

Digital Humanities Scholarship and Electronic Publication

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Abstract

This chapter argues that the publication and dissemination of digital scholarship relies upon three critical forms of infrastructure: scholarly, social, and technical. Scholarly infrastructure impacts the design choices made in the production of screen-based scholarly works; social infrastructure has to be developed to increase the value and acceptance of such work; and technological infrastructure is needed to ensure sustainability and accessibility of digital scholarship. Drawing on their many years of experience as editors of a digital journal devoted to publishing digital media scholarship, the authors of this chapter examine an NEH-funded digital humanities project they worked on to better the scholarly, social, and technical infrastructures of *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*.

Keywords: Accessibility, Design, Infrastructure, Metadata, Multimedia, NEH, OJS, Peer-review, Sustainability, Webtexts

Introduction

Discussing the creation of the Office of Digital Humanities (ODH) within the National Endowment for the Humanities (NEH), director Brett Bobley (2008) explains that most digital humanities work funded by the NEH involves “collections of cultural heritage materials, which are one of the primary objects of study for researchers across all humanities disciplines. Books, newspapers, journals, paintings, music, film, audio, sculpture, and other materials form a primary dataset for study” (1). What’s missing in this description is the development of collections of new cultural materials that are “born-digital”—that is, texts that are authored to use affordances of screen-based interactions and new media technologies and are neither digitizations of print-based materials nor reproducible in print forms. Following, what is also missing from the ODH description of digital humanities texts is the development of methods and methodologies for both studying and producing these new forms. While ODH’s intended corpus of DH materials has certainly expanded in the intervening years, the focus of many start-up grants funded by NEH are still primarily linguistic (e.g., language-driven) instead of multimodal (e.g., linguistic, visual, spatial, aural, and/or gestural; see Cope & Kalantzis, 2000). As the realm of digital humanities matures, we suspect that there will be a strong turn towards screen-based scholarship—what we are calling scholarly multimedia or *webtexts*—and suggest that digital rhetoric is well-positioned to participate in and contribute to the digital humanities when it does so.

The term “digital rhetoric” is perhaps most simply defined as “the application of rhetorical theory (as analytic method or heuristic for production) to digital texts and performances” (Eyman, in press). In this chapter we take up the relationship between the digital humanities (DH) and screen-based scholarship as a form of digital rhetoric practice. One of

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the ways in which we can further the study of webtexts is to develop scholarly approaches that partake of the same digital rhetoric methods and practices as the works we study. To that end, we argue that digital humanities scholarship that takes advantage of digital, networked media and platforms serves as an enactment of digital rhetoric practice. And as we develop scholarly approaches and platforms that further these practices, it is important to pay attention to the affordances and constraints of these platforms and to carefully consider the intellectual, social, and technological support structures that need to be used in the construction and dissemination of scholarly multimedia work. In this chapter, we reflect on a digital-humanities project we undertook as editors of *Kairos: A Journal of Rhetoric, Technology, and Pedagogy* to discuss how digital rhetoric informs the scholarly, social, and technological infrastructures of this webtextual journal.

Publishing Webtextual Scholarship: Digital Rhetoric and Infrastructure

In a recent review of four books about digital scholarship, Cheryl Ball (2010) notes that most books on this topic address the institutional or technological activity systems of print-based scholarship put online. There is no coherent body of scholarship that offers a sustained analysis of scholarly multimedia and its growing impact on digital scholarship in the humanities, although there are several journals that publish this kind of work. Readers familiar with *Kairos*, for instance, know that it is a peer-reviewed, independent, open-access journal that has been publishing screen-based, media-rich digital humanities scholarship since 1996 (see <http://kairos.technorhetoric.net>). Since its first issue, the mission of *Kairos* has been to publish scholarship that examines digital and multimodal composing practices, promoting work that enacts its scholarly argument through rhetorical and innovative uses of new media. *Kairos* authors design their own webtexts, drawing on whatever technologies, genres, and media they need to enact their arguments. Underlying each design is a unique information architecture of filenames, filetypes, and directories. Every webtext is different and, as editors, we cannot know nor dictate (for the most part) what these combinations might be, which means our submission, copy-editing, and publishing infrastructures must be flexible enough to work with whatever architecture an author creates. (However, there are certain technologies we do not accept, for preservation purposes. If we cannot host it on our server, we will not publish it. This is an infrastructural issue that will, despite its importance, fall outside the scope of what we are able to discuss in this chapter.)

