

# Disciplined: Using Educational Studies to Analyse ‘Humanities Computing’

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## Abstract

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. Most introspection regarding the role, meaning, and focus of “Humanities Computing” has come from a practical and pragmatic perspective from scholars and educators within the field itself. This article provides an alternative, externalized, viewpoint of the focus of Humanities Computing, by analysing the discipline through its community, research, curriculum, teaching programmes, and the message they deliver, either consciously or unconsciously, about the scope of the discipline. It engages with Educational Theory to provide a means to analyse, measure, and define the field, and focuses specifically on the ACH/ALLC 2005 Conference to identify and analyse those who are involved with the humanities computing community.

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## 1 Introduction

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’ (or its various pseudonyms)<sup>1</sup>, no definition of the subject exists, and very few academic institutions have a dedicated Humanities Computing department. This article looks towards Education Theory to ascertain what a discipline is, and to see how this can be used to define the status of Humanities Computing. This article also reports on an analysis of the Humanities Computing curriculum and community, from an educational, and curriculum, studies perspective. As a novel and alternative approach to answering

the perennial question ‘What is Humanities Computing?’, this research yields useful insights. As Kelly, (1999, p. 19) notes: ‘A study of curriculum, while not offering us spurious answers to questions of values, will . . . draw our attention to important questions that need to be asked about policies and practices and help us achieve the kind of clarity which will enable us to see underlying ideologies more clearly’. Is Humanities Computing a discipline at all? Does it exist as an academic field?

The article is presented in sections. Section 2 introduces the type of activities associated with Humanities Computing, and describes the problems associated with trying to ascertain its status. The methodology used to analyse Humanities Computing in this enquiry is then sketched.

Section 3 asks: what is an academic discipline? A definition of disciplinarity is propagated from Educational theory, and Humanities Computing is assessed from this perspective. Section 4 looks at the curriculum and issues of the 'Hidden Curriculum'. Teaching programmes are contrasted and compared with the research agenda, and aspects about the identity of Humanities Computing are raised. Section 5 attempts to ascertain who constitutes the Humanities Computing community through analysis of available data. Section 6 concludes the research, highlighting issues raised and identifying future work that could be carried out to develop this research further.

## 2 What is Humanities Computing?

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. Let us not discuss here the history of Humanities Computing, as it has been covered elsewhere by Fraser (1996), Schreibman *et al.*, (2004), and Vanhoutte (forthcoming 2006).

However, defining Humanities Computing as an academic field is problematic. There are few established academic departments in the field. A lot of work in Humanities Computing is project-based, usually resulting in a product for other academics to utilize, and there is concern whether this is an academic endeavour. Humanities Computing 'units' or 'centres' often provide technical support facilities for Humanities Divisions in universities, meaning that Humanities Computing is often viewed as a support to 'proper' academic research. There are also few teaching programmes in existence, perhaps because it is hard to define a skills-set to pass on which would individually define the discipline, rather than just

providing technical 'training' on specific computer technologies.

This can create problems for those in the field. Firstly, there is the question of academic kudos: if you are in a discipline which is not worthy of an academic department, is your research that meaningful or useful? There is often a bias from more traditional Humanities scholars that work with computing is not 'proper' research. Secondly, there are funding implications for research. Research councils tend to ask the academic to identify which traditional discipline they belong to: Humanities Computing is not a 'panel' within itself. Scholars using Humanities Computing are often 'too technical' to be eligible for funding from the Humanities sector, and 'not technical enough' to secure funding through Engineering and Computing Science channels. 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. Finally, if the subject cannot define a set of core theories and techniques to be taught, is it really a subject at all? Is a research community enough to define a 'discipline', or does this merely reflect a community of like-minded scholars who meet occasionally to swap battle scars?

These problems have been fairly exhaustively detailed by papers from many of the luminaries in the Humanities Computing field. However, these papers have generally focused on the content of specific teaching programmes and the development of a curriculum. There was an entire conference devoted to 'The Humanities Computing Curriculum: The Computing Curriculum in the Arts and Humanities' (Siemens, 2001), at Malaspina University College, Nanaimo, British Columbia, Canada. Most papers necessarily described the practical aspects of setting up Humanities Computing programs and courses, and defining an overview of their content. For example, Gilfillan and Musick (2001) outlined the practicalities involved in promoting the use of computing in Humanities-based teaching and research at the University of Oregon, and Hockey (2001) examined the role

of computing in the humanities curriculum at both postgraduate and undergraduate levels. There was a seminar series which was undertaken to define and generate a syllabus for a graduate course in knowledge representation for humanists at the University of Virginia, which resulted in a comprehensive syllabus for a Master's Degree in Digital Humanities (Drucker *et al.*, 2002), although this course was never actually established due to funding cuts (sending a disappointing message to the wider academic community). Various papers from this seminar detail the problems in belonging to a discipline-less discipline (Burnard, 1999; Hockey, 1999; McCarty, 1999; McGann, 1999; Moulthrop, 1999; Nerbonne, 1999). More generally, the Advanced computing in the Humanities (ACO\*HUM) project produced a study on how Computing was or is, and could be used in Humanities subjects (de Smedt *et al.*, 1999). These studies all serve to illustrate how important defining the curriculum is to Humanities Computing, and how, as a nascent subject, much is still being done to define the teaching programme, and the field: although their focus is mostly (and necessarily) a practical approach to how teaching programmes can be implemented and integrated into academic departments and scholarly frameworks.

Additionally, some of the papers were concerned with ascertaining whether Humanities Computing is an academic endeavour or merely a support subject. Various other papers exist that question the role and focus of Humanities Computing (Aarseth, 1997; de Smedt, 2002; Orlandi; Warwick, 2004) Most work has been done by Willard McCarty, Senior Lecturer in the Centre for Computing and the Humanities at King's College London (McCarty, 1998, 1999, 1999b, 2002, 2003, forthcoming 2005a, forthcoming 2005b; McCarty *et al.*, 1997; McCarty and Short, 2002) and John Unsworth, Dean and Professor of the Graduate School of Library and Information Science, University of Illinois, Urbana-Champaign (Unsworth, 1993, 1996, 2000, 2002–2004).

