

The Sound of Many Hands Clapping: Teaching the Digital Humanities through Virtual Research Environment (VREs)

Craig Bellamy <craig_dot_bellamy_at_versi_dot_edu_dot_au>, VerSI, University of Melbourne, Australia

Abstract

At the core of the work done within the digital humanities is a difficult interdisciplinary relationship between the at times divergent cognate fields of computer science and the humanities. This paper will explore some of the characteristics of the digital humanities and examine some of its *hard* *interdisciplinarity* relationships. It is the contention of the author that one of the central epistemological challenges within the field is to empower students to successfully manage the thorny interdisciplinary relationship intrinsic to technology and the humanities. Without understanding and managing this relationship, there is a danger that student projects lapse into exceedingly reductive pragmatism or overly theorised clumsiness. The author will suggest a model where this *hard-interdisciplinary* relationship may be taught and assessed through the critical use and analysis of digital objects within the framework of a Virtual Research Environments (VREs).

Introduction

Like many interdisciplinary fields within the humanities, the digital humanities consists of a broad range of researchers arriving within its fold from a range of disciplines practices. These may include disciplines as diverse as Papyrology, Media, Musicology, Classics, Epigraphy, Medieval Studies, History and Classical Archaeology. Although definitions vary between schools and schools of thought, humanities computing, or “digital humanities” as is now more popularly known, may be broadly defined as the application and development of computational methods and associated tools to address research problems within the humanities. Distinct from general computing approaches, the digital humanities is an interdisciplinary field of applied and experimental computing that advances the research concerns of the disciplines and sub-fields that make up the humanities. The methods employed in the field may be used to uncover new knowledge about corpora or to visualise historical research data in such a way as to uncover additional insights and meaning. The digital humanities is about structuring, analysing and communicating humanistic knowledge in a critical and authorial way using computing technology.^[1]

Through its journals, undergraduate and postgraduate programmes, conferences, and research outputs, the digital humanities is a fertile interdisciplinary field synergised, in part, through computing innovations at the research-methodology level. The methods employed in the field may involve text-encoding to create scholarly and critical editions of canonical texts, text mining techniques to uncover new historical knowledge about geographical place or word usage, or visualising data gathered on archeologically sites to propose arguments about building practices or cultural uses of the buildings. Many of the methods employed in one research endeavour may be applicable to another and the hard-gained wisdom in the digital humanities field facilitates the meaningful application of computing technologies developed in one research context to be reapplied in other research contexts.^[2]

Teaching *Hard Interdisciplinarity*

However, much of the tacit knowledge of the digital humanist in negotiating the cultural and technical capitals of the academy is, ironically, historically contingent upon the precarious institutional arrangements of the field. A field that has traditionally lacked an institutional base to support long-term research strategies has by way of historical circumstance produced some of the most intrepid *hard-interdisciplinary* scholars anywhere in the academy. This has resulted in many impressive contributions to original scholarship through, for instance, the relationship between 3D scanning and Epigraphy, grid computing and history, or text encoding and medieval studies. It is these interdisciplinary arrangements — of researchers coming to the table to build something new — that is the hallmark of the digital humanities field [Ramsay 2011]. This has been the case ever since 1949 when Roberta Busa began the Concordance of Thomas Aquinas (1275-1274) in conjunction with Thomas J Watson, the founder of IBM. The tool he created for performing text analysis within the massive corpus of Aquinas took 30 years to complete [Busa 2005].

Later interdisciplinary configurations have uncovered new knowledge about disputed texts and produced new understanding about Roman theatres using advanced visualisation methods [Fine Rolls 2011]. It is these two distinct qualities of the field, *hard interdisciplinarity* and building computing projects, which are core to the teaching and research efforts within the field. Students with these qualities are able to engage with the plethora of digital resources available from the World’s great archives and advance their meaningful interpretation and production. In other words, the digital humanities make humanists that make things and through making them, they learn about them.

