The Shifting Genres of Scholarly Multimedia: Webtexts As Innovation

Cheryl E. Ball
West Virginia University

ABSTRACT

In this article, I discuss webtexts as a multi-genre, multi-mediated type of research publication. After briefly describing what webtexts are, how they function, what their histories have looked like, and what media have been used to design them, I examine more closely what genres have been assigned to them and how those genres have fluctuated across time. This article explores how the genres of webtexts can be difficult to stabilize due to their technological and media innovations. This lack of stability is an unsolved preservation problem that rich metadata can partially ameliorate so that readers can interpret and interact with webtexts into the future. Although there doesn't exist any official controlled vocabulary for metadata that would apply to webtext genres, this article

outlines one attempt at creating a vocabulary for webtexts and their media elements that attends to their historical and generic shifts.

Keywords

Writing studies; Rhetoric; Digital publishing; Webtexts; Genre; Metadata; Web history

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INTRODUCTION

In the last two decades, research on academic publishing has offered studies such as citation rates in and between disciplines (e.g., Bott & Hargens, 1991; Hyland, 1999; Smart & Bayer, 1986), peer-review processes and biases (e.g., Fitzpatrick, 2011; Harnad, 1996; Lee, Sugimoto, & Zhang, 2013; Smith, 2006), and the economics of publishing in closed and open-access venues (e.g., Kahin & Varian, 2000; Tenopir & King, 2000; Willinsky, 2006), among many other topics. But for the wide swath of scholars whose research questions are not focused on the production value of academic publications, much of this bibliometric literature will not seem relevant. Indeed, most scholars are likely focused on writing up the single grant application, article, or book necessary to conduct their research and

retain employment. There is, too, a growing body of research on the processes and products of such academic writing, with a focus on the scholar-as-author within institutional, international, and intercultural genre systems (see, e.g., Berkenkotter & Huckin, 1995; Russell, et al., 2009; Swales, 1990; Ventola & Mauranan, 1996).

All of this work informs the media ecologies of academic publishing even as it often elides the *mediated* nature of publishing. One of the first publications to address this mediated nature was Suresh Canagarajah's 1996 article in *Written Communication*, "Nondiscursive' Requirements in Academic Publishing, Material Resources of Periphery Scholars, and the Politics of Knowledge Production," which addressed the difficulty of producing mediated (print-based) scholarship within a "Third World" context. There has been an increase of research on mediated publishing since the advent of the World Wide Web in the early 1990s, when Web-based publishing made it seem easier to allow for multimedia inclusions (Bellotti & Rogers, 1997; Bergeron & Bailin, 1996). Much of this research, however, calls for more multimedia publishing (e.g., Cox, 1998; English, 2005; Whitworth & Freedman, 2009), with very few publishers actually producing any such work. Multimedia-rich

research (in practice and in theory) is often limited to small disciplinary communities in which multimedia is already accepted as a valid and valuable method of scholarly communication (e.g., media studies), and smaller still within communities that value experimentation in their scholarly production.

Ironically, the field where readers can find most multimedia-rich scholarly publications is digital writing studies, which has a 20-year history of such work. Only more recently has media studies and art, fields that certainly value media as a rich communicative tool, made the move to incorporate media as a valued scholarly production tool. For instance, as recently as 2014, multimodal scholars Bill Cope and Mary Kalantzis wrote:

Whole disciplines limited in their publication opportunities by traditional textual exegesis – such as the arts, media and design – might formally be brought into academic knowledge systems in the actual modalities of their practice. New units of knowledge might be created at levels of granularity other than the singular article of today's journals system; fragments of evidence and ideas contributed by an author within an article, and curated collections and mash-ups above the level of an article, with sources duly

credited by virtue of electronically tagged tracings of textual and data provenance. (n.p.)

Why are so many disciplines that value multimedia hesitant to publish scholarly versions of their research that use multimedia as its main form of argumentation? I have discussed elsewhere several infrastructural reasons why disciplines do not adapt their publishing mechanisms to suit multimedia-based scholarship (see Ball, 2015; Eyman & Ball, 2015), but on a very practical level, I believe—as is the same with teaching students new genres—that scholars won't know how to author scholarship that primarily makes meaning out of multimedia without first understanding why and how these texts work. This is a question of genre that I will discuss in the next section.

THE GENRES AND CONVENTIONS OF WEBTEXTS

Scholarly multimedia, or what I call *webtexts*, are research-based artifacts that enact an author's scholarly argument through a web-based design. Each webtext is unique since each depends on the technology and media an author might need to ful-

Figure 1. Screenshot from opening animation of Delagrangé's (2009) "Wunderkammer, Cornell, and the Visual Canon of Arrangement" that users have to interact with as a curiosity cabinet to move further within the webtext.

fill her argument. Figures 1 and 2 are screenshots taken from one webtext in the online journal *Kairos* where the author designed a *wunderkammern*, or curiosity cabinet, to argue that visual arrangement facilitates the invention process in writing. Readers must interact with this *wunderkammern*, clicking on the cabinet to open it (Fig. 1), discovering the 36 nodes inside of it (each of which contains

Figure 2. A screenshot from an internal node within Delagrangé's (2009) "Wunderkammer" webtext that shows juxtaposed images superimposed over the written text and magnified in an animation.

a selection of images, animations, and written text that attend to a smaller point within the argument; Fig. 2), and meandering through the nodes in any order they want to gain a full understanding of the webtext. (These screenshots miss the animation that is a crucial part of the argument.)

Such a webtext makes an argument that is different from the way it would be made in a tradi-

tional scholarly article. Previous scholarship that compares webtexts to traditional scholarly articles has suggested that webtexts use many of the same rhetorical moves as print-based articles do. For instance, Allison Brovey Warner (2007) remarked, "many of the webtexts published in [*Kairos*] address traditional scholarly goals in key conventional ways" (/tool/cat-a/convergence.html). Those conventions include content, arrangement, documentation, and tone. However, webtexts also include conventions that distinguish themselves from print-based texts, such as explicit attention to and inclusion of structural design, form/content relationship, navigational design, link strategies, node strategies, visual design, and multimedia (tool/cat-b/index.html). Warner pointed out that

web-based conventions meet familiar goals of scholarship in presently unfamiliar ways. If they do meet such goals in different or innovative ways, it is important to consider what value/s they add *toward creating a new genre* of scholarly online text. (tool/cat-b/divergence.html, emphasis added)

In a webtext that draws on Warner's methodology, James Purdy and Joyce Walker (2012) provided detailed examples of how webtexts meet familiar

goals of scholarship in both familiar and unfamiliar ways through

- Explicit argument (e.g., literature reviews, peer review, images as evidence, etc.)
- Speculation (in language and design)
- Implicit association (e.g., hyperlinks, juxtaposing textual elements)
- Dialogic exchange (e.g., through implicit and explicit, technological means)
- Formal enactment (through form/content relationships).