However, these papers are written by academics within the field, describing their own experiences of teaching, learning, and research with very little thought given to educational theory—only one of these papers, Burnard (1999) mentions in passing

'educational theory from the 1960s' without providing any reference. The aim of this article is to apply the definitions and measures from education to the Humanities Computing community, to ascertain whether it exists as an academic subject.

There has been much discussion within education as to what actually makes a discipline, or what defines the work of a group of academic individuals as a bona fide 'subject'. Academic culture can define a 'tribe' of scholars, whilst the span of disciplinary knowledge can be described as the 'territory' of the discipline (Becker and Trowler, 2001). 'Fields gradually develop distinctive methodological approaches, conceptual and theoretical frameworks and their own sets of internal schisms' (*ibid.*, p. 14). What are the methodological approaches of Humanities Computing? Is there a culture which binds the scholars together? Or, is the Humanities Computing community merely that—a community of practice, which shares theories of meaning and power, collectivity and subjectivity (Wenger 1998) but is little more than a support network for academic scholars who use outlier methods in their own individual fields? Additionally, the notion of the hidden curriculum is also of relevance. What thoughts are we projecting in our teaching programs and research as to the scope and relevance of Humanities Computing?

This research is an ambitious attempt to provide an overview of an academic field. A literature review was carried out, both in Humanities Computing, and in Education, to understand notions of disciplinarity and the hidden curriculum. Secondly, a series of interviews with ten scholars in Humanities Computing was undertaken: six from the United Kingdom, two from the USA, one from Canada and one from Belgium. Comments and opinions from scholars are integrated throughout this article. Thirdly, four teaching programmes were compared and contrasted to see the focus of their teaching, and which notions of Humanities Computing were being projected onto students. Subject focus was compared and contrasted with available research materials to see whether the teaching covered the same scope as the research: this is quantifiable through textual analysis of available conference abstracts. Fourthly, a database

was constructed of the Humanities Computing community, taking as its basis presenters at the main conference in the field: the annual Association of Computing in the Humanities and the Association of Literary and Linguistic Computing Joint International Conference (ACH/ALLC). In 2005, this conference was held at the University of Victoria, British Columbia, Canada, June 15–18.<sup>2</sup> An analysis of who attended provides an overview of who is part of the Humanities Computing community, how it functions, and what this projects onto the discipline as a whole.

### 3 Disciplines, Disciplinarity, and Humanities Computing

Being part of a discipline gives a scholar a sense of belonging, identity, and kudos. But the idea of what constitutes a discipline is muddy, and often hinges around the bricks and mortar proof of a university department's existence:

[A Discipline] can be enacted and negotiated in various ways: the international; invisible college; individuals exchanging preprints and reprints, conferences, workshops... But the most concrete and permanent enactment is the department; this is where a *discipline* becomes an institutional *subject*. The match between discipline and subject is always imperfect; this can cause practical difficulties when, for example, the (discipline-based) categories of research selectively do not fit the way the subject is ordered in a particular department. (Evans, 1995; pp. 253–4).

This notion of institutionalizing the subject would seem to give gravitas: if you can point at an academic department, the discipline exists. However, this definition of a 'discipline' is problematic, as many have specialisms and subspecialisms, which may or may not be represented in every university department, and every 'discipline' is different in character and scope from the next:

most embrace a wide range of subspecialisms, some with one set of features and the other with different sets. There is no single method

of enquiry, no standard verification procedure, no definitive set of concepts that uniquely characterises each particular discipline (Becker and Trowler, 2001, p. 65).

Additionally, a 'discipline' is not an immutable topic of research or body of individuals: 'For nothing is more certain in the lives of the disciplines, whatever the field, whatever the institutional setting, than that they are forever changing'. (Monroe, 2002, p. 2).

The discipline gains kudos from becoming permanently established in the university subject roll call, but does not having this institutional branding preclude a body of research and teaching from actually being a discipline? Most 'new' academic subjects have had to gradually be accepted into the university pantheon, with much discussion along the way regarding whether they actually are disciplines in the first place. For example, there is continuing debate in the field of education as to whether it is really a discipline or not (Scheffler, 1963; Hughes, 1971; Kymlicka; 1992; Viñao, 2002). It would seem like asking 'is this a discipline?' akin to asking 'is this art?': it is, if the person involved in the activity *thinks* it is.

That said, although it is difficult to provide a definition of what a discipline may be, there are characteristics which are associated with disciplinary practice. Disciplines have identities and cultural attributes. They have measurable communities, which have public outputs, and

can be measured by the number and types of departments in universities, the change and increase in types of HE courses, the proliferation of disciplinary associations, the explosion in the number of journals and articles published, and the multiplication of recognised research topics and clusters (Becker and Trowler, 2001, p. 14).

Disciplines have identifiable idols in their subject (Clark, 1980), heroes and mythology (Taylor, 1976) and sometimes artefacts peculiar to the subject domain, or ethnographic similarities in workspaces (Becker and Trowler, 2001), meaning that the community is defined and reinforced by being

formally accepted as a university subject, but also instituting a publication record and means of output, and, more implicitly, by 'the nurturance of myth, the identification of unifying symbols, the canonisation of exemplars, and the formation of guilds' (Dill, 1992).

It is therefore, possible to ascertain if Humanities Computing is a discipline by taking an overview of the activities of the field utilizing these measures.

### 3.1 Is Humanities Computing a discipline?

Opinion was split between the interviewed scholars in Humanities Computing as to whether it was a discipline. Some felt very strongly that it was, others strongly denied it, defining a discipline as a 'core set of skills' or 'lingua franca' which could not be identified in the case of Humanities Computing. Two ascertained that it did not really matter: 'I don't know what it is. I don't know *if* it is. Actually, I doubt whether we need it to be'. Most identified that there was a definable community, but that they were bound together by the fact that they were traditional Humanities experts who happened to use new technologies to research in their field. If technology is all there is in common, this does not make a discipline, as an academic commented:

Hey, you write with a ballpoint pen, and I write with a ballpoint pen... Let's make us the Blue Pen Club! It is what we write with the pen that is important, not the technology.

