde postulates. A further possible result would be a more robust link to humanities

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disciplines through also working in a field where there are many current and important research challenges in relation to the digital (e.g. participatory culture, surveillance societies, gender and technology, and emerging art and text forms).[24]

The epistemic commitments of humanities computing are not limited to points discussed above, however these are particularly relevant for the discussion of humanities computing as digital humanities[28]. A broadly conceived digital humanities would necessarily include the instrumental, methodological, textual and digitalized, but also new study objects, multiple modes of engagement, theoretical issues from the humanities disciplines, the non-textual and the born digital.

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## Multiple Identities and Risk Taking

Let us briefly contrast humanities computing with a rather different kind of institutional setting and epistemic tradition. Anne Balsamo writes about the Georgia Institute of Technology in the article "Engineering Cultural Studies: The postdisciplinary adventures of mindplayers, fools, and others." More specifically she relates the story, tensions and context of the program in science, technology, and culture offered in the School of Literature, Communication and Culture (LCC) at Georgia Tech. Partly this is done through the work of cyberpunk science fiction writer Pat Cadigan.

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LCC used to be an English Department and was transformed in 1990. Balsamo discusses the different identities that faculty wear and the complex interrelations associated with being a humanities representative at a predominantly technical school. For instance, the institutional position requires LCC faculty to be committed to traditional humanities values, in order not to give engineering schools arguments for reducing or doing away with the humanities requirement. The lack of a stable identity is the result of different roles and an interdisciplinary setting, and it resonates with the lack of stable identity that seems to be such an integral part of humanities computing. The interdisciplinary meetings and setting are important to both enterprises, but they are not without risk:

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> Forging these new alliances – with technologists, scientists, and medical educators – offers the possibility of staking a claim on a territory that has been previously off-limits to the nonscientist cultural theorists. As with other political struggles, the project of alliance building is not without its risks and dangers.  [Balsamo 2000, 268]

Another similarity is instrumentalistic expectations from the "outside." In the case of an institution such as LCC there are expectations of delivering "high culture" and presumably, useful knowledge, to engineering students. At the same time there are basic values and critical perspectives that need to be expressed:

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> As a feminist scholar, I certainly don't want to abandon the epistemological critique of the construction of scientific knowledge as patriarchal knowledge. Nor do I want to give up on the pursuit of social justice through scientific and technological means. This becomes another occasion for the practice of identity-switching – this time not simply between the humanist and the critic, but between the teacher and the advocate. Whereas the teacher demands the students engage the philosophical critique of an epistemological worldview and construct their own assessment of the value-laden nature of a particular scientific worldview, the advocate continues to guide them towards careers in science and technology and encourage them to find a way to make a difference.  [Balsamo 2000, 271]

Both Balsamo's engaging narrative and the narratives of humanities computing speak about being in between, having multiple identities, lacking a stable identity, and engaging richly but not unproblematically with other disciplines within and without the local setting. There is energy, risk-taking and wanting to make a difference in such narratives.

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Georgia Tech and traditional humanities computing clearly represent very different approaches to digital humanities. For example, while Balsamo sees information technology as a cultural object in need of exploration and epistemological critique, traditional humanities computing treats technology in a more formal and instrumental way. In the next article in this series, an attempt to lay out a more detailed and comprehensive map of the digital humanities will be made. A number of diverse initiatives and approaches are used as examples, and different modes of engagement with the

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"digital" are discussed at more length. The story of the digital humanities continues to be complex in terms of the theoretical, practice-based, historical, technical and disciplinary foundations and a fast-changing landscape. It is exactly these qualities that make digital humanities an exciting field to study, and a place full of energy and multiple identities.

# Acknowledgements

## Notes

[1] For instance, the privileged role of text can be indicated through looking at four recent issues of the journal: [Literary and Linguistic Computing 24:1] (special theme: Computing the edition), [Literary and Linguistic Computing 23:4] (largely statistical text analysis), [Literary and Linguistic Computing 23:2] (largely text analysis apart from one article on scholarly visualization) and [Literary and Linguistic Computing 23:2] (largely text analysis, annotation and authorship attribution). See also expanded discussion later in this article.