Because the journal is independent and totally open-access, it has no budget, which means the editorial team has historically relied on in-kind donations (of servers, staff time, software, etc.) to fulfill its mission. In addition, the unique designs of webtextual publications, as well as the length of time the journal has been publishing, has meant that the journal's staff has had to rely on hand-made social and technical infrastructures to support its editorial workflow. That is, everything *Kairos* does to publish an issue is done manually since its staff uses the same technologies that were available in 1996: email, listservs, SFTP, and HTML editors. We haven't had the time, technology, or funding to change them in the intervening years. Only recently, and only in response to the DH project we discuss below, did we create a wiki to track some parts of our editorial workflow outside of this hacked-together, low-tech system.

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In 2010, after several years of brainstorming ways to build an editorial-management system that would help us automate our submission, review, and copy-editing processes in ways that were suitable to the multimedia content *Kairos* publishes, we realized we couldn't continue to rely on volunteers to build and maintain such a massive system. So we applied for and received an NEH Digital Humanities Start-Up Grant (Level II, \$50,000) to explore building scholarly multimedia plug-ins for Open Journal Systems (OJS). OJS could automate our back-end workflows such as uploading and tracking submissions, initiating the review process, and tracking the copy-editing process. It had a built-in user-base of over 10,000 journals worldwide that might use or expand on our plug-in prototypes. It seemed an ideal avenue to explore because we would have a community to help support the software instead of a very small group of overworked English professors. A large part of our choosing OJS was based on the infrastructural support we hoped it could provide *Kairos* and the digital rhetoric community.

Based on our tenure as editor and publisher of *Kairos*, we offer a three-part framework to analyze the underlying structures that support digital humanities work: 1) the importance of design as a rhetorical vehicle for scholarly argumentation; 2) the available means of assessment and peer-review; and 3) questions of sustainability of the scholarly work, regardless of form, in the rapidly evolving technological ecosystems of the Internet. We apply these scholarly, social, and technical infrastructural issues to our uptake of OJS for *Kairos's* use. Although this chapter approaches infrastructure from the perspective of editors and publishers, this framework will be useful to digital humanities scholars as they consider whether to engage with publication outlets that can support digital humanities production, as opposed to reporting in traditional, primarily textual forms.

The Scholarly Infrastructure of Digital Scholarship: Design as Rhetoric

The first challenge for scholarly multimedia in the humanities is the rhetorical function of design in the presentation of digital work. Just as Buchanan (1985) argued for the necessity of a theory of rhetoric in design, we posit there is a need for a more explicit theory of design as an integral element of digital rhetoric practice: design-as-rhetoric. For digital rhetoric, design is equivalent to style; thus, scholars must be concerned with understanding all the available elements of document design, including color, font choice, layout, as well as multimedia design possibilities including motion, interactivity, and appropriate use of media. Style in this sense is also an important quality in terms of a given text's use and usability. Bradley Dilger (2010) reminds us that for rhetoric, "style is never optional, as the common sense opposition of style to substance wrongly indicates" (p. 16); rather it is an integral element of all rhetorical communication and the question is not whether we want style or substance, but what kind of style we want to deploy as a component of substance.

The function of design as an enactment of rhetorical practice for digital scholarship is a relationship that we have attempted to champion and promote in each issue of *Kairos*, and the work that we publish has helped to demonstrate how meaning-making need not be solely textual. As we continue to promote the idea that digital scholarship can and should make arguments through the design of the work itself, we call on authors to take up Anne Wysocki's (2004) approach to composing texts in which their designs are overtly enacted through new media (p. 15). In practical terms, engaging design as rhetorical practice means

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that digital humanists need to critically wield both rhetorical and aesthetic principles and bring together the particular design affordances of the medium of scholarly multimedia. The digital rhetorician (and, by extension, the digital humanities scholar) must be able to work equally well with rhetoric, design, and code, if not by himself then in collaboration. Either way, academia's scholarly infrastructures—the ecosystems in which scholarship as an expected product of our reading, teaching, learning, and composing—must support design as much as it already supports “content” (as if content can ever be divorced from its form; see, e.g., Ball & Moeller, 2008; Wysocki, 2001).