However, there are a number of activities solely associated with the Humanities Computing community. It is now over thirty years since the Association of Literary and Linguistic Computing (ALLC)<sup>3</sup> was founded (in 1973), and almost twenty years since the first issue of the journal 'Literary and Linguistic Computing' (published by Oxford University Press) was issued in 1986<sup>4</sup>. The Association of Computers and the Humanities (ACH)<sup>5</sup> was founded in the early 1990s. The Humanist electronic discussion list, which describes itself as 'an international electronic seminar on the application of computers to the Humanities', has

been in operation during 1987<sup>6</sup>: more than 10 million words on the subject have been posted during that time. There has been a yearly conference (held by ALLC) since 1970, becoming an international conference (jointly held between ALLC and ACH)<sup>7</sup> since 1989. Other more local conferences emerge: Digital Resources in the Humanities<sup>8</sup>, a predominantly UK-based yearly conference, was first held in 1996. McCarty and Kirschenbaum (2003, regularly updated) attempt to keep a register of conferences, associations, journals, and teaching programs in Humanities Computing: they currently list seven printed and eleven electronic journals devoted to Humanities Computing, thirteen professional societies, six specific online portals, and three dedicated discussion groups. Clearly, something is going on that can be classed as 'Humanities Computing'.

Histories of and companions to the discipline have begun to emerge (Fraser, 1996; Schreibman *et al.*, 2004, Vanhoutte (forthcoming 2006)), from both research, scholarly, and institutional perspectives (Warwick, 2004). When asked who the academic 'heroes' of Humanities Computing were, most experts came up with the same names: Professors Roberto Busa, Susan Hockey, Roy Wisbey and John Unsworth. Others mentioned (Professors Mark Greengrass, Alan Bowman, Manfred Thaler, Lisa Jardine, and Ray Siemens) were all active members in the field, and the head of often ambitious and very successful initiatives in the discipline.

As for artefacts and workspace: most of the experts; workspaces were characterized by having one (or more) powerful computers, contrasted with shelves of books on traditional Humanities subjects such as English Literature, with the odd technical manual about the Internet or eXtensible Markup Language (XML)<sup>9</sup> thrown in. There was usually some large artwork on the wall (perhaps stressing how they are routed in the 'creativity' of the Humanities, not Computer Science, which has a bad name for being 'geeky' although it is also a creative discipline). There are also identifiable artefacts from Humanities Computing: the mug from DRH;98, the rucksack from ACH/ALLC 2003.

There are undoubtedly cliques of scholars in the community, unofficial discussion groups, friendships, scholarly support networks, mentoring programmes, and many other relationships associated with academic communities and disciplines active within Humanities Computing. The amount of activity would suggest that there was an identity associated with the Humanities Computing community, as well as issues of shared practice, and that the amount of academic activity detailed above do classify this as a discipline, rather than just a 'community of practice' (Wenger, 2002, p. 150).

However, where the argument falls down for Humanities Computing as a discipline, is in its institutionalization, or lack of it. McCarty and Kirschenbaum, (2003) provide 'a structured list of departments, centres, institutes and other institutional forms that variously instantiate humanities computing' (although this is slightly out of date). Only 10 institutions worldwide are listed that provide academic teaching programmes in the field. These are generally at the postgraduate level, with only a minor in Humanities Computing being available at the undergraduate level at two institutions: the 'major' degree is always a traditional Humanities subject. Additionally, the majority of these programmes are provided not through 'departments' but through 'Centres' or 'Institutes', such as the Centre for Computing in the Humanities at King's College London<sup>10</sup>, or the Humanities Advanced Technology and Information Institute<sup>11</sup> at the University of Glasgow. As computing becomes more pervasive, Information Technology skills are becoming more important to all scholars, and these centres usually also provide general IT skills training to Humanities scholars. This makes it hard to differentiate between general training in computing applications, and bona fide 'academic' study. 'Humanities Computing' has yet to be institutionalized as an academic subject.

There was a feeling amongst some of those interviewed that 'the lady doth protest too much' regarding the perennial 'is-Humanities-Computing-a-discipline' question. Surely if it was, it would have become established by now? But given the above evidence, it would seem to be established as a

discipline. The question is why it is not an established university *subject*. This may be because there is not a definable skills set or focus that can be passed on to the next generation of scholars. Additionally, the subject is reliant on technologies which continually change, requiring learning of specific applications and the application of knowledge and action rather than the traditional Humanities focus on development of the 'self' (Barnett *et al.*, 2001, p. 439). Also, there is an inherent understanding that the domain will always exist as applied to traditional Humanities scholarship, as it uses computational techniques to undertake Humanities research. It does not exist in 'itself' away from the Humanities, and will always depend on the traditional disciplines to provide questions that need to be answered. Experts variably described this as 'symbiosis' (giving a positive view of the intertwining of computer technologies with the Humanities) or the negative 'parasitic': 'Its like mistletoe. It cannot exist on its own'. The Humanities computing scholar was often described as a 'magpie' who had to visit other domains to gather shiny pieces of knowledge for use at home, or a 'chameleon' who has to jump from one mode of disciplinary thinking and culture to another. McCarty (forthcoming 2005b) describes Humanities Computing as an 'archipelago' of subjects that we visit. We are like a 'Jack of all trades: master of none'. Finally, to be able to understand how computing technologies can benefit the Humanities there needs to be an understanding of how the Humanities function. Therefore, most scholars need traditional Humanities training or qualification before they can use Humanities Computing: it is essentially a research environment, and that befits teaching at a postgraduate level better than undergraduate level.

Humanities Computing would seem to display many traits that are associated with being a discipline, apart from being institutionalized as a 'proper' academic subject. This raises problems, as detailed in Section 2, regarding kudos and funding. However, although there are only a small number of teaching programmes available, this would suggest that there *is* something to be taught, and this is analysed in Section 4.

## 4 Curriculum, Hidden Curriculum, and Humanities Computing

The syllabus and curriculum of Humanities Computing has never really been decided (as demonstrated by the discussion papers listed in Section 2.) However, some teaching programmes do exist. This section gives a brief overview of some programmes and compares and contrasts their content, comparing this to the research agenda of Humanities Computing through analysis of conference abstracts in the field. Issues of the 'Hidden Curriculum' are then discussed, illuminating what message Humanities Computing is giving out through its teaching programmes and institutional representation.

