

Competing Ideologies of Collaborative Research

Arienne M Dwyer

University of Kansas (Professor, Anthropology; Co-Director, Institute for Digital Research in the Humanities) &
CUNY Graduate Center (Visiting Professor of Digital Humanities)

Abstract

Collaboration advocacy is born both of perceived necessity and ideology. Necessity, since for *in situ* language research, community partnerships and interdisciplinary work have resolved problems of non-collaborative research (e.g. fraught communication, lack of access, limitations of data, theory, or methodology). But this advocacy also reflects ideologies of “empowering research” (Cameron et al. 1992).

Strenuous objections to collaboration have been raised by a few within documentary linguistics and within the humanities in general. Some scholars are concerned that political correctness is overwhelming academic concerns (Malik 2000, Crippen and Robinson 2011). Some humanists view collaborative approaches entailing larger data sets as a covert rejection of contemporary literary analysis (Golumbia 2012). The pushback against collaborative approaches is ideological, rather than methodological or theoretical, and mirrors larger trends in the humanities.

Do ideologies of collaboration create new obstacles to research? If so, what approaches could mitigate such effects? Identifying both methodological and ideological barriers enables better practice in linguistics, from research design through data analysis.

1. Collaboration as an imperative

Collaboration entails the participation of two or more individuals or entities doing academic research with a common vision towards common goals. The most frequently-cited reasons by digital humanists for collaboration are the different skills that research partners contribute (Siemens et al. 2009); other common reasons include increased productivity, better and more diversified methodological approaches, and the ability to complete a complex project on a deadline (id.).

Scholars in other disciplines including linguistics cite similar motivations. The practice and recognition of collaboration in the humanities was extolled in the 2011 presidential address of the Modern Language Association:

“As a profession, we ought to extrapolate and expand this model of collaboration into the rest of our practices, by embracing co-teaching, collaborative research, co-authorship of dissertations and articles, of blogs and books, and all the innovative forms of networking that are ensuing

from new technologies and the digital humanities. This is already under way. Full speed ahead.” (Berman 2012: 452)

The view advanced by Berman and many others is optimistically activist: new technologies facilitate collaboration, developing knowledge, and developing disciplines. In the last decade, collaboration in the humanities – primarily in the context of digital humanities – is becoming increasingly central to research. Numerous grant initiatives and publications treat collaboration as an intellectual imperative (e.g. Inman, Reed and Sands 2004, Deegan and McCarty 2012). Collaboration is promoted to encourage interdisciplinary research across 'divides': “transcending divisions between the arts, sciences, and humanities; between the academy, industry, and culture; between practitioners and theorists” (Zorich 2008: 11).

By bridging disciplines, collaboration's mix of methods leads not only to novel results, but also could be the harbinger of new hyphenated disciplines: “Digital technologies provide new ways of processing these questions and of communication [sic] the results of the scientific labor. Particularly, this technology provides new instruments to deal with large quantities and statistics (see, for instance the Google Ngram Viewer). This opens new possibilities to the quantitative *humanities*, used up to now mainly by linguistics” (Koller 2012).

This particular brand of idealism is focused on the promise of quantitative analysis to make sense of large humanistic data sets. The very word choices ('instruments', 'scientific labor', 'statistics', 'quantitative') that signal a willingness to transcend disciplinary divisions are those that most alarm critics of collaborative approaches, as we will see in the next section.

Ideologies of collaboration are accompanied by the positive valuation of the maximal sharing and access of scholarly resources. In this view, a scholar has a responsibility towards her discipline and relevant communities (both academic and local) to share both the “raw data” and the results of research, in a form (or range of forms) that is accessible to both scholarly and non-scholarly audiences. Some instantiations of these ideologies are the research results access requirements of most U.S. federal research funding agencies, the Open Access (to scholarly publications) movement (Suber 2012), and the Access to Knowledge movement (<http://a2knetwork.org/>). Making scholarly results publicly available has long been standard practice in the natural and medical sciences, and now federally-funded social scientists and linguists in the U.S. are subject to such mandates.

Such ideologies of the intellectual and economic necessity of collaboration have not penetrated linguistics as much as one might expect, in part given that it is a discipline that spans humanities, social sciences, and natural sciences. Documentary, experimental, and typological linguists are more likely than other linguists to be involved in collaborations due to practical, economic and intellectual necessity. Collaborative projects are more likely when the research is longer term, more expensive, and requires multiple disciplines to answer

research questions; collaboration is also more likely when the majority of others in the discipline are collaborating (thus there is both a positive ideology and a habit of collaboration).