Thus teaching the *hard-interdisciplinary* skills of computing and the interpretative humanities is not an easy task given that they often exist in competing research cultures that are antagonistic to one another. Although many digital tools and associated methods are groundbreaking in terms of their generalisable passage across disciplines, computing technology is far from egalitarian (as some would tell us) and it is characterised by new forms of hierarchy and competing ideas. Learning to pilot through rival cultural (and economic) capitals is important for much electronic scholarship, especially since there is resistance and misunderstanding about digital technologies within the humanities (coupled with an at times unhelpful temporal-parochialism emanating from technical discourses). The digital humanities is a diverse field and there is a need to develop strategies and applications to celebrate this diversity, rather than allow one group to standardise and dominate our understanding of it (whether they be text encoding specialists, empiricists, or at times hysterical archivists!).

“If technology is the answer, what is the question?”

[3]

Thus teaching in the digital humanities field should emphasise that computing is not simply a set of techniques to achieve a predetermined set of results. Computing in the humanities is a set of humanities *questions* to achieve a set of challenging *interpretations*. Digital resources and tools are made available to students through a series of choices by their creators, educators, and administrators, and making student aware of these choices is vital for facilitating active and critical engagement with them.

Therefore, teaching technical skills to humanities students – so that they are faced with the similar technical choices of developers — is one way to emphasise that computing technologies, just like the academic monologue, is a series of (applied) choices, arguments and interpretations. But not all schools are equipped to provide computer programming classes and this level of in-depth technical knowledge may not always be achievable or desirable unless the student is considering a longer-term research career in the field. A “critical interpretation” of digital objects may also be fostered by providing technical architectures that open-up critical interpretations of digital objects (within assessable tasks) to broader audiences of students.

This latest *genre* of projects in the digital humanities are sometimes called *Virtual Research Environment* (VREs) and may lessen the need for coding projects from scratch as they provide critical access to underlying humanities data sources through an interpretive “heuristic” framework. This framework provides tools and services to advance understandings and meaningful interpretations of, for instance, classical corporuses or graphical or social data. Large digitisation projects such as *Perseus Digital Library* and *Thesaurus Linguae Graecae* now allow their corporuses to be fed into text mining systems and text encoding systems [Crane 2011] [Thesaurus Linguae Graecae 2011] [eAqua Project 2011]. Tasks may be set within these *Virtual Research Environments* to invite students to locate and compare significant occurrences of terms and places in a given corpus, or compare fragmentary texts, or classify texts. As long as the technical framework and the choices being made by the developers of this framework are transparent and open to critique — and the corpus is understood in its contextual scholarly setting — the student may be able to appreciate the coming into being of knowledge (and maybe even advance it!).

From delivery of digital objects to interpretive frameworks

For many educators within the humanities, the discovery of the digital humanities, broadly defined, largely came via the World Wide Web; its tools adopted to their domain through search-engines, database construction, large-scale digitisation projects, and digital libraries. As Cathy Davidson of Duke University and co-founded of the Humanities, Arts, Science, and Technology

The first generation of digital humanities was all about data. The excitement and impetus of digital humanities throughout much of the 1990s and continuing to the present was that massive data bases could be digitised, searched, and combined with other data bases for interoperable searches that yielded more complex and complete results in a shorter amount of time than the human mind has ever imagined possible. [Davidson 2007]

However, new-generation digital humanities projects are not just about hastily making data available through databases or digital libraries, but are about creating scholarly, interpretive frameworks to make sense of it. These frameworks allow information to be conceptualised, visualised, analysed, and collaboratively worked upon in order to address questions often never thought possible. And VREs facilitate team and project-based work, highly suitable for the digital humanities in the classroom. In fact, the more transformative effects of digital humanities innovations have been through collaborative team-work and the ability to re-use and relate data through these capacities; again highly desirable for educational purposes [Goldberg and Franklin 2007]. Some innovative examples include:

- **UCLA's *Hypermedia Berlin* (2008):** *Hypermedia Berlin* is a research platform and interdisciplinary collaborative environment for analysing the architectural, cultural, and urban history of Berlin over an 800 year period [Maciuka 2011]
- **Aus-e-Lit (2011):** At the University of Queensland, their Aus-e-Lit project is building a system for classroom teaching and research of a Australian literature and print culture and offers "...compound object authoring, editing and publishing services, collaborative annotation services, data integration and search services. empirical reporting services" [Aus-e-Lit 2011].
- **TAPoR (2011):** TAPoR "...is a gateway to tools for sophisticated analysis and retrieval, along with representative texts for experimentation. TAPoR has built a unique human and computing infrastructure for text analysis across Canada by establishing six regional centres to form one national text analysis research network. One of the major projects of the network was the development of the portal. This portal is a gateway to tools for sophisticated analysis and retrieval, along with representative texts for experimentation..." [Rockwell 2011].^[4]