Their point was to trace the rhetorical moves that webtexts make, to show that they are scholarly, occasionally in ways—and through various media types—that differ from print-based scholarship. Indeed, they concluded that “Identifying the rhetorical moves characteristic of digital scholarship can help us begin to understand these new academic genres and their value to meaning-making in the discipline” (n.p.). Webtexts are typically published in journals in the humanities and, more recently, the arts, likely due to the disciplinary acceptance of multimodal (aural, visual, gestural, etc.) and (digital) design strategies as rhetorical, semiotic means of communication in these fields (see, e.g., Cope & Kalantzis, 2000; Eyman, 2015; Eyman & Ball,

2014; Liestøl, 2010; Liestøl, Morrison, & Rasmussen, 2004; Kress, 2010).

Webtexts are a genre of scholarly multimedia that can be traced back to 1996, when the journal *Kairos: Rhetoric, Technology, and Pedagogy* first began publishing (see <http://kairos.technorheto-ric.net>). As an editor of this journal since 2001, I have worked first-hand with over 350 webtexts through the submission, peer-review, and copy-editing processes, gaining intimate knowledge of their genres, and generic fluctuations, across time. There were other humanities-based electronic journals that existed prior to *Kairos*’s inaugural publication on January 1, 1996 – such as *Postmodern Culture* (circa 1990) and *RhetNet* (circa 1995) – but *Kairos* is considered to be the first electronic journal that has continuously and exclusively published webtext content. In addition to *Kairos*, other scholarly journals that exclusively publish webtexts include *Computers and Composition Online* (1996–2000; 2004–present); *Vectors: Journal of Culture and Technology in a Dynamic Vernacular* (2005–2007; 2012–2013; on hiatus as of this writing); and *Journal for Artistic Research* (2011–present). Each of these journals publish webtexts that follow the five criteria listed below.

- Authors design their own webtexts, either individually or in collaboration with co-authors or designers.
- The design of the webtext must convey the author’s scholarly argument and not be gratuitous.
- A webtext’s purpose is to convey new knowledge in a discipline through the presentation of research. It is not meant to function as a primarily aesthetic method of conveying creative practice, such as with examples of electronic literature or interactive multimedia for artistic effect.
- Websites can incorporate any number of design elements and media appropriate to the World Wide Web (e.g., java script, links, graphics, and, more recently, streaming media, etc.), as long as that inclusion is rhetorically in line with the scholar’s argument.
- A webtext cannot be printed without losing its argument.

This set of criteria—genre conventions of webtexts—is gleaned from my 15 years of working with *Kairos*, publishing webtexts in these and other journals, reading webtexts published in other

journals, and teaching authors and students to compose webtexts. While each journal may have its own publishing requirements—such as *Kairos*'s submission guidelines that require that all webtexts be preservable on the journal's servers and presented through an HTML infrastructure—those requirements are almost always technical in nature, not generic. Technical conventions shift with time, so I have limited the genre conventions to those that have remained somewhat rhetorically static over the last 20 years, such as the necessity of the form:content relationship as indicated in both Warner's (2008) and Purdy and Walker's (2012) webtexts, as well as in other scholarship that describes evaluative criteria for peer-reviewed scholarly multimedia (see, e.g., Ball, 2013; Kuhn, 2008; Kuhn, Johnson, & Lopez, 2011).

In addition to the few webtext journals mentioned above, there are a number of academic journals that publish scholarly multimedia similar to webtexts. For instance, *Audiovisual Thinking: The Journal of Academic Videos* (2010–2014; currently on hiatus), *The Journal of Undergraduate Multimedia Projects* (TheJUMP; 2010–2014; on hiatus), and the *Journal of Visualized Experiments* (JOVE; 2006–present) have all published videos as the primary medium of research dissemination. *Video*,

however, isn't a genre, it's a medium—consider the hundreds of genres and sub-genres that reside on the video-streaming platforms YouTube and Vimeo: from far-flung examples such as cat videos (e.g., sub-genres: singing cats, cats who are jerks, cats sitting in containers) to instructional videos (e.g., sub-genres: home-improvement, classroom-based, game-play, etc.) and almost anything you can imagine in between. The ubiquity of video in the 21st century may make it seem as if video is a genre itself, but each of the genres and sub-genres mentioned above have their own set of conventions and rhetorical situations, which make them distinct—even as they are all distributed within the video medium. YouTube has a lengthy discussion of tagging videos-as-media versus tagging video subgenres. This distinction becomes important when discussing how readers interpret and interact with these texts. In the case of videos published as scholarship in journals such as *AudioVisual Thinking*, *TheJUMP*, or *JOVE*—each of which has its own set of genre conventions that make the videos within each radically different from the others—it is equally important to recognize the media that underlies the genres of scholarship so we can best determine how such texts should be preserved for the scholarly record.

In describing the role of media within social semiotic systems, Jay Lemke (2006) wrote, “The medium, as such, is the material technology through which the signs of the system are realized or instantiated. ... In many cases, we have only a single name for both the modality and the medium, as for example with *video*” (pp. 5–6). Webtexts, however, are neither a single medium nor a material technology for delivery. They tend to be infrastructurally complex, combining many media and technologies across multiple webpages or layers that are meant to be navigated hypertextually via nonlinear reading paths, as Lemke (2006:6) observes:

The Web is a truly multimedia medium insofar as any other medium can be embedded within a web page and linked into a Web site. As a medium, it can accommodate, in principle, and increasingly in practice, *any* modality and it can at least simulate most other media. It is also a hypertextual or hypermedia medium because elements in other media and modalities can be linked together in ways that allow the user to choose a variety of paths through the Web site in the course of time.

Videos, on the other hand, are exclusively linear in their presentations due to their timeline-based

technical requirements; but, webtexts can contain videos as well as other media in combination for an overall non/linear reading path or trajectory, and, as Lemke said, “a trajectory across links within a Web site may already carry us across different genres and different media using different modalities” (p. 6). Drawing on Lemke’s discussion of the complexities of multimedia content, I argue that webtexts *are* different genres delivered using the affordances of the Web and, indeed, may contain multiple genres in a single webtext (including videos). Although Lemke (2006) was referring to surfing across websites in his discussion of genres on the Web, the same can be applied to the hyper-mediated nature within webtexts themselves when he said,

We are learning to make meaning across these *traversals* (Lemke 2002a, 2002b, 2003), in ways that are trans-generic and trans-institutional. Such traversals are still relatively free of the constraints of conventional genres and represent an important potential source of radically new kinds of meanings. (p. 7)

The exercise of separating genres of webtexts from stand-alone media types such as academic videos is not meant to make webtexts into uni-

corns, but to give us pause for closer analysis of these long-existing, media-rich genres. I facetiously use the metaphor of a unicorn here because of scholarly publications that have long overlooked or denigrated the existence of webtexts (e.g., English, 2005; Cope & Kalantzis, 2014). Yet, webtext practices are fundamental to some disciplinary fields. Most of the research on e-scholarship (e.g., Borgman, 2007; 2012; Cope & Phillips, 2014) focuses on STEM fields, often because it is wrongly assumed that humanistic disciplines publish books instead of journal articles. If there is any discussion of multimedia in scholarly publishing, it is often in reference to what is colloquially called an *article-plus*, a PDF or otherwise-linear article that includes an illustrative video or interactive dataset, literally as an aside or sidebar in some journals, such as Elsevier’s collection of Articles of the Future (<http://www.articleofthefuture.com/>). Commercial scientific publishers almost always present these types of articles-with-multimedia as experiments—rightly so given the unicorn status of webtexts and the general inconsistency of most webtext publishers to maintain their scholarly archive (see Ball, 2015; Eyman & Ball, 2016).