At *Kairos*, as at several other online journals in digital rhetoric including *C&C Online* and, more recently, *Enculturation* and *Harlot of the Arts*, design is treated as an equivalent form of argument to written content. Go to any of these journals' websites and peruse the Table of Contents for a few minutes. It won't take long to discover how webtexts look and draw on but function differently than linear scholarship (Ball, 2004; Purdy & Walker, 2010; Purdy & Walker, 2012). Yet, design-as-argument is mostly absent in digital humanities' journals such as *Digital Humanities Quarterly* (DHQ) or *Journal of Digital Humanities* (JDH). The Winter 2012 issue of JDH, on the visually stimulating methodology of topic modeling, is a great resource, but the articles are primarily print-like. Screenshot examples of topic modeling are included as in-line figures, but they are difficult to read because they are shrunk to fit a narrow column of the journal's Wordpress theme (see Fig. 1). In *Kairos*, authors don't have these same infrastructural constraints and can highlight the visual and interactive designs as a main feature of the webtext (see Fig. 2).

The image shows a screenshot of a web page from the Journal of Digital Humanities. The page has a dark purple header with the journal's logo and name. Below the header is a navigation bar with links for 'About', 'Volumes', 'Submissions', 'Reader Survey', and 'Subscribe to the RSS'. The main content area is white and features a table of contents on the left and an article on the right. The article title is 'What Can Topic Models of PMLA Teach Us About the History of Literary Scholarship?' by Andrew Goldstone and Ted Underwood. The article text discusses literary-historical narratives and criticism. Below the text is a network visualization of topics, consisting of blue and green dots connected by lines. A caption below the network reads: 'Figure 1: A browsable network based on Underwood's model of PMLA. Click through, then mouse over or click on individual topics.'

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What Can Topic Models of PMLA Teach Us About the History of Literary Scholarship?

ANDREW GOLDSTONE AND TED UNDERWOOD

Of all our literary-historical narratives it is the history of criticism itself that seems most wedded to a stodgy history-of-ideas approach — narrating change through a succession of stars or contending schools. While scholars like John Guillory and Gerald Graff have produced subtler models of disciplinary history, we could still do more to complicate the narratives that organize our discipline's understanding of itself.



Figure 1: A browsable network based on Underwood's model of PMLA. Click through, then mouse over or click on individual topics.

Figure 1. Design is backgrounded in this typical DH article published online.