Four university courses were looked at to compare and contrast their content and implementation. These were:

- (1) The MA in Applied Computing in the Humanities<sup>12</sup> in the Centre for Computing in the Humanities, at King's College London. This is a one year Masters degree.
- (2) 'Humanities Computing: Electronic Text'<sup>13</sup>, a one-term, one module course at Masters level in the English Department of the University of Antwerp.
- (3) 'Digital Resources in the Humanities'<sup>14</sup>, a one-term, one module course at Masters level in the School of Library, Archive, and Information Studies, University College London.
- (4) 'Digital Humanities'<sup>15</sup> a one-term, one module course at Masters level in the Graduate School of Library and Information Studies, University of Illinois at Urbana-Champaign.

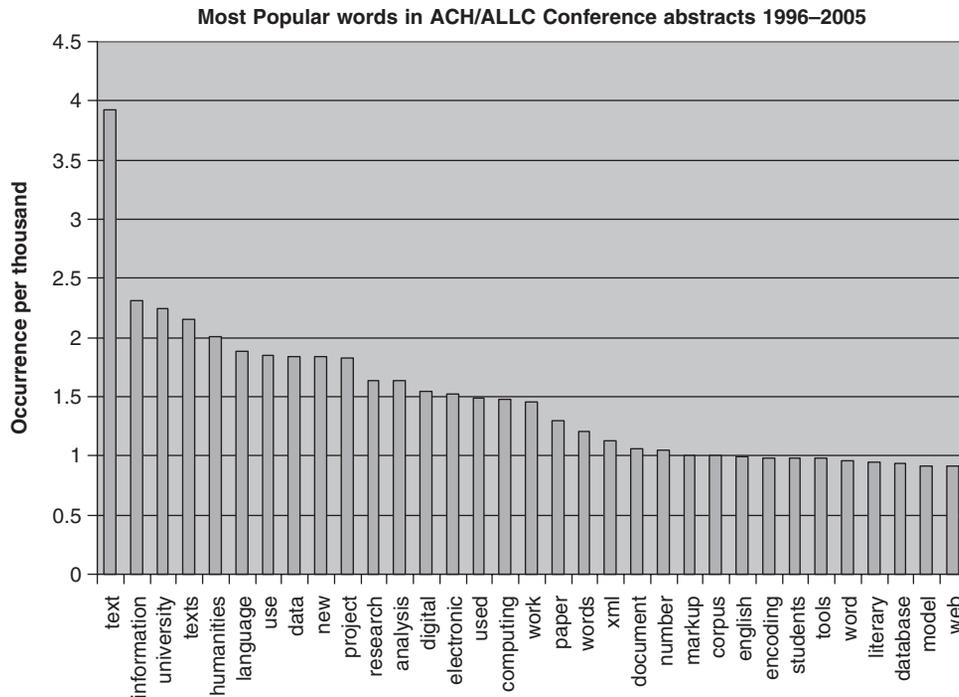
### 4.1 The syllabus and curriculum

From an educational and curriculum studies perspective, the term 'curriculum' applies not only to the content of a particular subject of study, but refers to the total programme of an educational institution: being 'the overall rationale for any educational programme, including those more subtle features of curriculum change and

development and especially those underlying elements [explanation and justification] ... which are the most crucial element in Curriculum studies' (Kelly, 1999, p. 3). Syllabus here is taken to mean the course content.

The courses listed above have a remarkably similar focus, mostly taking as their syllabus the techniques used to produce, manipulate, and deliver electronic text. Some, such as Antwerp, focus, exclusively on this, whilst others, such as UCL, have this as the focus but introduce some other computational application to the Humanities in the course of teaching, such as digitization and outlier methods such as Virtual Reality. Illinois is more discursive than the others, with more written elements and less technical work, and of course the one year course at King's is more extensive than the others, and can go into more depth about various tools and techniques. There is a significant amount of group work, which is relatively rare in the Humanities. Courses are relatively small and have much direct contact with the tutors, with practical sessions as well as lecture and tutorial sessions. Assessment is by practical project, or take-home exam, in which the students are expected to demonstrate that they can implement the technologies whilst understanding the theory behind them. But the focus of these courses is digital text, and the theory, tools, and technologies which can be used for markup and analysis. The reading lists are remarkably similar, and the projects which the students have to do involve practical project work where they create an electronic text using the techniques taught in the session (all of the courses teach eXtensible Markup Language (XML)<sup>16</sup>, and the form of XML espoused by the Text Encoding Initiative (TEI)<sup>17</sup>: major technical developments by the Humanities Computing research community).

There is good reason for this, as it would seem that it is the thrust of academic research within the discipline. This can be shown by a simple analysis of conference abstracts published for ACH/ALLC, which were obtained in electronic format, and run through a commonly used text analysis program, Concordance<sup>18</sup>, to show which are the most commonly used words in these papers (Fig. 1).



**Fig. 1** The most commonly used words in abstracts of the Association for Computing and the Humanities and Association of Literary and Linguistic Computing Joint Conference. Words are shown in occurrences per 1000, excluding words like ‘the’ and ‘a’ (using the Glasgow Stop Words List<sup>33</sup>). ‘Text’ is by far the most commonly used word, statistically occurring in every single abstract. Other key words demonstrate that Humanities Computing is about the computational analysis of data, especially language, words, and documents.

All available conference abstracts from ACH/ALLC were mined<sup>19</sup>, from 1996 to 2005, with the exclusion of 2003 which was not available. This resulted in a corpus of 1,026,503 words, which, when analysed, demonstrated that ‘text’ is indeed the focus of Humanities Computing research.

Further analysis (not shown here) demonstrates that this is consistently the case across all years of the conference. Humanities Computing research is predominantly about text: it follows that the teaching programmes should concentrate on this aspect. This also demonstrates that the teaching and research agendas are similar—this is perhaps debatable in other subjects, and could be the focus of further research. It would seem then, that the rationale for the courses is to pass on the theory and techniques used in the Humanities Computing research community.