Maintaining the scholarly archive is, perhaps, the single-biggest challenge for webtext publishers since webtexts cannot be archived in databases and

indices such as JSTOR and EBSCO, which only take linear texts and PDFs. Unfortunately, this means webtexts may go missing over the life of a journal. The impact of lost scholarship trickles down to future authors who will have to decide, based on the reputation of the journal, whether to submit or not. Given my focus on webtexts in humanistic contexts—in which webtext venues are primarily independent from scholarly organizations and commercial publishers—maintaining the scholarly archive within a journal publication can be burdensome. (This is a primary reason for building the academic publishing platform, Vega, which Andrew Morrison and I are working on—so that the challenge of preservation isn’t burdensome to authors, editors, or publishers.) Elsewhere, I’ve discussed best practices for sustainability in media-rich, electronic, scholarly publishing (Ball, 2015; Eyman & Ball, 2016), but those suggestions exist at the level of the journal and publisher, *not* at the level of the webtext or the media element, both of which concern the author–editor–reader relationship that is built through the uptake of a text. It is these levels – webtext and media element – that I will focus on next. Specifically, how does an author or editor make a webtext readable to researchers far into the future? How can such texts be preserved despite the ever-changing digital and material technologies

they employ? And, finally, how does *genre* impact the preservation of webtexts?

METADATA AS AN INNOVATION MARKER

This lack of stability for webtexts is a mostly unsolved preservation problem that rich metadata can partially ameliorate so that readers can interpret and interact with webtexts into the future. Although there doesn't exist any official controlled vocabulary for metadata that would apply to webtexts specifically, I outline one attempt at creating a vocabulary for webtext genres that attends to their historical shifts over time.

Metadata, at a very basic level, is data about data—the finding aids of objects in an archive (Baca, 2008). Authors write metadata on their articles already—every time they craft an article and include their name, affiliation, email address, abstract, keywords, and biography, they are writing a form of metadata. That metadata helps make their article findable, indexable and searchable. All of these functions are easy to process when the article is primarily made of words. Webtexts, however, are not primarily words (or, at least, not always): instead, they comprise a series of linked files that

contain a combination of words (on the HTML pages) and other media elements (embedded in or linked from the HTML pages), such as the following breakdown:

- 8 HTML files (grouped in thematic folders, as needed)
- 10 image files in an /image/ folder
- 2 CSS files
- 3 PDFs
- 2 video files
- 1 audio file.

In generating metadata for this sample webtext, we have two levels of consideration, as mentioned above: the webtext-level and the media-element level. At the webtext level, metadata could be generated by equating such a composition to an *article*, which comes with some standard metadata descriptors using, for instance, a major metadata schema like Dublin Core, which has been the premier metadata standard for library and information science workers for decades. The “Guidelines for Encoding Bibliographic Citation Information in Dublin Core Metadata” (i.e., the guidelines for creating metadata for journal articles), poses the following problem for journal articles:

Many [metadata] implementations have needed a way to describe journal articles and, because of the lack of any guidelines, have invented many ad hoc solutions, which solve the problem locally but discourage interoperability. These guidelines provide a recommended and thus interoperable way to encode bibliographic citation information within a Dublin Core description. (n.p.)

Their recommendation for a Dublin-Core description of a journal article looks like Table 1 below.

There are two related notes about this example: It refers to a print-based journal article (as acknowledged elsewhere on the webpage this table was pulled from), which is, in part, indicated by the “dc:type” property (listed as Text in this table). DC:type refers to one of the 15 properties used in the Dublin Core’s Metadata Element Set. *Type*, in that core set’s list of elements, is defined as “the nature or genre of the resource” (n.p.). It is further recommended that *type* be used with “a controlled vocabulary such as the DCMI Type Vocabulary [DCMITYPE]” (n.p.), which “provides a general, cross-domain list of approved terms that may be used as values for the Resource Type element [of Dublin Core] to identify the genre of a resource” (see DCMI Type Vocabulary, 2006). Unfortunately

Table 1. *Dublin Core description of a printed journal article.*

Property	Encoding Scheme URI	Value String	Value URI
dc:title		Studying E-Journal User Behavior Using Log Files	
dc:creator		Yu, L	
dc:creator		Apps, A	
dc:subject	http://purl.org/dc/terms/DDC	020	
dc:subject	http://purl.org/dc/terms/LCC	Z671	
dc:publisher		Elsevier	
dc:type	http://purl.org/dc/terms/DCMIType	Text	
dcterms:issued	http://purl.org/dc/terms/W3CDTF	2000	
dcterms:isPartOf			urn:ISSN:0740-8188
dcterms:bibliographicCitation		Library and Information Science Research 22(3), 311-338. (2000)	

that list of genres is purposefully broad so that it can serve the widest swath of objects possible. The list includes the following genres:

- Collection
- Dataset
- Event
- Image
- InteractiveResource
- MovingImage
- PhysicalObject
- Service

- Software
- Sound
- StillImage
- Text.

For example, an Image DCMI Type can include “images and photographs of physical objects, paintings, prints, drawings, other images and graphics, animations and moving pictures, film, diagrams, maps, musical notation. Note that Image may include both electronic and physical representations” and yet there is also a MovingImage [sic] type that includes “animations, movies, television programs,

videos, zoetropes, or visual output from a simulation. Instances of the type Moving Image [sic] must also be describable as instances of the broader type Image” (n.p.). The Dublin Core Metadata Initiative acknowledged in several locations on its massive schema website that “the terms in DCMI vocabularies are intended to be used in combination with terms from other, compatible vocabularies in the context of application profiles” (Dublin Core Metadata Element Set, n.p.).