A VRE is usually not one technology, but is a set of tools and methods assembled in one place to assist students to manage and model research. VREs are extendable, flexible, and work on a common framework that can be altered to support the needs of specific teaching and research scenarios. A VRE does not have to be "large" because it can support underlying research processes within sub-disciplines or can be constructed around a particular set of research questions and teaching scenarios. A most importantly, a VRE is especially useful for research fields not accustomed to advanced computational methods because it can support knowledge transfer in an opaque way by not just making data available, but by making it available in a way that allows for contextual critique and analysis.

A VRE can be used as a framework to address numerous questions such as those relating to the collaborative analysis of historical documents for historians, to those relating to the annotation of digital media, to student peer review, meta-tagging and/or creating maps through GIS (Graphical Information Systems). A well-considered VRE does not add unnecessary layers to the research and teaching process, but understands these processes so as to build systems that efficiently utilise distributed and collaborative labour. These approaches are highly translatable to formal teaching development because they can be broken into steps, delegated to individuals or teams and are fundamentally collaborative.

Teaching the perspective of others

A challenging perspective within the digital humanities to impart to students is that the Internet and related technologies are far from being simply the "delivery boy" of knowledge [McCarty 2005]. There is an intrinsic message within the medium that goes beyond the offerings to the user that the technical developer provides. A lack of understanding of this has often led to inadvertently biased reference points that construct unnecessarily reductive academic discourses. It is crucial to realise that choices made by programmers and developers to present and order cultural knowledge are also a component of *an opinion*, and without an understanding of the interpretive choices that motivate their actions, we leave a significant gap in our understanding of how developers within the digital humanities shape knowledge production and dissemination.

VREs, if well constructed, may be able to guide students to understand the *socio-technical* conflicts in the learning material being offered whilst receiving reasonable coherent views of the subject matter. Teaching students how to appreciate the perspectives of others (ie. temporality versus depth, practicality and "rigour" versus critical speculative enquiry) is an important component of teaching computing within a humanities context (however, some students do develop highly pragmatic and instrumental understanding of computing versus a more reflective, critical and holistic analysis of the digital materials provided).

VREs not only impact upon the processes of teaching, but also alter the nature of the questions being asked in the first place (and it is possible to argue that the entire history of computing has had the core endeavour to "augment the human intellect" and to assist individual question and decision making processes (e.g., [Bush 1945], [Engelbart 1962], [Nelson 1965]). The approach offered by VREs combines a theoretical sophistication with technical proficiency to expose important issues to critique in ways that were previously unavailable. Students come together to explore types of collaborative activity that would otherwise be difficult or impossible. Designing this collaboration around a central theme that integrates the student experiences, the knowledge in the field, and a healthy social interaction, means that new question about the digital objects being provided may emerge [Beane 2007]. This yields insights and develops skills that are valuable and meaningful in humanities education whilst lessening the need to teach the basics of computer programming.

Conclusion

Many of us learnt interdisciplinarity the same way we learned about computing: the hard way. But a new generation of projects in the digital humanities may lessen the need for programming whilst to exposing to critique the underlying technical decision-making process. Whilst it is important to "make stuff" in the digital humanities, different schools have different capacities to do this and VREs may be one way to impart digital humanities values and processes without the need to build projects from scratch.

The questions concerning technology and society go back centuries and it is naïve to believe that the digital humanities and the tools and methods produced within it fold can somehow obviate the larger ingrained structures of cultural practice in education. In the Anglo-Saxon tradition, technological education generally comes from a heritage of utilitarian and vocational training whilst the humanities have been traditionally more valued by the middle classes. Building *hard-interdisciplinary* relationships between humanities and technology should engender a critical and deeply scholarly understanding of technological production, and VREs are one way to bridge this gap in the classroom.

Notes

[1] For a list of definitions of the humanities computing/digital humanities, by those working in the field, see: [Rockwell and Newman 2009].