## 4.2 The hidden curriculum

The term ‘Hidden Curriculum’, coined by Philip Jackson (1968), refers to the fact that education is a socialization process, and that cultural norms, socially accepted practices and acceptable types and levels of knowledge are passed on to students through the way the teaching process is constructed. Investigation into the hidden curriculum can be used to understand more fully how the educational process works at different institutional levels (see Snyder, 1973; Tobias, 1997; and Margolis, 2001 for further discussion).

Academics in Humanities Computing were asked about the aspects of teaching and research which could pass on implicit messages about the subject to either the student, or to the wider academic community. It was difficult to gather statistics about the courses regarding usual aspects of hidden

curriculum research: gender, social background, ethnicity, etc as the courses were new, of different sizes, and in very different organizations. Various other issues were raised.

- (1) In teaching specific technologies, specifically regarding text processing and manipulation, the field was not seen to be engaging in the full spectrum of technology development, but a narrow focus. Because the field was so insular, and did not engage with Computer Science, it was shielding itself away from further developments.
- (2) All of these courses are taught in Humanities faculties: only one course exists which teaches people in a Computing Science Department<sup>20</sup>. Scholars were seen to need Humanities training before they could be 'trusted' to undertake computational analysis of Humanities data, and this precluded students with a background in technical subjects such as computing or engineering being 'allowed' to join the field at Masters level—when actually they could have a lot to contribute.
- (3) Links between traditional Humanities departments could not be guaranteed as there was scepticism about the value of some courses. Where links were made, these were generally because of a few keen individuals in the institution.
- (4) The fact that courses are taught (or research is done) in 'centres' or 'institutes' for the most part, rather than 'departments', suggests to both students and other academics that this is not a proper subject. This has an effect on recruitment for courses. The closure of a research institute by a major Oxford University (see Burnard (2001)), and the funding of the creation but not implementation of an MA degree (Virginia, see Drucker *et al.*, 2002) has also done a lot of damage to the growth of the 'subject' because of the way these actions have been perceived in the wider community. Humanities Computing was seen as a 'help desk' rather than as a research field in its own right.
- (5) The Humanities Computing community is small and friendly, and it was seen that graduate students could rapidly become part of this community and have the opportunity to engage with leaders in the field from quite early in their study of the subject. However, it was relatively insular.
- (6) The use of small group and practical project work was very different from traditional Humanities disciplines and required a different skill set from the average Humanities' graduate student. Students have to be technically very adept, and also have an access to technology to be able to undertake the courses.
- (7) It can be very difficult to ascertain funding to undertake graduate research in Humanities Computing, although this may be changing as computing becomes more pervasive throughout all disciplines.

Although there is a similar curriculum and syllabus throughout available courses, which relates very closely to the research agenda of Humanities Computing, there are various issues that need to be addressed in the way that the discipline projects its values onto students, and to the wider academic world. Although the community is warm and welcoming, Humanities Computing needs to engage more with both Computer Science and Humanities disciplines, rather than being an insular community. Issues of curriculum and the hidden curriculum require much more attention and analysis in the future if Humanities Computing is to expand and become institutionalized as an academic subject.

## 5 Who is Part of the Humanities Computing Community?

It has been suggested in Section 2 that academic fields can be 'measured' by their number of publications, associations, conferences, etc. In section 4, it was suggested that the Humanities Computing community was small and insular, and it has also been suggested that academics active in research in Humanities Computing generally

are employed to research in traditional disciplines. This section aims to ratify these claims by briefly attempting to measure the Humanities Computing community.

### 5.1 Membership of associations, journals, and discussion groups

The major associations in Humanities Computing are the Association of Literary and Linguistic Computing<sup>21</sup> (which is based in Europe) and the Association for Computing and the Humanities<sup>22</sup> (based in the USA). Subscribers can be members of both, but as the membership is tied to paid subscription to the journal 'Literary and Linguistic Computing'<sup>23</sup> and as it is necessary to choose one or the other or pay extra to be a member of both, most subscribers belong to one organization only. Statistics for membership of these, and also the main free discussion lists in the subject (Humanist<sup>24</sup> and the Text Encoding Initiative List<sup>25</sup>) were collected (Table 1).

There are between 100–200 scholars who are willing to pay for yearly subscription to the field journal (members can subscribe once but can be members of both the organizations), and over 1300 interested parties in the field who will sign up for free, almost daily, postings and discussions about the discipline. Over 500 engage in almost daily discussions about the application of textual markup in the Humanities. Although the community is relatively small, it is not inconsequential. But who are these people?

### 5.2 Analysis of ACH/ALLC 2005 conference abstracts

One way to measure who partakes in the Humanities Computing community, given that it has such a diverse spread, is to analyse conference

proceedings, attendance lists, and abstracts. The biggest conference in Humanities Computing is ACH/ALLC (see p. 5). Attendance lists were not available for any of the annual conferences, and only a selection of full papers will ever be published. However, the 1000-word abstracts selected for presentation from those submitted were made available<sup>26</sup> by the Program Committee for analysis.

A database was constructed, from abstracts and personal webpages, of all the presenters attending ACH/ALLC 2005, with their name, paper title, department and institution affiliation, and job title stored for each presenter. Not everyone who undertakes teaching or research in Humanities Computing presented at (or attended) this conference, but as the single large conference in the field, it should provide an overview of activity, affiliation, and structure of Humanities Computing<sup>27</sup>.

A total of 250 individuals were presentation authors at ACH/ALLC, which consisted of 122 sessions: eight full sessions, thirteen panel sessions, and 101 individual papers. (Indicating that there are, on average, more than two presenters associated with each paper: perhaps a rarity in Humanities scholarship?) A few scholars presented more than one paper.