Webtexts, as genres that contain many sub-genres, would be categorized as DCMI Type InteractiveResource—“A resource requiring interaction from the user to be understood, executed, or experienced” such as “Web pages, applets, multimedia learning objects, chat services, or virtual reality environments” (DCMI Type Vocabulary, n.p.)—not as Text, like the print journal example mentioned above.¹ Within either InteractiveResource or Text, as with Image, there can be multiple subgenres to categorize. This further classification can be especially important when it comes to webtexts,

¹ Dublin Core does offer an example of metadata usage for an electronic journal article, but that example mysteriously excludes many of the print-article properties that would be needed for an e-journal article, too, including Publisher and Type.

since the subgenres these scholarly texts embrace might include such wide variety as video manifesto (Miles, 2015; Watkins, 2008), parody (theamishaugur, 2009; Walls, 2008), game (Nelson et al, 2013; deWinter, 2014), or comic (Jacobs, 2014; Johnson, 2014; Parish, 2012). Webtexts require more description of genres than metadata standards such as Dublin Core offer, especially given the constantly changing affordances within digital technology as seen through changing Web standards, updated media types, and obsolete software. When all of these changes come together in a single webtext—such as the use of Macromedia Director (as an early example) or Adobe Flash (as a recent example), which were once-stable design platforms for journals like *Kairos*—both authors and editors need to consider crafting more robust metadata than the descriptors available in InteractiveResource. Dublin Core and other descriptive forms of metadata (including the Library of Congress’s MARC’s Genre Term List, Moving Image Genre Form Guide, and Thesaurus for Graphic Materials)² are really only meant to help readers locate objects, and perhaps

2 See <http://www.loc.gov/standards/valuelist/marcgt.html>, <http://www.loc.gov/rr/mopic/miggen.html>, <http://www.loc.gov/rr/print/tgm2/tgm2.txt>

to know what hardware or software emulator to use on a MIME Type³ that is no longer playable in most browsers (e.g., a Shockwave executable file or RealPlayer file). As if to squelch the concern of multimedia publishers everywhere, Murtha Baca (2008), editor of the foundational textbook on metadata, reminded us:

There is no “one-size-fits-all” metadata schema or controlled vocabulary or data content (cataloging) standard. Institutions must carefully choose the appropriate suite of metadata schemas and controlled vocabularies (including collection-specific thesauri and local picklists), along with the most appropriate cataloging standards (including local cataloging guidelines based on published standards) to best describe and provide access to their collections and other resources. (principles.html)

3 A MIME identifies grouping of filetypes such as text/css, text/html, application/pdf, image/gif, image/png. Mimetypes are a controlled vocabulary created by IANA – a full listing can be found here: <http://www.iana.org/assignments/media-types/media-types.xhtml>. Mimetypes are not directly indicative of genre, but they lend help in pinpointing the mixtures of genres that might be embedded in a webtext.

Inclusion of metadata should be an integral part of the invention and production process for digital works on the part of authors as well as a standard element of the publishing process. “The active construction of metadata should be a compositional practice because it is emblematic of the ways an author deploys rhetoric, design, and code as the means by which a given webtext engages scholarly, social, and technical infrastructure” (Eyman & Ball, 2014, p. 116). In the next section, I describe one effort to create a robust genre description for *Kairos* webtexts that would be usable for finding and preserving these innovative digital objects.

INSTABILITY AND INNOVATION IN WEBTEXTS

Starting in Fall 2010, as part of a National Endowment for the Humanities Digital Humanities Start-Up grant, I led a group of faculty and student researchers through a metadata-mining project for *Kairos* webtexts. Working from a Dublin Core (DC) and Open Journal Systems (OJS) inspired metadata schema created by then-*Kairos* Associate Editor Kathie Gossett, Senior Editor Doug Eyman, and myself, 19 researchers captured 32 fields of metadata at the webtext and media-element level. Min-

ing metadata is costly and prone to human error, which would lead one to ask why we mined metadata at the media-element level in addition to the InteractiveResource itself. Borrowing from a previously published justification of this, I argued that

This level of granularity would allow us to provide more comprehensive and more finely tuned research opportunities for readers and potential authors, eventually allowing us to tag every media element in a webtext so that it would be independently searchable and remixable and could be cited appropriately. This granularity would also allow us to better describe and preserve, if only through metadata, some of the webtext components that become technologically obsolete with age. (Ball, 2013b, p. 97)

That is, by attaching metadata to every HTML file, CSS file, JPG, PNG, PDF, MOV, WMV, SWF, MP3, and so on, our hope as editors was to create a re-usable resource that future authors could draw on and cite as they created even more webtexts⁴.

4 By that point, Senior Editor and digital rhetoric scholar Douglas Eyman had been researching citation practices of webtexts for nearly a decade (see 2000, 2007a, 2007b), and

Some of those webtext- and media-specific properties are listed here:

Webtext-Level: Author, Title, Abstract, Volume & Issue, Section, Date Published, Peer-Reviewers, Peer-Reviewed Status, Publisher, Language, DOI, DCMI Type, URI, Genre, File Size, Creator

Media-Element-Level: FileName, MimeType, Page Title, Alt Text, DCMI Type, URI, Genre, File Size, Creator

Authors: Affiliation, Rank, Email.

Many of these properties correspond to the Dublin Core terms and others from DC and OJS that we added, although in most cases, the names of the terms were changed for convenience since I was working with 15 undergraduates unfamiliar with *Kairos*, webtexts, or metadata schema. For instance, the term Author mapped onto DC's Cre-

had discovered all sorts of problems with the way webtexts, and elements within webtexts were and, for the most part, were not, cited. He was attempting to create a remix engine so that readers could better use the existing media assets the journal had already published, which we hoped would also ameliorate the citation problem by providing DOIs (or at least directly accessible file names) to media elements that users might employ.

ator term, Abstract to DC's Description, Section to Source, and so on. Some properties, like MimeType and DCMI Type were so specific as to warrant not changing for the student-researchers, particularly since there were controlled vocabularies involved. While I have described elsewhere how this project was undertaken (as a pedagogical tool; see Ball, 2012), here I focus on discussing the Genre properties at the Webtext level and the Media-element level, which proved to be the single-most difficult property to determine in this project.

At the Webtext level, Genre was slightly easier to map, as it often corresponded to the Section of the journal in which the webtext appeared, although combing through the archives of the journal made this process more difficult. The scope of the mining project included retrieving or creating metadata for all back issues of the journal; at the time we started the project, we were at Volume 15, Issue 2, which translated to 15 years of publication with at least two, if not three, issues per year. The names of journal sections had changed over the years. For instance, sections variously called *Kairos* Interactive, Responses, and Disputatio all published webtexts that could be labeled as a "response" genre. Similarly, the sections called Classroom Spotlight, Pixelated Rhetorics, Praxis, and PraxisWiki could

comprise the genre “praxis,” which would be webtexts focused on theorized classroom practice. Other sections, such as Interviews, News, and Reviews were easier to categorize as genres according to their section titles, and these sections rarely (if ever) changed names.⁵ We did create and assign subgenres to the peer-reviewed sections of the journal, and those were, concomitantly, the sections that were less stable in terms of Section names. For example, the “feature” genre could be found in the Features, Topoi, or CoverWeb sections, for which sub-genres such as case study, course study, teaching narrative, editorial, and others might be listed. We created a controlled vocabulary for all sections by discussing the rhetorical aims of several example webtexts in a norming session and proposing generic labels for those aims. Below is a partial list of webtext subgenres (with brief descriptions):

- editorial – editor’s statements
- discussion – town hall discussions
- book review – review of a book

⁵ The reasons why sections changed their names is beyond the scope of this article, although it often had to do with a combination of editorial staff changes and shifts in the disciplinary discourse.