[2] Willard McCarty refers to this exchange of methods as a *Methodological Commons* [McCarty 2005].

[3] British Architect Cedric rice ridiculed technical-determinist approaches in architecture [Price 1979].

[4] See Geoffrey Rockwell's description of the project on Arts-humanities.net, King's College London; http://www.arts-humanities.net/projects/tapor_text_analysis_portal_research.

Works Cited

Aus-e-Lit 2011 University of Queensland. *AUS-e-Lit*. University of Queensland. <http://itee.uq.edu.au/~ereseach/projects/aus-e-lit/>><http://itee.uq.edu.au/~ereseach/projects/aus-e-lit>.

Beane 2007 Beane, J. *Curriculum Integration*. New York: Teachers College Press, 1997.

Bowman 2011 Bowman, Alan. *Building a Virtual Research Enviroment for the Humanities*. http://bvreh.humanities.ox.ac.uk/news/e-Science_Demonstrator.

Busa 2005 Busa, Father Roberto. *Index Thomisticus*. Milan: Catholic University of the Sacred Heart, 2005. <http://itreebank.marginalia.it>.

Bush 1945 Bush, Vannevar. "As We May Think". *Atlantic Monthly* 176: 1 (1945), pp. 641-649.

Crane 2011 Crane, Greg. *Perseus Digital Library*. Tufts University. <http://www.perseus.tufts.edu>.

Davidson 2007 Davidson, Kathy. *Data Mining, Collaboration, and Institutional Infrastructure for Transforming Research and Teaching in the Human Sciences and Beyond*. HASTAC (Humanities, Arts, Science, and Technology, Advanced Collaboratory). Duke University, 2007. <http://www.hastac.org/blogs/cathy-davidson/data-mining-collaboration-and-institutional-infrastructure-transforming-research>.

Deegan 2011 Deegan, Marilyn, ed. *LLC: The Journal of Digital Scholarship in the Humanities*. Oxford: Oxford University Press, 2011.

Engelbart 1962 Englebart, D. *Augmenting Human Intellect: A Conceptual Framework*. Menlo Park: Stanford Research Institute, 1962. http://www.invisiblerevolution.net/engelbart/full_62_paper_augm_hum_int.html.

Fine Rolls 2011 Centre for Computing in the Humanities. *Fine Rolls of Henry III*. Centre for Computing in the Humanities, King's College London and partners. <http://www.finerollshenry3.org.uk/home.html>.

Goldberg and Franklin 2007 Goldberg, David Theo, and Kevin D. Franklin, eds. "Socializing Cyberinfrastructure: Networking the Humanities, Arts, and Social Sciences". *CT Watch Quarterly* 3: 2 (2007).

Maciuka 2011 Maciuka, John. *Hypermedia Berlin*. UCLA. <http://www.berlin.ucla.edu>.

McCarty 2005 McCarty, Willard. *Humanities Computing*. New York and Basingstoke: Palgrave Macmillan, 2005.

Nelson 1965 Nelson, Theodore H. "A File Structure for the Complex, the Changing and the Intermediate". Presented at *Association for Computing Machinery* (1965).

Price 1979 Price, Cedric. London: Pidgeon Audio Visual/World Microfilms, 1979

Ramsay 2011 Ramsay, Stephen. *On Building*. January 11 2011. <http://lenz.unl.edu/papers/2011/01/11/on-building.html>.

Rockwell 2011 Rockwell, Geoffrey. *TAPoR (Text Analysis Portal)*. University of Alberta. <http://portal.tapor.ca>.

Rockwell and Newman 2009 Rockwell, Geoffrey, and John Newman. *How Do You Define Humanities Computing/Digital Humanities?* Tapor Project, University of Alberta, 2009. http://tapor.ualberta.ca/taporwiki/index.php/How_do_you_define_Humanities_Computing/_Digital_Humanities%3F#How_do_you_define_Humanities_Computing_2F_Digital_Humanities.3F_282009.29.

Thesaurus Linguae Graecae 2011 University of California Press. *Thesaurus Linguae Graecae (TLG)*. Irvine: University of California Press, 2011. <http://www.tlg.uci.edu>.

eAqua Project 2011 University of Leipzig. *eAqua Project*. University of Leipzig. <http://www.eaqua.net>.



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