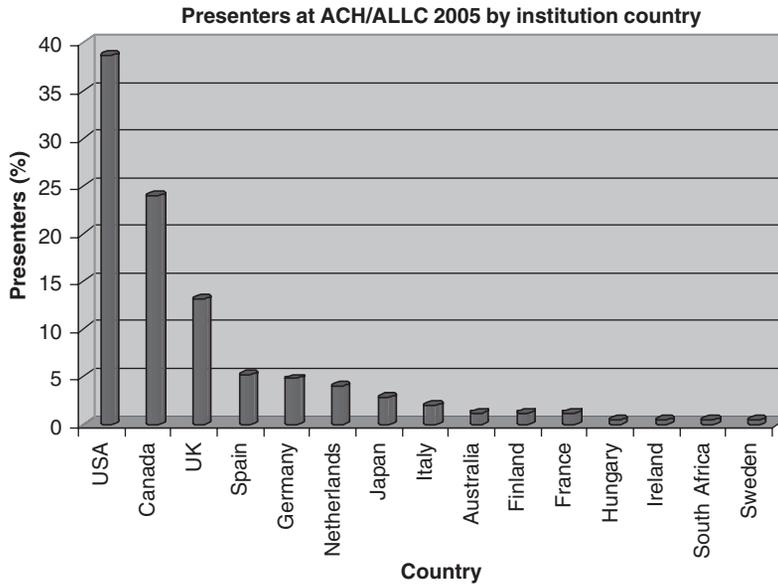
The 250 presenters came from 15 countries (Fig. 2): logged by country of the institution they are affiliated to.

This domination by the USA and Canada is not altogether surprising, considering the location of the conference. When the conference is held in Paris in 2006<sup>28</sup>, there will probably be more presenters submitting papers from Europe. Nevertheless, 77% of those presenting are from countries where English is the native tongue. Only five abstracts were accepted in other languages: French, German, and Spanish. This may construct barriers to non-native English speakers adopting the techniques developed by scholars in the discipline.

Additionally, the scholars are all from western countries (the one presenter from Africa being from its richest and most 'Western' country). Humanities Computing relies on access to computational technologies which would exclude scholars from poorer institutions participating. Also noticeable

**Table 1** Membership of various initiatives in Humanities Computing

Name	Membership
ALLC	100 (approx)
ACH	100 (approx)
Humanist discussion list	1375 subscribers
Text encoding initiative discussion list	553 subscribers



**Fig. 2** Presenters at ACH/ALLC 2005 by institution of the country. It can be clearly seen that the conference is dominated by those from the USA and Canada.

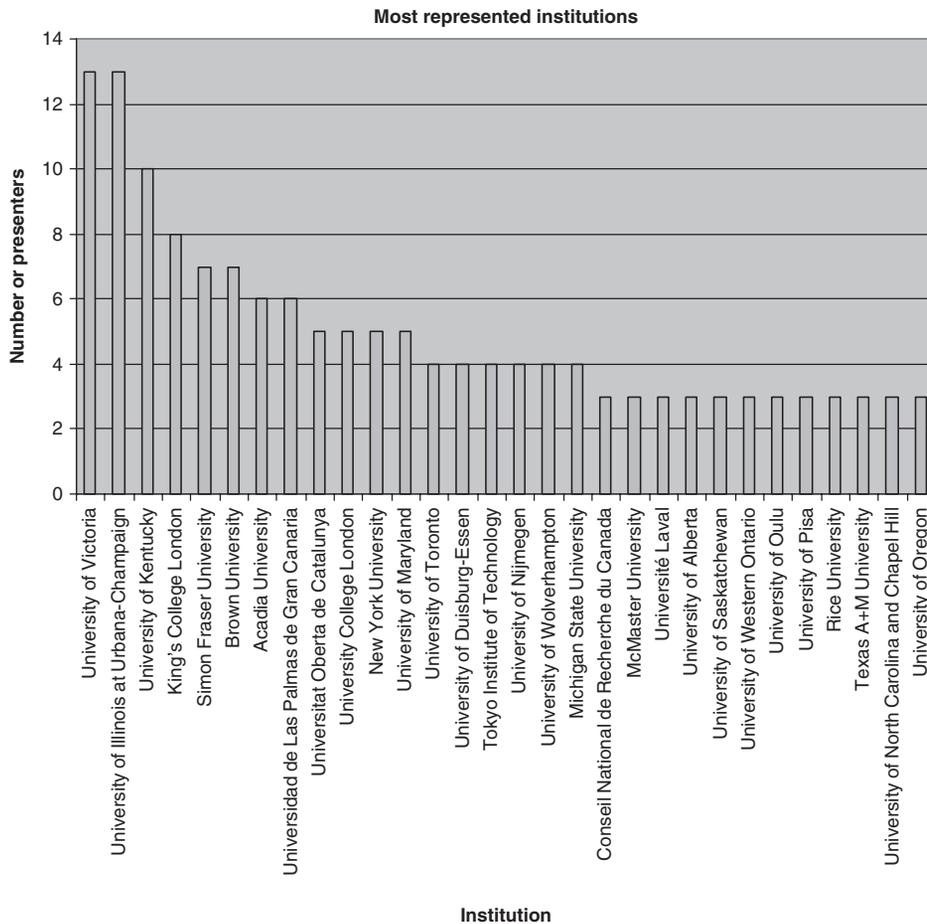
in their absence are China and India, which have both experienced massive technological growth and expansion of Internet usage in recent years<sup>29</sup>.

The presenters at the conference come from 102 different academic institutions<sup>30</sup>, with four scholars coming from the industry. The host institution, The University of Victoria, fields the most presenters (although, they have a very strong Humanities Computing Centre). This attendance is matched by the University of Illinois at Urbana-Champaign, who have a large and strong library school. Most institutions represented are fairly large, well-known and respected universities (Fig. 3).

In a few institutions, Humanities Computing is more prevalent, but there still remains a large number of lone, or almost lone, scholars in the field: twenty institutions fielded two scholars, fifty two fielded a lone scholar (although, a large number of these work or present with scholars from other institutions).

The scope of the Humanities Computing community can also be judged by the host department each presenter is affiliated to<sup>31</sup> (Table 2).