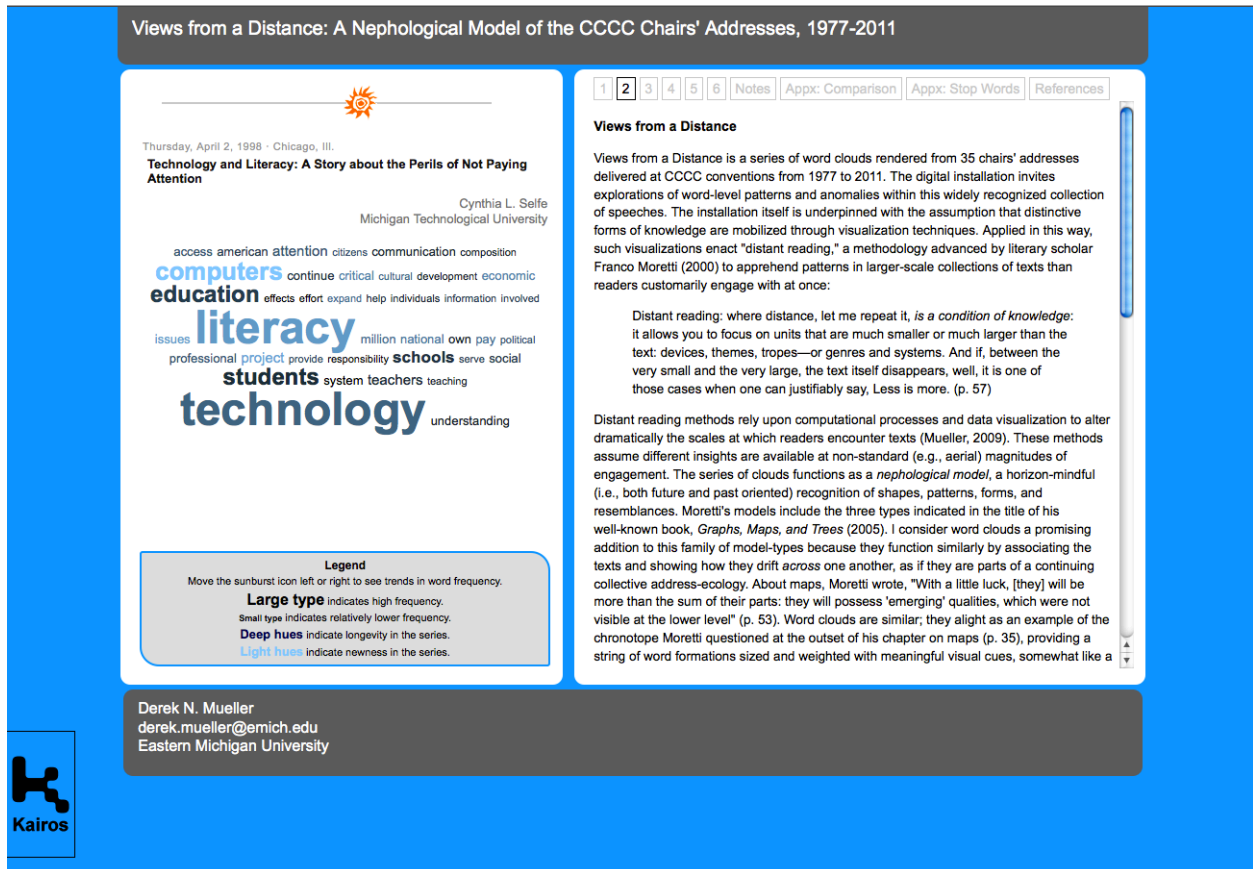


Figure 2. Design is foregrounded (through the word clouds, screen left) in this typical webtext from *Kairos*.

We mention JDH's use of Wordpress not to denigrate that choice—many other online journals use similar content-management systems such as Drupal, CUNY Commons, MediaCommons, and OJS—and for good reasons relating to those journals scholarly (print-based) values. But we do want to point out that, as Cindy and Dickie Selfe (1999) said, interfaces are political, and technical-infrastructure choices are based in scholarly infrastructural values. Wordpress, for instance, only allows certain kinds of media types to be embedded in its pages, and HTML (a primary basis of webtext construction) is not one of them. So, if a journal's technical infrastructure doesn't support scholarly multimedia as an equivalent rhetorical tool to linguistic content, then the scholarly infrastructure of that journal and its discipline is automatically constrained to valuing print-based, linguistic scholarship. Or worse, authors link out to their rich digital humanities project from a print-like article they've written, effectively doubling (or tripling) their workload without ever getting credit for the original, designed work. This retro-active un-mediation (to get digital projects to count within our traditional scholarly ecologies) performs what Gresham and Aftanas (2012) called the second-shift work of digital scholarly production. We argue that until authors, editors, and publishers assume that design-as-argument can be a fundamental part of our scholarly infrastructure in the digital humanities, we will continue to see scholars shoehorn their screen-based projects (think large-scale DH projects like Hypercities, Writing Studies Tree, CompPile, etc.) into print-based, linear, traditional peer-reviewed articles. We at *Kairos* knew, for instance, that OJS was built to publish print-like

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scholarship and that it would be more work than a \$50,000 grant could accommodate to make it suitable to hosting webtexts as a front-end, reader interface. We did not want to ask authors to shoehorn their work into a print-like system. Instead, we hoped to modify OJS to use for our back-end, social, editorial processes such a peer-review, which we discuss next.

The Social Infrastructure of Digital Scholarship: Collaboration and Peer Review

The infrastructure of scholarly practice for digital humanities work is primarily the responsibility of the scholars and publishers of that work; what we are calling the *social infrastructure* is the most difficult of the challenges facing the publication of digital scholarship because the outcomes are dependent on the reception and use of that work. Traditional notions of scholarship and the institutional practices that rely on them (academic recognition, particularly in the form of tenure and promotion) represent a status quo that doesn't align well with new practices. Digital humanities work tends to redefine and complicate what constitutes a scholarly work as well as what should count as scholarly work (see Schreibman, Mandell, & Olsen, 2011; Purdy & Walker, 2010). Digital humanities work also tends to be collaborative, which serves as an additional challenge to the humanities status quo, which valorizes the scholar as an individual contributor to knowledge in the field (Spiro, 2012). One of the benefits of supporting the social infrastructures of digital scholarship is that it helps to show the benefits of collaborative work, which has been a challenge for scholars who publish in traditional forms as well.

Social infrastructure, then, concerns both assessment and peer-review of digital scholarship. We have noticed that digital humanities practitioners at conferences such as HASTAC and DML are beginning to wrestle with the frictions that arise between traditional mechanisms for evaluating the quality of scholarly work and their limited applicability to the assessment of new media scholarship. Thus, we echo Fitzpatrick's (2011) call for additional venues and mechanisms for providing peer-review for scholarly multimedia. Doing so need not look like a traditional journal – indeed, there is a clear need for means of providing assessment for the tools built by digital humanists, the production of digitized and categorized data sets, and scholarly multimedia, and it is likely that the traditional structure and time-bound practices of the academic journal may not be the most appropriate framework for these new publication and review platforms.