A fourth, ethical dimension has emerged to complement the practical, economic and intellectual motivations for collaboration cited above. Egalitarianism emerges as a primary motivator for collaboration: consultatively establishing protocols, equally valuing the intellectual contributions of all project members (especially those of native speaker partners), and equally recognizing the contributions of all members to the results of a project (Rice 2006, Dwyer 2006, 2010, Penfield et al. 2008, Czaykowska-Higgins 2009). The CoLang Institute for Language Research was founded on these participatory principles, contrary to other linguistics institutes focusing exclusively on theory and/or methods; its charter (CoLang 2012) reads similarly to the MLA statement above, and emphasizes collaborative learning, teaching, and research.

The ethical concerns of documentary linguists tend to center more on relationships with native speaker colleagues, while those of digital humanists tend to center instead on their relationships with scholarly products. Both approaches attempt to redress perceived wrongs of the past, particularly for group members who are seen as (historically) disempowered. Documentary linguists tend to focus on egalitarian relationships in reaction to native speaker consultants having been treated as objects to be vacuumed of data; digital humanists tend to focus on project members (especially graduate students) being accorded credit in publications and websites, in reaction to the invisibility of students, technologists and data entry personnel in past humanities publications.¹

These related but distinct ethical foci highlight two major aspects of working together: that collaboration creates its own social microsphere (a community of practice), and that the products of collaboration are likely to have numerous contributors. Both the complex social microsphere and multi-authored products demand an initial negotiation and periodic re-examination of ground rules (e.g. for communication and for copyright, among many other aspects). Such discussions of practice are viewed as the temporal price one pays for being ethical.

So researchers cite practical, economic, intellectual and ethical motivations for collaboration. Working with others on a project may seem like a carrot to some, and a stick to others, but is in any case a necessity for many scholars. Those who view technology-enabled collaboration as humanism's Great Leap Forward see immediate and long-term benefits for research, teaching, publication, and even society as a whole. So what's not to like?

1 These tendencies are of course not absolutes: digital humanists also are sensitized to power dynamics within research teams, and linguists are also ethically concerned with academic aspects of collaborations. Both groups certainly attend to team relations. Nonetheless, when expounding publicly on research ethics (e.g. in blogs and publications), linguists focus more on empowering *relations* while digital humanists focus more on empowering *products*.

2. Collaboration as a Trojan horse

The implicational corollary to embracing collaboration (along with its touted intellectual and methodological advantages) is that those who do not collaborate remain trapped within narrow disciplines, along with the methods and theories of yesteryear. Not embracing technological advances risks one being branded as outmoded and intransigent. Solo researchers may be less likely to obtain research funding and may be at a competitive disadvantage on the job market.² With so much at stake, small wonder that the exuberant push for collaboration has been met with resistance, ranging from cautious skepticism to outright hostility. On one end of the scale, collaboration skeptics caution against the uncritical adoption of new and possibly inappropriate techniques from apparently unrelated disciplines like the natural sciences; on the other end, the intellectual, technological and possibly economic bases of humanistic scholarship are under threat.

Starting with the milder critique: A major motivation for the documentation of endangered languages has been the view that every language holds valuable and possibly unique local indigenous knowledge. A provocatively-titled article "Let them Die" rejects this view: Why should we waste our time collaborating on endangered languages, when languages disappear all the time anyways (Malik 2000)? Others embrace the idea of languages as embodied local knowledge, but reject the clarion call of doing this work collaboratively (Crippen and Robinson 2011). A preference for non-collaborative work stems from practical and ideological concerns. The practical concerns were not made available to this author (in the true spirit of non-collaboration, those authors ignored requests for a copy of their talk), but based on the abstract seem to center justifiably on the agility of the solo researcher in a native speaker community (id.). The ideological concerns (clearly expressed in the abstract) indicate that these authors misunderstood critiques of Lone-ranger Linguistics (Dwyer 2006) and lone-wolf research (Austin 2007) as critiques of *all* solo research. (In fact, Dwyer and Austin explicitly endorsed both collaborative *and* solo research approaches that recognized the contributions of community members; these authors were rather critiquing the practice of linguistics by a sole researcher in service of neocolonialism and/or sole scholarly glory.) To be fair, for students (such as the above skeptics), academic or larger-scale community collaborations are often impractical (a point to which we return in §3 below) but this challenge does not absolve even the solo researcher of recognizing the contributions of all parties.