- software review – review of software/CD, etc.
- review essay – review of multiple objects (includes micro-reviews)
- interviews)
- chat interview – interview conducted in a MOO, IRC, chat, etc.
- survey
- case study
- course study
- assignment study
- reflection
- conference review
- listserv review
- teaching narrative – (includes narratives in the PraxisWiki section)
- ethnography
- usability study (of space, of website design...).

These are not further broken down by Section or main genre since some of these subgenres could cross into several sections. For instance, the *discussion* subgenre could appear in a CoverWeb, since *Kairos* used to publish special issues from the Computers & Writing conferences, at which a Town Hall was a main session. It could also appear in an

old section called *Kairos Meets The Authors*, which were part-interviews/part-discussions between a staff member and an author who had published a webtext in the same issue. These subgenres were admittedly weird, and the student-researchers could be wildly inaccurate in applying them (so it goes with metadata...).

Our larger concern as an editorial team, however, was with assigning genre to the media elements. After all, abstracts⁶ and other webtext-level metadata such as Title, would help future researchers trace the historical importance of this journal. At the level of the media element, we wanted authors and researchers to be able to determine which videos, for instance, were instructional, performative, student/classroom projects, or something else. In this discipline, instructors often assign multimedia projects, and we are constantly looking for examples to share with students. It is an oft-repeated request of practitioners in the field to ask someone to build them a database that would help them collect student-built projects of various genres and media.

⁶ It should be said that the students wrote abstracts for all 1200+ webtexts they found. Asking for abstracts had not been a practice of *Kairos* until we undertook this metadata-mining project.

We also wanted to provide data on the history of MIME Type usage for researchers who may eventually study the archives of *Kairos* to trace research questions such as how the rise of CSS changed the interface designs and sustainability of webtexts. Assigning MIME Types was easy, given that it is an Internet Assigned Numbers Authority (IANA) controlled vocabulary (e.g., a file extension of .avi will always be named Audio Visual Interleave (AVI), which will always be a MIME Type of “video/x-msvideo” just as a file extension of .htm or .html will always be named HyperText Markup Language with a MIME Type of “text/html”). However, as with the example of *video* from earlier in this article, a MIME Type of video/x-msvideo doesn’t tell us what the *genre* of that video is, even as it tells us what its file format is (and, thus, what potential codec or emulator we might need to read it in the future). Still, we want to know the genre: student project (and then what sub-genre)?, informational video?, performance?, manifesto?, and so on.

Another example we kept returning to was that of the MIME Type image/gif. It won’t be surprising to historians of the Web that gifs used to run rampant in the early days of *Kairos*; authors used that MIME Type for all sorts of purposes—as title

graphics with a decorative font (pre-font APIs), as navigation buttons, as illustrative decorations (despite the a-rhetoricity of such usage; this was definitely a period-specific choice in Web design), as animated gifs, and more. Listing all of these genres as simply Image or MovingImage would not do justice to the rhetorical complexities of these media elements. So, as we did with the Webtext-level genre property, the student-researchers and I normed our terms for all media elements that were represented in *Kairos*. We sorted by DCMI Type, then MIME Type, and then looked at the file a-contextually (and then contextually, in relation to the webtext page, if needed) to determine what sub-genre it should have (see Fig. 3 for a portion of one Excel sheet we used to capture the metadata for StillImages). The controlled vocabularies we created for three media types are presented below:

Images

- title header—title text made into graphic (may include webtext logo)
- title graphic—graphic used alongside a title (repeated as a logo)
- title animation—animated graphic as title
- splash title—graphic that readers have to

C	D	E	F	G
File Name	File Size	MimeType	DCMIType	Genre
aeardt.jpg	9 kb	image/jpg	StillImage	illustrative photograph
arrow.gif	1 kb	image/gif	StillImage	navigational graphic
banner.gif	15 kb	image/gif	StillImage	title graphic
blackwell.gif	49 kb	image/gif	StillImage	illustrative photograph
chism.gif	20 kb	image/gif	StillImage	illustrative photograph
ckpic.jpg	36 kb	image/jpg	StillImage	illustrative photograph
DariaMooreBW.jpg	11 kb	image/jpg	StillImage	illustrative photograph
girls2.jpg	32 kb	image/jpg	StillImage	illustrative photograph
image20.jpg	6 kb	image/jpg	StillImage	background image
mead.jpg	49 kb	image/jpg	StillImage	background image
mtchl.oif	22 kb	image/oif	StillImage	illustrative photograph

Figure 3. A screenshot of the Media Elements metadata-mining project from *Kairos*.

click through to get to main webtext

- author photograph
- family snapshots
- illustrative photographs
- background image
- image map—an image used as the main navigation in a webtext
- book cover graphic
- navigational graphic—arrows, etc.
- clip art—graphics used for illustrative or placeholder purposes

- bullet characters—images used instead of bullets in a bulleted list
- logo—graphic that represents corporation/organization, etc.

Text (primarily, but not exclusively, HTML)

- external links page—leads to other websites
- internal links page—leads to other *Kairos* webtexts
- instructional page—contains instructions on how to use the webtext
- forum—user message board
- FAQ—questions and answers
- author biographies
- menu—page that contains tabs that lead to each webtext section
- submenu—page that consists of content within sections
- table of contents—structured list of topics with links to the broad categories
- image placeholder—html file with only an image
- full article—the entire webtext in one media file
- commentary—typed comments on a webtext or topic
- email correspondence—messages ex-

changed between individuals

- project elaboration—main body copy of a project’s argument
- section elaboration—main body copy of a section’s argument
- chat interview—text of synchronous communication
- discussion—multiple authors talking about a topic
- session review—review of a particular session at a conference
- quote—page consisting of quotations(s)

Multimedia (video, audio, animation, etc.)

- mashup—combines multiple primary texts into a new text
- remix—remaking of a primary text into a new text
- slideshow—video of mostly pictures set to music
- kinetic typography—animated text
- animated graphic—any still image set to move across multiple frames⁷

⁷ The original version of this definition read “any still image that moves in an annoying way.” One of the reviewers for this article rightly questioned who had placed the value of “annoy-

- documentary (short)
- spoken word—slam performance; poetry read aloud, essays read aloud
- sound effects—random noise patterns, etc.
- how-to podcasts—instructional audio pieces
- background music—soundtrack for a page or webtext
- title animation—animated graphic as title
- response video
- conversation video
- Flash player plug in.

For additional video types, I asked students to draw on the only set of resources we had at the time: the Moving Image genre types list from the

ing” onto the media element. The provenance speaks to an interesting historical artifact within the journal: the students and I would have been talking about late-1990s animated gifs such as flying envelopes, opening mailboxes, and blinking under-construction signs, which were *de rigueur* for that time period in *Kairos*. These kinds of animated gifs are certainly seen as annoying by today’s web design standards. I have revised the definition here to make it more useful across time, since animated gifs have returned to prominence via memes and reaction-type uses.

Library of Congress, which predominantly included cinematic genres based in filmic media, not digital video.