The most represented academic discipline is Library and Information Studies. This subject has made extensive use of technology for the organization, storage, and retrieval of data. English follows, as literary and linguistic textual analysis and manipulation are common application in the field (hence the name of 'Literary and Linguistic Computing'). Reassuringly, a large proportion of scholars are linked to Humanities Computing centres, showing that their presence is central to the field. A distinction has been made between library schools and university libraries, (as a place for training of librarians versus the university facility), but staff from university libraries are also well represented, indicating the take-up of technologies in this area. Linguistics is also strongly represented. Interestingly, however, is the fact that seventeen scholars are computer scientists, indicating that Humanities Computing is of interest to not only the Humanities scholar, but also those involved in Computer Science. Digital Projects are specific projects which use Humanities Computing techniques to construct digital resources (for example Matrix<sup>32</sup>, the Centre for Humane Arts, Letters



**Fig. 3** Most represented institutions. Any institution fielding less than three scholars is not shown.

and Social Services online, which develops online teaching tools). Various other arts and social science disciplines are also part of the Humanities Computing community, indicating that the techniques, theory, and applications discussed at this meeting are of broad interest in the Humanities themselves.

In addition to tracking the academic affiliation of presenters, their job titles were noted. Again, this required some degree of abstraction, and it is also possible that lecturers could be grouped further: a 'Lecturer' can be seen as being akin to being an Assistant Professor, for example. Additionally, five presenters' job titles could not

be ascertained. The type of job undertaken with the number of presenters is shown subsequently: most represented job first.

The resulting spread of academic positions demonstrates that those involved in Humanities Computing cover the whole spectrum of academic posts: there is a high number of professors, associate and assistant professors, lecturers, researchers and graduate students, as well as support staff, directors of projects, Web developers, post-docs, and independent consultants. Although it is hard to make any statistical judgement on this without comparing it to other disciplines, the fact that this wide range of posts is represented would suggest that Humanities

**Table 2** Official departmental affiliation of presenters

Academic department	Number of presenters
School of Library and Information Studies	37
English	32
Humanities Computing Centre	24
Library	24
Linguistics	20
Computing Science	17
Digital Project	13
Education	8
Literature	8
Classics	7
History	7
Computational Linguistics	5
Information Services	5
French	4
Italian	4
German Linguistics	3
Humanities	3
Philology	3
Phonetics	3
Social Sciences	3
Dutch Linguistics and Literary Studies	2
Management Sciences	2
Slavic Languages and Literatures	2
Archaeology	1
Art and Design	1
Cognitive Science	1
Communications	1
Economics and Business	1
Multimedia	1
Philosophy	1
Public Policy	1
Retired	1
Sociology	1
Spanish	1
Women and Gender Studies	1

Computing functions as an academic field where promotion and development is possible. It is not only a service to be provided to Humanities scholars, but a discipline in its own right. That said, many of the academic professors earned their chair from more traditional disciplines, such as English or Linguistics, without the use of computing, and their interest in computing may have come after significant academic success has already been achieved.

This analysis has shown that, although there are very few academic departments called ‘Humanities

**Table 3** Official posts of presenters

Job type	Number of presenters
Graduate student	40
Professor	35
Researcher	33
Assistant Professor	22
Lecturer	20
Associate Professor	19
Director	13
Librarian	12
Programmer/Developer	8
Post-Doctoral Fellow	7
Associate Director	4
Computing Officer	3
Humanities Computing Specialist	3
Research Development	3
Senior Analyst	3
Senior Lecturer	3
Undergraduate student	3
Consultant	2
Manager	2
Research Assistant	2
Teacher	2
Web Architect	2
Archivist	1
Assistant Curator	1
Assistant Dean	1
Reader	1

Computing’, there is a community of scholars who partake in the discipline and who cover a broad range of traditional academic disciplines. These scholars are involved at every level from undergraduate student to Professor. Humanities Computing is international—if international is limited to developed, Western countries, that is. Nevertheless, the fact that such a community clearly exists would suggest that there is enough academic activity being undertaken to identify this as a separate field in its own right, confirming the ‘disciplinary’ status. Further analysis of the abstracts from ACH/ALLC 2005 would include citation and publication analysis, which could provide further information regarding the operation of the field and how it interacts with others. Additionally, it would be useful to compare these results to previous ACH/ALLC conferences, to see any potential changes in the community, and to compare and contrast the Humanities Computing community with those from other disciplines.

## 6 Conclusion

This article has taken an externalized viewpoint, from Educational Theory, to demonstrate that Humanities Computing consists of a diverse community from various subjects in the Humanities, whose activities constitute those associated with an academic *discipline*. Although few teaching programmes exist, 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 enquiry has raised 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, at all academic level from the student to the professor.

Further studies need to be carried out to further analyse and define the Humanities Computing discipline, field, and community. A citation analysis could be carried out to see which texts are cited by scholars in the field: are they Computing Science texts, or pure Humanities texts? Which journals are most popular? Which are the seminal texts in Humanities Computing, that emerge from this analysis? Who would be the most cited author(s)? Continuing this 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.

Further analysis of the curriculum and hidden curriculum is needed across the teaching programmes, with comparison to be made between the differences between pure Computing Science and Humanities Computing, and also more traditional Humanities academic subjects and

Humanities Computing. Students from various courses could be interviewed so that more detailed information could be ascertained about the different issues present between different academic subjects. There is room for also engaging more with curricular theory, on issues of the Hidden Curriculum and how we can intrinsically promote and expand Humanities Computing through our teaching programmes and methods.

By turning to a different discipline, Education, to understand its views on issues of disciplinarity, curriculum, and identity, it has been possible to measure and analyse the Humanities Computing community and academic activity in a novel and illuminating way, highlighting areas of concern, and confirming that we do, indeed, seem to function as an academic discipline. What this research has not done is to provide an over-arching definition of the 'subject': it has demonstrated that Humanities Computing exists as an academic discipline, without having to be accepted into the university subject pantheon. Although this creates problems with funding and academic kudos, it can also be seen as an indication of the strength of the discipline: the community exists, and functions, and has found a way to continue disseminating its knowledge and encouraging others into the community without the institutionalization of the subject.

This gives the discipline and the scholars within it additional freedom: if they are not defined, or their activities are not prescribed, then they are free to develop their own research and career paths, which may not fit into the normal mode of operation for academic subjects, but could allow the subject to remain fluid and undefined. Is it such a bad thing if a definition of the subject does not exist?:

who, for example, ever learnt anything of significance of learning or loving by *defining* these concepts? Reflecting on and writing about learning should preserve or create an openness, which is a fundamental part of the practice of learning, rather than the closure of categorization, which has more to do with oppression and control. (Rowland 2000, p. 82).