At *Kairos*, the new platform we planned integrated the linear, double-anonymous model of traditional journals, replicated and automated in OJS, with the collaborative, multi-tiered model of *Kairos's* partially open peer-review process. During the second tier of review (see “The *Kairos* Editorial Review Process”), editorial board members collaboratively review a webtext submission on a closed listserv. Any one of the 50 board members can participate over a four-week stretch of review. Most submissions receive feedback from at least 5 board members, but some receive more. One of the challenges that *Kairos* has faced over the years is a decreasing number of participants during editorial reviews, we suspect because of overloaded service commitments; reviewing, which takes place over 3- or 4-weeks, often gets re-prioritized in our inboxes since we know others are likely to take up the slack in this collaborative process. But *Kairos* prides itself on always providing a collaborative review, which simultaneously ensures rigor and helpful critique in this non-

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blind process. (Space doesn't allow us to justify here why it is pedagogically inappropriate and technologically impossible to anonymously review scholarly multimedia.)

So, in an effort to increase collaborative participation during editorial reviews, we wanted to add a synchronous review option to our OJS project. Ideally, we would continue to provide the social infrastructure of asynchronous discussion forums, as one feature to the Kairos-OJS codebase (as John Willinsky, creator of OJS, referred to it during the 2011 PKP conference). And we would provide a new feature to that social infrastructure by offering synchronous reviewing, made possible through individual navigation of submissions with annotation tools (sticky notes, highlighters, etc.), text-based chat, and "Share" buttons, so that other reviewers could see the markup on one reviewer's screen. Whereas the editorial board listserv discussions of around 50 scholars tended to make more junior scholars shy at responding when they were unsure of their asynchronous audience, we wanted to revive the communal idea of the late 1990s' Thursday Night MOOs, as the TechRhet community that is *Kairos's* primary audience base called them (John Walter, personal communication). The idea for this multimedia-based OJS review interface was that whenever we had a submission ready for the board, the editors would post a notice for a review about a week in advance and then whoever could show up (drink in hand at that time of the evening, if need be) would live-review the webtext for an hour. A week or two later, the editors would collate those responses with the asynchronous ones from the discussion forums and write a review letter to the author(s). The synchronicity of the so-called Thursday night review also meant that reviewers would have to do less transduction from nondiscursive elements such as images, navigation, and color into discursive elements for a written review when they could circle, highlight, and share their screens in a way the database could capture.

This last point was crucial for us as editor and publisher: We still use YahooGroups for most staff and editorial board work because it archives everything. But a good portion of the journal's work is conducted through non-archived emails, especially with authors. So our interest in migrating to OJS as a back-end for *Kairos* also lay in the fact that it would archive and preserve all of our correspondence in a single place—a technical infrastructural issue not to be dismissed when one considers the amount of email correspondence *Kairos* has produced in its nearly two decades of existence, 100 staff and board members and alum, and nearly 1,000 webtexts it has published.

Sustainability and the Technical Infrastructure of Digital Scholarship

The third issue in editing and publishing scholarly multimedia and digital scholarship in general is sustainability, which includes both access and maintenance. Because technologies and systems are in a state of constant evolution, it is critical to build and maintain sustainable platforms for the publication of digital humanities work. Many scholars in the digital humanities are working specifically on these issues with regard to digital artifacts, and it behooves us to make sure that these concerns are addressed proactively in terms of publication. While it is beyond the scope of this chapter to present the full range of technical best practices and recommendations, we do want to call attention to a few technical infrastructure challenges that are particularly pressing for digital humanities scholarship – each of which impacts the long term usability and sustainability of digital humanities publishing venues. Some of these challenges include a reliance on

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proprietary software, preservation of and access to obsolete formats, and citation rot, among others.