[2] http://www.ach.org/abstracts/1999/renear-ach.html

[3] http://cfp.english.upenn.edu/archive/Collections/0047.html

[4] See e.g. http://www.ach.org/documents/minutes2003.html

[5] [Humanist 21.436]. In December 2004, there were about 1500 subscribers personal communication with Willard McCarty. The readership thus seems relatively stable.

[6] There is an archive of the Humanist list which makes for interesting reading and historical contextualization. http://www.princeton.edu/~mccarty/humanist/

[7] Interestingly, [Terras 2006] employs a somewhat similar material in her analysis. As far as I know these are independent analyses. My own material was first presented publicly in 2004.

[8] In particular English departments are likely to be targeted. They are part of the heritage and identity of humanities computing as well as the foundational narratives mentioned earlier. Geoffrey Rockwell writes, "A discipline maintains common stories of its founding and a history complete with heroes (Father Busa), monsters (English Departments) and timely achievements (the publication of the TEI P4)." [Rockwell 2002]

[9] It is representative of Aarseth's position and refreshingly provocative style that his ALLC/ACH 2005 keynote was entitled "Old, new, borrowed, blue? Can the Humanities Contribute to Game Research?"

[10] The text files were taken from the Humanist website apart from issues 2005-2006 and 2006-2007 which were created.

[11] An interesting example of co-existence can be found in the introduction to the *A Companion to Digital Humanities*: "The digital humanities, then, and their interdisciplinary core found in the field of humanities computing, have a long and dynamic history best illustrated by examination of the locations at which specific disciplinary practices intersect with computation."

[12] In her short reference to terms for the field, [Terras 2006] seems to regard these and other related terms as more or less equivalent. In this analysis the terms are not seen as synonymous. Rather they have certain traditions and values associated with them.

[13] [Renear 2004] provides a useful overview and history of text encoding.

[14] While web 2.0 is certainly a buzz word there is no doubt much interesting development in web-based collaborative and social software, handling of micro content, visualization and innovative interfaces. See [Alexander 2006] for a useful overview.

[15] http://tada.mcmaster.ca/Main/WhatIsExtremeTextAnalysis

[16] Conversely, the target group may be too large or knowledgeable when the methods or technologies are already in use.

[17] Commenting on Juola's presentation at DH 2006 in Pairs in an informal wiki entry, Geoffrey Rockwell writes, "Why do we have to get buy in from others? Do researchers in established fields feel they need to convert everyone else in the humanities? Do we really need legitimization from others?" (http://tada.mcmaster.ca/view/Main/Dh2006?skin=plain).

[18] Terras says that "[t]he field may only flourish as an academic subject if it becomes less insular and interacts both with Computer Science and those Humanities scholars who are less willing to accept computing as part of their research tools" [Terras 2006, 243].

[19] Or, for that matter, a "post-visual" turn represented by for instance [Sterne 2006] and [Witmore 2006].

[20] While there seems to be interest in text mining and grid computing for textual analysis in humanities computing it seems more likely that a broader range of data, visualization and computing intensive applications will develop in relation to non-textual material (or a combination of textual and non-textual material).

[21] McCarty also adds that these tools are derived from and their application governed by "formal methods." The formalistic aspects of humanities computing will not be discussed in any great detail here.

[22] To the best of my knowledge.

[23] Rockwell and Lancashire do discuss preservation of electronic texts: "The future understanding of our past and understanding of this age of technological change will be incomplete if we do not take steps to preserve one of the most widely used forms of electronic information — the electronic text." (http://tapor.ualberta.ca/Resources/TAIntro/).

[24] The need for a stronger link to the disciplines has been articulated in several different contexts. In an interesting Humanist thread ([Humanist 6.0357], [Humanist 6.0362]) from 1992, Mark Olsen says (rather provocatively) that "Humanities computing is a hobby largely because there has been a consistent failure among the practitioners of humanities computing to rock the boat; to produce results of sufficient interest, rigor and appeal to attract a following among scholars who *do not* make extensive use of computers." While "rocking the boat" should not be a goal in itself it is true that the kind of development indicated here would probably bring about more discipline-specific and humanities-external interest.

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