There may be a time when every academic institution worldwide may have some element of Humanities Computing research and teaching present within it. Alternatively, given that computing is becoming more pervasive, perhaps the Humanities Computing scholar will just be accepted back into the individual discipline they are applying the techniques to: the safe haven of a community of Humanities scholars who happen to use computational techniques may no longer be needed. The techniques and tools of Humanities Computing will then become absorbed back into the support function of information systems and services in academic institutions.

The 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. Research and teaching methods peculiar to Humanities Computing have to be promoted and developed as useful adjuncts to usual training for Humanities students. The community must continue to develop, but extend its remit to be more inclusive, international, and interdisciplinary: in the cross-faculty sense, encouraging work between the sciences and the arts. Humanities Computing is 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.

## Acknowledgements

The authors would like to thank the following academics involved in Humanities Computing for their aid in researching this work (in no particular order): Edward Vanhoutte, Lou Burnard, Dr Willard McCarty, Professor Seamus Ross, Professor Susan Hockey, Dr Claire Warwick, Dr Mike Fraser, Dr Stan Ruecker, Professor John Unsworth and Dr Wendell Piez. The author also thanks Alejandro Bia for providing abstracts from ACH/ALLC 2005 ahead of public release and Andrew Ostler who provided technical advice on data mining.

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## Notes

- 1 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. Throughout this article, 'Humanities Computing' is used for consistency.
- 2 <http://web.uvic.ca/hrd/achallc2005/>
- 3 <http://www.allc.org/>
- 4 1. The Association of Literary and Linguistic Computing published their journal twice yearly from 1980 to 1985, when this was merged with ALLC bulletin to become Literary and Linguistic Computing (1986).
- 5 <http://www.ach.org/>
- 6 <http://www.princeton.edu/~mccarty/humanist/>
- 7 <http://www.kcl.ac.uk/humanities/cch/allc/refdocs/conf.htm>
- 8 <http://www.drh.org.uk/>
- 9 <http://www.w3.org/XML/>
- 10 <http://www.kcl.ac.uk/humanities/cch/>
- 11 <http://www.hatii.arts.gla.ac.uk/>

- 12 <http://www.kcl.ac.uk/humanities/cch/ma/4.html>
- 13 <http://www.kantl.be/ctb/vanhoutte/teach/hc2005.htm>
- 14 <http://www.ucl.ac.uk/slais/melissa-terras/drh.htm>
- 15 <http://www3.isrl.uiuc.edu/~unsworth/LIS590DH-S04.html>
- 16 <http://www.w3.org/XML/>
- 17 <http://www.tei-c.org/>
- 18 <http://www.concordancesoftware.co.uk/>
- 19 They were downloaded from the relevant web pages using a utility called PageSucker, <http://www.pagesucker.com/>, and concatenated using a Python script, for analysis with Concordance.
- 20 The MSc in IT and the Humanities at the University of Glasgow, recently changed to the name MSc in Information Management and Preservation, which is jointly taught between the Humanities Advanced Technology Institute and the Department of Computer Science: <http://www.hatii.arts.gla.ac.uk/imp/index.htm>
- 21 <http://www.kcl.ac.uk/humanities/cch/allc/>
- 22 <http://www.ach.org/>
- 23 <http://llc.oxfordjournals.org/>
- 24 <http://www.princeton.edu/~mccarty/humanist/>
- 25 <http://listserv.brown.edu/archives/tei-l.html>
- 26 Thanks must go to Alejandro Bia (Chair of the ACH/ALLC Program Committee, Universidad de Alicante, Spain) for access to these files prior to official release.
- 27 Of course, these statistics are of no use without comparison with other conferences. Conference size and attendance varies greatly between subject and 'importance' of host association. Take these two examples as extremes:
- Siggraph 2004, the 31st annual conference and exhibition on computer graphics and interactive techniques, consisted of 83 papers, 225 exhibitors, and seven panel sessions. 27,825 professionals from nearly 90 countries attended the conference at Los Angeles, 8–12 August 2004. See <http://www.siggraph.org/s2004/>
  - Computers and History or Art (CHArt) 2004 consisted of 15 papers, with 15 presenters from 6 different countries. Approximately 100 people attended the two day conference on 11–12 November, University of London. See <http://www.chart.ac.uk/chart2004-abstracts/index.html>
- ACH/ALLC is a medium-sized conference which represents a specific subject matter. Attendance at ACH/ALLC 2005 was approximately 300 scholars (including presenters). The percentage of attendees who were present is much higher in this medium-size conference than a conference like Siggraph: perhaps meaning that presenting at ACH/ALLC has less academic kudos than presenting at a larger conference, even though it is the leading conference in its field.
- 28 <http://www.allc-ach2006.colloques.paris-sorbonne.fr/>
- 29 Internet World Stats, <http://www.internetworldstats.com/stats3.htm>, demonstrate that the Asia has experienced a 164% growth in Internet usage since 2000, with the rest of the world experiencing 137% growth. The European Union experienced 131% growth during this period.
- 30 The International Association of Universities holds records of almost 9200 academic institutions: <http://www.unesco.org/iau/onlinedatabases/list.html>. This would indicate that only 1.1% of academic institutions have a scholar attending ACH/ALLC. <http://www.unesco.org/iau/onlinedatabases/list.html>.
- 31 A degree of abstraction had to be used to pigeonhole the departments because of different naming conventions: for example, centres in Humanities Computing were variously named: Centre for Computing and the Humanities, Centre for Technology and the Arts, Computing for Humanities, Institute for Technological Research in Humanities, Arts Informatics, Humanities Computing, Humanities Computing and Media Centre, Humanities Computing Centre, Institute for Technology in the Humanities, Research Computing (Faculty of Arts), and the Institute for Technology and Liberal Education, with only one 'Department of Computing in the Humanities' (at the University of Groningen, Netherlands).
- 32 <http://matrix.msu.edu/projects.php>
- 33 [http://www.dcs.gla.ac.uk/idom/ir\\_resources/linguistic\\_utils/stop\\_words](http://www.dcs.gla.ac.uk/idom/ir_resources/linguistic_utils/stop_words)