The first of these challenges is the reliance on proprietary software formats. While there has been a general championing of the use of open-source systems for digital humanities work in general, many webtextual forms and digital humanities approaches rely on functionality that is not available via open-source systems. Digital humanities scholars are currently wrestling with the question of preserving and maintaining access to obsolete formats, and even in just the past decade we have seen a rapid shift in formats. As a case in point, one of the most innovative and compelling examples of new media scholarship that we have published in *Kairos*, Anne Wysocki's "A Bookling Monument," (published in 2002) is no longer accessible in all current browsers because the version of Macromedia Director used to create the work is no longer fully supported by the latest version of the Shockwave plugin needed to view the work; moreover, that plugin is not available for Linux-based systems. And between 2006 and 2008, no Shockwave plugin was available for Macs either – which is emblematic of the difficulties of maintaining digital scholarship over multiple platforms and in formats that may change over time (in this case, changes in the platform were made when Adobe Systems bought Macromedia in 2005). Since there is no guarantee of stability, editors and publishers must push for greater use of open-source and sustainable formats, an argument that Karl Stolley (2006), among others, has made repeatedly within the digital rhetoric literature. One of the problems, however, with pushing for open-source versus proprietary systems is that there is not always a good open-source alternative. For instance, "A Bookling Monument" could not be reproduced in current applications (although it would be possible to update it to work more efficiently with the latest version of Adobe Director/Shockwave, but that would require considerable time, energy, and the purchase of fairly expensive software – none of which should become a requirement of scholarly production).

Another key issue for digital scholarship is the quotation and citation of other online works. We have found that almost every work that *Kairos* has published includes links or references to works that have since moved location or vanished entirely. In this case, the author does not have control over what happens to these external sources, so, unlike the issue of format, it is not a question of asking producers to make better or more informed choices about which sources to use; rather, this is an issue that needs to be addressed by publishers directly. In terms of technical infrastructure, we do have some options that can help alleviate this problem. Publishers can support and encourage the use of standardized systems that help track and monitor the location and status of both the works we publish and those that our authors cite by using systems like the International DOI Foundation's document object identifiers (DOIs), which function as "persistent interoperable identifiers for use on digital networks" (DOI Foundation). Because DOIs cost money, however, *Kairos* is limited in implementing them, but we have been pointing to versions of no-longer-extant works archived at the Internet Archive (archive.org) whenever possible (recent policy decisions at IA mean that archive is no longer a stable repository, unfortunately).

For both the proprietary or obsolete format problem and the ephemerality problem, metadata (defined as data about data) will solve some of these problems. We discovered

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this solution when completing a metadata mining project associated with our push to use OJS as a searchable database for *Kairos* webtexts (see Ball, 2013). Metadata provides information about the contents, format, ownership, and publication of a digital work whether that work is still available or not. It also aids in accessibility and research; for instance, if Wysocki's (2002) "A Bookling Monument" webtext becomes inaccessible again due to bitrot or plug-in failures, having a long scholarly and technical description, mimetype(s), and other types of metadata included as part of the webtext will allow readers and researchers to interact with the text in fundamentally more sustainable ways, even if it's not the way the author or editors originally intended. Inclusion of metadata should be an integral part of an author's invention and production process for digital works as well as a standard feature in the digital publishing process.

Building Support for Digital Humanities Infrastructures – A Call to Action

While each of the three infrastructure areas discussed above affects all of the stakeholders who produce and publish digital humanities scholarship, the responsibilities for engaging and developing the foundations for effective production and dissemination reside with different actors for each form—creators of digital humanities scholarship are most concerned with the scholarly infrastructure of rhetoric and design; editors and publishers are best situated to work on the technical infrastructure, and both creators and publishers need to focus on the social infrastructure challenges of these new forms of scholarly work.

Current economic trends impacting scholarly publishing and increasing development and funding of digital humanities work seem to indicate that those of us who support digital rhetoric work find ourselves at an opportune moment to promote digital humanities scholarship writ large. Thus we end with a call to action with an outline of four key tasks that digital humanities scholars and those who support them should undertake:

- Digital humanities scholars need to consider developing and publishing scholarly multimedia work that is effective and accessible—which means learning to deploy rhetoric, design, and code.
- Editors and publishers need to develop new publication and peer-review platforms for screen-based work—and they need to hold scholars to high standards of accessibility, usability, and sustainability.
- Both scholars and publishers need to pay attention to and effectively use technological infrastructure to ensure findability and accessibility of new media scholarship.
- All of the stakeholders in the digital humanities need to educate their colleagues and administrators and push for broader acceptance of new scholarly forms.

Although our efforts at creating a version of OJS suitable to meet these challenges was ultimately unsuccessful (see Ball, Eyman, & Gossett, forthcoming), our NEH start-up grant did allow us to discover that these are, indeed, key challenges and needs for a scholarly community engaged in digital humanities publishing. If we can collectively continue to develop appropriate publication venues and educate those outside of the digital humanities, we have an opportunity to fully support a wide range of innovative new forms of scholarship.

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