A more substantive objection is the possibility that collaborative approaches are a covert repudiation of the humanistic approaches to culture and knowledge developed in the last fifty years, and represent yet another incursion of neoliberalism into academia. One form of this thesis is that collaborative approaches entailing the quantitative analysis of larger data sets represent not

² As an impressionistic estimate, at least one-quarter of humanities job postings this year mention 'digital media' or 'digital humanities' as a desideratum.

an intellectual advance, but rather a return from modern literary theory to the bad old days of scientific positivism. Recalling Koller (2012)'s 'instruments', 'scientific labor', and 'statistics' above, some proponents of technology-assisted collaboration sound as if humanism should be about measuring things. This quantitative approach is seen as a direct challenge to cultural theory and contemporary literary analysis (Golumbia 2012, Graham 2012). "Literature is not data" (Marche 2012).

The specific threats seems to be "distant reading" (Moretti 2005) and "big data": the idea that literary questions could be answered by searching a large group of texts for key words, collocations, and patterns. This now-common digital humanities approach assumes that data mining can reveal latent meanings and assist in the interpretation of texts. How many times Person A talks to Person B can be counted, or the types of adjectives used to describe characters can be compared. Besides the individual scholarly projects using distant reading, tools have been developed to exploit and visualize the results of these queries, for example, Voyant (Sinclair and Rockwell 2012) and Google Ngrams (Google 2012).

Quantitative approaches are faulted for *obscuring* rather than revealing patterns in text, in that the queries are bound to be limited by a scholar's interests; thus, computationally-assisted scholarship is "a criticism that narrows meaning to the significances designed by an author, a criticism that generalizes from a text as small as half a line (Fish 2012)." In a computational world, it is claimed, only binary distinctions are possible, and the resultant scholarship is by necessity positivistic and lacking nuance; it is "a criticism that insists on the distinction between the true and the false, between what is relevant and what is noise, between what is serious and what is mere play" (id.).

"Distant reading" purposefully (flagrantly?) contrasts with "close reading," a central approach to humanistic inquiry. Much like the "thick description" of anthropologists and social scientists, these techniques entail a rigorous interpretation not only of all aspects of a text (which may be an event) and its participants, but also the prior discourses indexing the text. Critical reading and critical reflexivity are central components of such inquiries, including the evaluation of the mediating effects of personal, scholarly, and societal ideologies. The interpretive acts of close reading and thick description are complex, unpredictable, and above all intensely human-mediated. So it is surprising, perhaps, that machine algorithms can uncover meaningful patterns that the human cannot (Ramsay 2011).

Distant reading causes discomfort because it implies that artificial intelligence enhances human intelligence. It is a kind of a collaboration between a human and a machine. If we extending this line of thought to its ultimate conclusion: so if quantitative techniques appear to reject accepted literary methods now, they could well represent the wholesale replacement of humanistic techniques with artificial intelligence. The machine-assisted techniques of today might be replaced by the machine-*driven* techniques of the future.

While no one, even those hostile to collaborative approaches, has publicly expressed an outright fear of artificial intelligence, humanistic scholarship is still presented as a zero-sum game, in which quantitative approaches cannot co-exist with qualitative ones. Digital humanities and cultural theory are presented as if they were engaged in a struggle for dominance. So clearly the main discomfort is ideological rather than methodological.

Another related argument against collaborative approaches is the suspicion that larger economic forces or at least their ideologies are actually behind humanistic collaborations and quantitative “big data” approaches. “Collaboration favors large corporations” (Fish 2012). The most well-known semi-collaborative example of a big data project is Google's book digitization project, which provides an electronic database for tools like their Ngram viewer (which allows visualization of simple diachronic word and collocation searches). While appreciating the tool for the rough impression it provides, we humanists also notice shortcomings of the data and the tool itself (e.g. granularity, accuracy, format, lack of metadata), and ponder the trade-off between data availability and near or outright violation of copyright.

Objections like Marche (2012)'s “literature is not data,” is partly a claim that literature is irreducible and thus unsuited to algorithmic approaches (as above). But the statement also implies that all data must be exploited quantitatively; he appears to confuse the term 'data' with 'commercial data' of the sort that Google and many other businesses collect. This kind of view can lead to the fear that scholars are somehow inadvertently participating in commercial data mining when they do humanistic data mining using resources like GoogleBooks.