The purpose in having a more fine-grained description of Genre applied at the webtext level was intended to help future researchers reverse-engineer the kinds of experimental scholarship the journal publishes, in cases where codecs, plug-ins, or even the Internet were no longer available. Given that the Library of Congress (LOC), who would otherwise seem to be the ultimate arbiter of such namings, had no dog in the scholarly multimedia fight at the time,⁸ we decided to create our own schema and be responsible for our own preservation until such time some other organization came up with a better preservation plan. The journal has been lucky to publish for 20 years (as of this writing), but I am often asked where, or what, the journal will be in another 20 years, and I do not have

8 Since 2010 the LOC has been working on more schema that would account for born-digital work (although not scholarly multimedia specifically), under the name of the National Digital Stewardship Alliance. In 2015, the NDSA transitioned to a new institutional home under the Digital Library Federation, where more work towards digital-asset preservation will continue to take place.

an answer for that. But I do know that regardless of the experimental and innovative media usage *Kairos* has exhibited in its history—some of which can be extremely difficult to preserve and play even just a few years after it was published—that some future researcher studying in the discipline that *Kairos* publishes in (e.g., digital writing and rhetoric, and related fields) will be able to trace back the field's history in enough detail to understand that, at one point, digital writing studies valued, as one example, reviews about listservs and conferences, the latter of which we still regularly publish. Naming genres—and the difficulty of doing so when the sub-genres of webtexts have changed alongside media types every few years (a topic I wish I had room to discuss here)—is also important for helping potential authors grapple with composing webtexts and helping readers, including hiring and promotion evaluators, understand the range and value of digital work being produced by scholars to date.⁹

9 For more on valuing and evaluating webtextual work in terms of scholarly production, see Ball, 2004, 2012, 2013a; Ball & Moeller, 2007; Purdy & Walker, 2010, 2012.

CONCLUSION

Although this project was intended simply to supply data for a database so that *Kairos* could migrate to a content-management system, we realized along the way what a rich collection of research questions it created. With well over a million points of data on over 1,000 webtexts (and counting), this metadata-mining project contains the possibility of so many research avenues that we made the data publicly available in the Stasis (archive) section of *Kairos*: <http://technorhetoric.net/stasis/2016/kairos-metadata/>.

The mining project also revealed significant challenges that journals face when publishing webtext genres. Most readily is the lack of long-term accessibility—both in the sense of disability issues and access and preservation issues. These two issues are intimately related, as we describe in the multi-authored webtextual white paper, “Access/ibility: Access and Usability for Digital Publishing” (Eyman et al, 2016). For *Kairos*'s immediate purposes in regards to the metadata mining project, we discovered the journal has a sad lack of alt attributes on images and other media-rich, non-textual file types throughout, despite submission requirements calling for alternative descriptions

as well as editorial processes that require adding alt text when it is missing. Essentially, we require written descriptions embedded in the code on anything that is nonlinguistic text in a webtext, so that readers with impaired vision or hearing, differing neurocognitive abilities, or slow connection speeds can access metadata about these media assets in the easiest way possible. The journal was admittedly bad at mandating alt attributes and similar properties in its first decade, but by the beginning of the second decade, it had put workflows in place to ensure these descriptions were made available prior to publication.

However, as the mining project shows, this wasn't always done as thoroughly as it should have been. Not only does a lack of accessibility metadata hurt our readability; it also hurts our findability, searchability, and sustainability. For instance, some media types, as I mentioned earlier, are no longer easily accessible through browsers (e.g., Flash and Shockwave files). Alt text would function as a metadata stand-in that could potentially describe the source (and not just the MIME and DCMI Type, but the actual genre and, thus, purpose of the file) for that missing media element, making these media elements more sustainable in terms of future research purposes—but only if that

metadata exists in the first place. Figure 4, for instance, shows a screenshot of the metadata collection for an early issue of *Kairos*, in which nearly all of the alt attributes are missing. This makes all of these media files inaccessible to multiple user types and, further, makes these images impossible to find through a search. This is highly problematic in an open-access webtext where the design of the piece (including all of its media, interface, layout, etc.) should convey its scholarly argument through aesthetic and rhetorical means just the same as any written content should.

The Page Titles in Figure 4 also show how haphazard these descriptive elements were in early issues. Starting with the 2008 “New Design Debut” issue of *Kairos* (which was also the issue we began incorporating DC metadata into all HTML headers), we began assigning standardized <title> tags to every HTML page in a webtext: Kairos Vol.Issue: Authorslastname (et al), Short Webtext Title – Web Page Content Title (e.g., “Kairos 13.1: Yergeau et al, Expanding the Space of f2f – Home”). A major part of the 2008 redesign involved removing any semblance of frames from our previous interface designs, which meant that webtext-specific page titles were now visible in the browser toolbars (see Figure 5). Adding in standardized page titles also

meant that readers could more easily determine what they were looking at, in terms of genre, in a given browser window (i.e. that they were reading an online scholarly journal, and a specific page of a webtext in that journal), which we felt was crucial given the lack of scholarly navigational signposting some online journals practiced. We had seen authors cite webtexts from other major journals in our field as if they were personal websites instead of peer-reviewed scholarly articles because (we guessed) there was no indication on the webtext itself or within the webtext's metadata that it belonged to a peer-reviewed scholarly journal.

Given the innovative nature of media-rich webtexts, it behooves editors *and* authors of these and similar kinds of scholarly multimedia and interactive designs to include rich descriptions of their work, at the level of the work if not at the level of its parts, as I have described here. Metadata exists not only to protect media elements and article-length projects, but also the journals themselves. Many online journals have lost their collections due to bad planning because they assumed webtexts were static publications or did not need maintaining in ways that are unique to digital media-rich publications (See Ball, 2015; Eyman & Ball, 2016). As Cope and Kalantzis (2014) articulated:

1	A	F	G	H	I	J
1	DOI	Genre	URI	Creator	Page Title	Alt Text
13		1				
14	1.3.news.wick-et-al	Author Photo	joseph.gif			Headshot of Joseph Unger
15	1.3.reviews.nellen	Author Statement	english_online/saga.html		Ted's Saga	
16	1.3.coverweb.glaros	Author's Statement	Glaros/simult.html		simultaneous	
17	1.3.coverweb.moss	Author's Statement	Moss/where.html		WHERE AM I?	
18	1.3.coverweb.moss	Author's Statement	Moss/moowriting.html		temp3.html	
19	1.3.coverweb.moss	Author's Statement	Moss/design.html		Designing a course	
20	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.unconscious3b4.html		appropriating textual strategies for design	
21	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.unconscious3a3.html		holding back	
22	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.trueself7.html		alison holds on to the "e;true self"	
23	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.reflections5.html		loving students	
24	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.personal5.html		impulse to write about the self	
25	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.multiple.voices3.html		two voices	
26	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.multiple.voices2.html		two identities	
27	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.freedom.html		anxiety as the pulse of life	
28	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.anxiety12.html		transformation example	
29	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.anxiety.inside3.html		eating disorders	
30	1.3.coverweb.sullivan	Author's Statement	Sullivan/kairos.anxiety.inside2.html		violence	
31	1.3.coverweb.sullivan	Author's Statement	Sullivan/dream5.html		dream5	
32	1.3.coverweb.sullivan	Author's Statement	Sullivan/dream1.html			
33	1.3.features.dorwick	Author's Statement	dorwick/e-state.htm		Rethinking the Academy	
34	1.3.reviews.heaps	Author's Statement	twominds/2mrevpleas.html		Of Two Minds Review -- A Feel for Prose: Reviewer's Plea	
35	1.3.coverweb.sullivan	Background Image	Sullivan/shells.gif			
36	1.3.coverweb.sullivan	Background Image	Sullivan/60.gif			
37	1.3.features.krause	Background Image	krause/helixr2.gif			
38	1.3.inbox.cross-et-al	Background Image	moo/daback4.gif			
39	1.3.coverweb.sullivan	Background Image	Sullivan/lunar2.jpg			
40	1.3.features.dorwick	Background Image	dorwick/kdltblue.jpg			
41	1.3.features.dorwick	Background Image	dorwick/cream.jpg			
42	1.3.features.krause	Background Image	krause/bluesnow.jpeg			
43	1.3.features.sidler	Background Image	sidler/tan.jpeg			
44	1.3.news.keenan-et-al	Blank Page	epiphany/blank.gif			
45	1.3.news.keenan-et-al	Blank Page	epiphany/vspace.gif			
46	1.3.reviews.nellen	Clarification Page	english_online/notyet.html		Companion Website Not Available	
47	1.3.features.sidler	Class Discussion	sidler/k4.htm		Class Discussion	

Figure 4. Metadata screenshot showing, in the dark grey box, missing alt attribute information for a series of image files, in an early issue of Kairos.

Figure 5. Webtext page titles show up in browsers, allowing readers to more easily know the provenance of a webtext at a glance.

Most journals are still making PDFs, still bound to the [stable] world of print-lookalike knowledge representation, but a reading of technological affordances tells us that we don't have to replicate traditional processes of knowledge representation – digital technologies allow us to do more than that. (n.p.)

Indeed, webtexts do 'more than that.' But because its genres change with each new technology, it is hard for readers and researchers to notice, let alone trace, webtexts' stability-in-innovation. By examining the multiple genres (as well as MIME Types, file sizes, etc.) through one journal's history, we can look back at how one discipline makes and values knowledge in its fields and anticipate better ways to preserve and promote webtexts for readers and researchers in other disciplines, now and into the future.

Unfortunately, it is outside the scope of this article to delve into how this project helped us create accessibility and sustainability guidelines for webtexts (and similar kinds of digital media and digital publishing projects). If you are interested in that project, I encourage you to read “History of a Broken Thing: The Multi-Journal Special Issue on Electronic Publication” (Eyman & Ball, 2016), which traces technologically infrastructural-wide problems with digital media publishing and how to ameliorate them, and “Access/ibility: Access and Usability for Digital Publishing” (Eyman, Ball, Boggs, Booher, et al, 2016), which offers a set of best practices for digital publishing with attention to the relationship between open access, accessibility for diverse users, and access and preservation standards. It may be enough for some readers to follow these suggested research threads, but this body of research on the innovative and difficult nature of webtexts—technologically, infrastructurally, and, as demonstrated in this article, generically—also requires new publishing practices to be put into place in order for this kind of scholarly innovation to continue. It is because of that need that Andrew Morrison and I, along with consulting researcher–editor Douglas Eyman, began work with a development studio in Oslo, Norway, in early 2015 to build

Vega, an academic publishing platform that would support the generic innovations webtexts promote. Vega provides author tools, editorial workflows, and publishing features (including flexible metadata schema) that showcase webtexts as a priority genre in scholarly publishing. To follow the progress on Vega, due for release in Fall/Winter 2017, please visit <http://vegapublish.com>.

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REFERENCES

- Baca, Murtha (Ed.). (2008). *Introduction to metadata*, 2nd ed. Los Angeles, CA: Getty Research Institute. Retrieved November 11, 2015, from http://www.getty.edu/research/publications/electronic_publications/intrometadata/
- Ball, Cheryl E. (2012). Assessing scholarly multimedia: A rhetorical genre studies approach. *Technical Communication Quarterly*, 21 [Special issue: Making the implicit explicit in assessing multimodal composition], 61–77.
- Ball, Cheryl E. (2013a). Multimodal revision techniques in webtexts. *Classroom Discourse*, 5(1), 1–15. DOI: <http://dx.doi.org/10.1080/19463014.2013.859844>
- Ball, Cheryl E. (2013b). Pirates of metadata or, the true adventures of how one editor, fifteen undergraduate publishing majors, and 25,000 media elements survived a metadata mining project. In Stephanie Davis-Kahl & Merinda Hensley (Eds.), *Extend and unify: Outreach and education for scholarly communication and information literacy programs*. Chicago: Association of College and Research Libraries.
- Ball, Cheryl E. (2015). Sustainable infrastructures and the future of writing studies. *Council of Writing Program Administrators Journal*, 39(1), 122–137.
- Ball, Cheryl E., & Eyman, Douglas. (2015, Fall). Editorial workflows for multimedia-rich scholarship. *Journal of Electronic Publishing*, 18(4). DOI: <http://dx.doi.org/10.3998/3336451.0018.406>
- Ball, Cheryl E., & Moeller, Ryan M. (2008). Converging the ASS[umptions] between U and ME; or How new media can bridge the scholarly/creative split in English studies. *Computers & Composition Online*. Retrieved December 23, 2016, from <http://cconline-journal.org/convergence/>
- Bellotti, Victoria, & Rogers, Yvonne. (1997). From web press to web pressure: Multimedia representations and multimedia publishing. In *Proceedings of the ACM SIGCHI Conference on human factors in computing systems* (pp. 279–286). ACM. Retrieved from <http://dl.acm.org/citation.cfm?id=258755>
- Bergeron, Bryan P., & Bailin, Michael T. (1996). Collaborative hypermedia development: Considerations for academic publishing. *Journal of Educational Multimedia and Hypermedia*, 5(2), 101–112.
- Berkenkotter, Carol, & Huckin, Thomas N. (1995). *Genre knowledge in disciplinary Communication: Cognition/culture/power*. Lawrence Erlbaum Associates, Inc. Retrieved from <http://psycnet.apa.org/psycinfo/1995-97008-000>
- Bott, David M., & Hargens, Lowell L. (1991). Are sociologists' publications uncited? Citation rates of journal articles, chapters, and books. *The American Sociologist*, 22(2), 147–158.
- Canagarajah, A. Suresh. (1996). "Nondiscursive" requirements in academic publishing, material resources of periphery scholars, and the politics of knowledge production. *Written Communication*, 13(4), 435–472. doi:10.1177/0741088396013004001
- Cope, Bill, & Kalantzis, Mary. (2014). Changing knowledge ecologies and the transformation of the scholarly journal. In Bill Cope & Angus Phillips (Eds.), *The future of the academic journal*, 2nd ed. Oxford, UK: Chandos Publishing.
- Cope, Bill, & Kalantzis, Mary. (Eds.). (2000). *Multiliteracies: Literacy and the design of social futures*. New York, NY: Routledge.
- Cope, Bill, & Phillips, Angus. (2014). *The future of the academic journal*, 2nd ed. Oxford, UK: Chandos Publishing.
- Cox, John E. (1998). The changing economic model of scholarly publishing: uncertainty, complexity, and multimedia serials. *Library Acquisitions: Practice & Theory*, 22(2), 161–166.
- DCMI Type Vocabulary, (2006, August 28). Retrieved November 1, 2015, from <http://dublincore.org/documents/2006/08/28/dcmi-type-vocabulary/>