With neoliberal management dominating the ongoing cost-cutting in North American institutions, it is no wonder that some scholars see at least an ideological relation between institutional changes and those in the humanities. The economic notions “efficiency” (production for the lowest cost), “competition,” and “sustainability” (economic independence) have always been factors in planning large collaborative research projects. But recently these ideologies have been used metaphorically in humanistic explanation. In arguments about the problem of language loss and endangerment, for example, Golumbia (2010) writes, “[t]here are too many economic (“competition”) and bad pseudo-biology (again, “competition”) metaphors in the writing on this subject. I think we need to ask more and more how to *undo* this “positive power” of major languages, in addition to talking about saving languages.” (I agree that a survival-of-the-fittest argument for why some languages disappear is only distracting from a discussion of the actual factors.)

Most “big data” mining projects in other humanities fields require a team of people and, depending on the data source, collaboration with industry. The industry partner might or might not benefit commercially. While there is absolutely no *a priori* disadvantage to such a collaboration, some of the skepticism from humanists is likely rooted in the suspicion that the humanist will

be tainted either by economic ideologies or by association with commercial enterprises.

These cautions of ideological drift, and clarifying our terms ('data,' 'interpretation,' 'mining') are well worth minding; the outright hostility towards non-traditional collaborations, less so.

Finally, an overview of debates on academic collaborations would be incomplete without mentioning the challenges of organizing, maintaining, and receiving scholarly recognition for a collaboration. Building and maintaining trust and continuing communication (the aforementioned community of practice) is very challenging and time-consuming, particularly in a distributed, non-face-to-face environment. Institutions often reward individual work and lead investigatorships, which is a disincentive for collaboration (Unsworth 2007).

The lack of recognition for multiple-authored scholarship in many humanities disciplines as well as in socio-cultural anthropology is well-known (Nowvieskie 2011).

3. Collaboration as a growing norm

Humanistic scholarship may be a collaborative or a solo endeavor, as appropriate to a project's topic, scope, budget, and personnel. The number and types of humanistic collaborations, though, will continue to rise. Even in natural science journals, international collaborative publications constitute only 35% of all scientific publications, but these have risen 10% in the last 15 years (Royal Society 2011: 6).

The concerns raised about collaboration have provoked a stimulating debate, which allows us to question and improve our practices as documentary linguists and humanists. Collaboration is clearly not appropriate under all circumstances for all projects; if it is appropriate, working together is likely to greatly expand our disciplinary range, the questions we ask, and the kind, quantity, and quality of results we produce. Collaboration facilitates communication and knowledge-building, it helps us to share and aggregate materials, and it facilitates the production of knowledge through joint annotation, transcription, and translation (Spiro 2009).

Distributed collaboration has been enabled and enhanced by communication and other technologies. And as scholars – who often already work at the boundaries of their disciplines – collaborate, we combine methods and tools from various disciplines in possibly novel ways. One of those developments has been the adaptation of a range of data visualization techniques to humanistic pursuits. Another is the extension of corpus linguistics-like approaches to documentary, typological, and historical linguistics, as well as to other humanities disciplines like history and English. A number of these approaches are quantitative and require comparatively large digitized datasets. The quantitative approaches have been criticized for being at the very least a

blunt tool, and possibly a covert attempt to undo a half-century of humanistic scholarship, whether as an academic or an economic coup.

But quantitative approaches have been intended to be used *with* rather than instead of traditional close-reading approaches. They do not require hypothesis-testing and verification, unlike in the natural sciences (Ramsay 2010). Further, integrating distributed collaborations may well facilitate the dissemination of ideas: “[D]igital technologies will have, and have had already, their biggest impact in changing the ways scholars communicate their work to the public. It’s easier than ever to deliver useful content to readers, both on engaging online multimedia archives, and on websites — like this one — that combine scholarly and popular writing to put avid readers in touch with buzzing literary and cultural scenes” (Selisker 2012).

Quite opposite to Fish's (2012) Chicken-Little scenario, if we pay attention to the kinds of questions qualitative and quantitative humanists ask, we will know both what is possible and what our limits are: “But in their own corners, the new methodologies of distant reading and data mining are also changing how we understand the limits of what we can know about culture in the digital age” (Selisker 2012). We multiply our interpretive possibilities (Ramsay 2011).

Ultimately, perceived differences between the two camps may be greater than actual differences. In documentary linguistics, scholars collaborate with native speaker communities and other scholars to a greater or lesser degree, depending on the point in their career trajectory, their goals, and their means. Early-career scholars, particularly students, rarely have the logistical, financial, and temporal means to organize and manage a collaboration between scholars; the scholarly standard of the single-authored dissertation based on completely original research has mitigated against collaboration.

Since building communication structures, learning how to collaborate and share governance, and develop a community of practice takes so much time, collaboration is also inadvisable for small and short-term projects with limited grant funds (Unsworth 2007), e.g those 6-12 months. For longer-term projects, though, these efforts pay off in methodological, intellectual, and efficiency gains. So collaboration may well be unwieldy, and it may well be twice the work of a solo project, but the results may be better (id.).

Another obstacle to collaboration is the lack of adequate scholarly recognition. Yet scholars are already conventionalizing the practice of detailing their contributions on the products (“deliverables”, below) of research: “...Under traditional tenure and promotion guidelines, single-author articles are afforded more weight than multiple author ones. However, the realities of applied work in which anthropologists work closely with multi-disciplinary teams and with community-based practitioners, often require –logistically and ethically– the inclusion of multiple parties in the dissemination of results. The narrative should clearly state the “deliverables” of applied work.” (American Anthropological Association 2012).

Secondly, as more scholars collaborate, co-authorship will be more and more the norm; thus, evaluation standards of these fields will change. So evaluation standards for former "lone scholar" documentary linguists and socio-cultural anthropologists will eventually become more like those for archaeologists, who have had a longer tradition of interdisciplinary collaboration (Nowvieskie 2011).

Data mining is well-accepted for linguistics and even for language-use questions in literature, but still controversial for answering literary questions *per se*. I have not heard of a digital humanist who claims that quantitative approaches can answer *all* literary questions; rather, humanists who collaborate with language technologists simply claim that *some* questions can be answered with computational assistance, including some that would not be answerable manually.

I advanced the possibly controversial view that computationally-assisted research techniques such as data mining are a kind of human-machine collaboration, and that this collaboration is a source of ideological discomfort. As such, the distant vs. close reading controversy occupies a central place in any discussion of collaboration. It is a discussion that should continue.

References

- American Anthropological Association. 2012. Academic Tenure and Promotion Resources. Online: <http://aaanet.org/profdev/Academic-Tenure-and-Promotion.cfm>
- Austin, Peter K. 2007. Training for language documentation: Experiences at the School of Oriental and African Studies. In D. Victoria Rau and Margaret Florey (eds.), *Documenting and Revitalizing Austronesian Languages*, 25–41. Honolulu: University of Hawaii Press.
- Berman, Russell A. 2012. Teaching as vocation. *PMLA*, 127.3: 451–459.
- Cameron, D., E. Frazer, P. Harvey, M.B.H. Rampton, and K. Richardson. 1992. *Researching language: issues of power and method*. New York: Routledge.
- CoLang 2012. Institute for Collaborative Language Research Charter. 26 June. Online: <http://idrh.ku.edu/colang2012/charter/>.
- Crippen, James and Laura Robinson. 2011. "In defense of the "lone wolf": Collaboration in language documentation." Presentation at the International Conference on Language Documentation and Conservation, Honolulu.
- Czaykowska-Higgins, Ewa. 2009. Research Models, Community Engagement, and Linguistic Fieldwork: Reflections on Working within Canadian Indigenous Communities. *Language Documentation and Conservation* 3.1:15–50. Online: <http://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/4423/czaykowskahiggins.pdf>.

- Deegan, Marilyn and Willard McCarty (eds). 2012. *Collaborative Research in the Digital Humanities*. Ashgate.
- Dwyer, Arienne M. 2006. Ethics and practicalities of cooperative fieldwork and analysis. In Gippert, Jost, Nikolaus Himmelmann and Ulrike Mosel, eds. *Fundamentals of Language Documentation: A Handbook*. Berlin: Mouton de Gruyter, pp. 31–65.
- Dwyer, Arienne M. 2010. Models of Successful Collaboration. In N. Louanna Furbee and Lenore A. Grenoble, eds. *Language Documentation: Practice and Values*. Amsterdam: Benjamins: 269–284.
- Fish, Stanley. 2012. Mind your ps and bs: the digital humanities and interpretation. *New York Times* January 23, 2012. Online: <http://opinionator.blogs.nytimes.com/2012/01/23/mind-your-ps-and-bs-the-digital-humanities-and-interpretation/?scp=1&sq=stanlet%20fish&st=cse>
- Google. 2012. Google N-Gram Viewer. Online: <http://books.google.com/ngrams>
- Golumbia, David. 2010. Re: Are dying languages worth saving? (fwd link). *Indigenous Languages and Technology* listserv, September 15.
- Golumbia, David. 2012. Why Digital Humanities Hates Literary and Cultural Studies: The Secret History, and What to Do About It. Presentation at Carnegie Mellon University's English department. Online: <http://wp.vcu.edu/english/2012/02/25/dr-golumbia-and-why-digital-humanities-hates-literary-and-cultural-studies/>
- Graham, M. 2012. Big data and the end of theory? *The Guardian*. Mar 9. Online: <http://www.guardian.co.uk/news/datablog/2012/mar/09/big-data-theory>
- Inman, James, Cheryl Reed and Peter Sands (eds.). 2003. *Electronic Collaboration in the Humanities: Issues and Options*, Mahwah, NJ: Lawrence Erlbaum.
- Koller, Guido. 2012. Jean-François Lyotard, Delegitimization and Digital Humanities. 05-18. Online: <http://wethink.hypotheses.org/320> .
- Marche, Stephen. 2012. Literature is not Data: Against Digital Humanities. *LA Review of Books*. October 28. Online: <http://lareviewofbooks.org/article.php?type=&id=1040&fulltext=1&media=#article-text-cutpoint>
- Malik, Keenan. 2000. Let them die. *Prospect*. Online: <http://www.kenanmalik.com/essays/die.html>
- Moretti, Franco. 2005. *Graphs, Maps, Trees: Abstract Models for Literary History*. Verso.
- Nowviskie, Bethany. 2011. Where Credit Is Due: Preconditions for the Evaluation of Collaborative Digital Scholarship. *Profession 2011*: 169–181. Online: <http://www.mlajournals.org/doi/pdf/10.1632/prof.2011.2011.1.169>
- Penfield, Susan D., Angelina Serratos, Benjamin V. Tucker, Ameria Flores, Gilford Harper, Johnny Hill, and Nora Vasquez. 2008. Community Collaborations: Best practices for North American indigenous language documentation. *International Journal of the Sociology of Language* 191: 187–202. Online:

- http://www.ualberta.ca/~bvtucker/Papers/penfield_serratos_tucker_flores_harper_hill_vasquez_IJSL.pdf . Accessed April 2008.
- Ramsay, Stephen. 2010. The Hermeneutics of Screwing Around; or What You Do with a Million Books. April 17. Online: <http://www.playingwithhistory.com/wp-content/uploads/2010/04/hermeneutics.pdf>
- Ramsay, Stephen. 2011. *Reading Machines. Towards an Algorithmic Criticism*. University of Illinois Press.
- Rice, Keren. 2006. Ethical issues in linguistic fieldwork: An overview. *Journal of Academic Ethics* 4: 1–4.
- Royal Society. 2011. *Knowledge, Networks and Nations: Global Scientific Collaborations in the 21st Century*. London: The Royal Society. Online: http://royalsociety.org/uploadedFiles/Royal_Society_Content/Influencing_Policy/Reports/2011-03-28-Knowledge-networks-nations.pdf
- Selisker, Scott. 2012. The Digital Inhumanities? *L.A. Review of Books*. Nov 5. Online: <http://lareviewofbooks.org/article.php?type=&id=1146&fulltext=1&media=#article-text-cutpoint>
- Siemens, Lynne, Wendy Duff, Richard Cunningham, Claire Warwick. 2009. "It challenges members to think of their work through another kind of specialist's eyes": Exploration of the Benefits and Challenges of Diversity in Digital Project Teams. Presentation to the American Society for Information Science and Technology Annual meeting. Online: <http://www.asis.org/Conferences/AM09/open-proceedings/openpage.html>
- Simeone, Michael, Jennifer Guiliano, Rob Kooper, Peter Bajcsy. 2011. Digging into Data: using new collaborative infrastructures supporting humanities-based computer science research. *First Monday*. Online: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/rt/prINTERfriendly/3372/2950>
- Sinclair, Stéfan and Geoffrey Rockwell. 2012. Voyant Tools. Online: <http://voyant-tools.org/>
- Spiro, Lisa. 2009. Examples of Collaborative Digital Humanities Projects. Online: <http://digitalscholarship.wordpress.com/2009/06/01/examples-of-collaborative-digital-humanities-projects/>
- Suber, Peter. 2012. *Open Access*. MIT Press.
- Unsworth, John. 2007. Problems with collaboration. Digital Humanities Centers Summit wiki. Online: <https://apps.lis.illinois.edu/wiki/display/DHC/Problems+with+collaboration>.
- Zorich, Ellen. 2008. *A Survey of Digital Humanities Centers in the United States*. Washington, D.C.: Council on Library and Information Sciences Publication 143.