- Dublin Core Metadata Element Set, Version 1.1. (2012-06-14). Retrieved November 1, 2015, from <http://dublincore.org/documents/dces/>
- English, James. (2005). Academic journals in the global age: New vs. old forms of inquiry. *Journal of Scholarly Publishing*, 37, 8–18.
- Eyman, Douglas. (2000). Does anybody read *Kairos*? [Editorial]. *Kairos: A Journal for Teachers of Writing in Webbed Environments*, 5(1). Retrieved November 1, 2015, from <http://kairos.technorhetoric.net/5.1/binder.html?loggingon/eyman.html>
- Eyman, Douglas, Walker, Joyce, Purdy, Jim, & Reilly, Colleen. (Eds.). (2007b). *Computers and Composition Online* [Special issue: Online Research, Writing, and Citation Practices]. Retrieved December 20, 2016, from <http://cconlinejournal.org/print-screen07/index.htm>
- Eyman, Douglas, & Ball, Cheryl E. (2014). Composing for digital publication: Rhetoric, design, code. *Composition Studies* 42(1), 114–117.
- Eyman, Douglas, & Ball, Cheryl E. (2015). Digital humanities scholarship and electronic publication. In Jim Ridolfo & William Hart-Davidson (Eds.), *Rhetoric and the digital humanities*. Chicago, IL: University of Chicago Press.
- Eyman, Douglas, & Ball, Cheryl E. (2016). History of a broken thing: The multi-journal special issue on electronic publication. In Bruce McComisky (Ed.), *Microhistories in composition Studies*. Logan, UT: Utah State University Press.
- Eyman, Douglas, Ball, Cheryl E., Boggs, Jeremy, Booher, Amanda K., Burnside, Elkie, DeWitt, Scott Lloyd, Dockter, Jason, Dolmage, Jay, Gardner, Traci, Georgi, Sara, Hinderliter, Hal, Ivey, Susan, Keller, Michael, Kelley, Rachael, Kennedy, Sarah, Kennison, Rebecca, McClanahan, Pamela, Ries, Alex, Roberts, Kassi, Schlosser, Melanie, Stolley, Karl, Walter, John Paul, Williams, George H., Yergeau, Melanie, & Zdenek, Sean. (2016). Access/ibility: Access and usability for digital publishing. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy* 20(2). Retrieved March 6, 2016, from <http://kairos.technorhetoric.net/20.2/topoi/eyman-et-al/index.html>
- Fitzpatrick, Kathleen. 2011. *Planned obsolescence: Publishing, technology, and the future of the academy*. New York: New York University Press.
- Harnad, Stevan. (1996). Implementing peer review on the net: Scientific quality control in scholarly electronic journals. *Scholarly publishing: The electronic frontier*. Cambridge, MA: The MIT Press.
- Hyland, Ken. (1999). Academic attribution: citation and the construction of disciplinary knowledge. *Applied Linguistics*, 20(3), 341–367.
- Kahin, Brian, & Varian, Hal R. (2000). *Internet publishing and beyond: the economics of digital information and intellectual property*. Cambridge, MA: The MIT Press.
- Kress, Gunther. (2010). *Multimodality: A social semiotic approach to contemporary communication*. New York, NY: Routledge.
- Kuhn, Virginia. (2008). The components of scholarly multimedia. In Virginia Kuhn & Victor Vitanza (Eds.), *From gallery to webtext* [Webtext compilation]. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 12(3). Retrieved November 11, 2015, from <http://kairos.technorhetoric.net/12.3/topoi/gallery/>
- Kuhn, Virginia., Johnson, DJ, & Lopez, Dave. (2010). Speaking with students: Profiles in digital pedagogy. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 14(2). Retrieved November 11, 2015, from <http://kairos.technorhetoric.net/14.2/interviews/kuhn/>
- Lee, Carole J., Sugimoto, Cassidy R., Zhang, Guo, & Croinin, Blaise. (2013). Bias in peer review. *Journal of the American Society for Information Science and Technology*, 64(1), 2–17.

- Lemke, Jay. (2006). Toward critical multimedia literacy: Technology, research, and politics. In Michael McKenna (Ed.), *International handbook of literacy and technology: Volume two* (pp. 3–14). Mahwah, NJ: Lawrence Erlbaum Associates..
- Liestøl, Gunnar. (2010). On mobility, localization and the possibility of digital genre design. In Ina Wagner, Tone Bratteteig, & Dagny Stuedahl (Eds.), *Exploring digital design* (pp. 171–188). London, UK: Springer.
- Liestøl, Gunnar, Morrison, Andrew, & Rasmussen, Terje. (Eds.) (2004). *Digital media revisited: Theoretical and conceptual innovations in digital domains*. Cambridge, MA: The MIT Press.
- Purdy, Jim, & Walker, Joyce. (2012). Scholarship on the move: A rhetorical analysis of scholarly activity in digital spaces. In Debra Journet, Cheryl E. Ball, & Ryan Trauman (Eds.), *New work of composing* (n.p.). Logan, UT: Utah State University Press, Computers and Composition Digital Press. Retrieved November 11, 2015, from <http://ccdigitalpress.org/nwc/chapters/purdy-walker>
- Reilly, Colleen, & Eyman, Douglas. (2007a). Multifaceted methods for multi-modal texts: Alternate approaches to citation analysis for electronic sources. In Heidi McKee & Dànienne DeVoss (Eds.), *Digital writing research: Technologies, methodologies, and ethical issues* (pp. 353–375). Cresskill, NJ: Hampton Press.
- Russell, David R., Lea, Mary, Parker, Jan, Street, Brian, & Donahue, Tiane. (2009). Exploring notions of genre in “academic literacies” and “writing across the curriculum”: Approaches across countries and contexts. In Charles Bazerman, Adair Bonini, & Débora Figueiredo (Eds.), *Genre in a changing world* (pp. 459–491). [Perspectives on Writing series]. Fort Collins, Colorado: WAC Clearinghouse.
- Smart, John, & Bayer, Alan. (1986). Author collaboration and impact: A note on citation rates of single and multiple authored articles. *Scientometrics*, 10(5-6), 297–305.
- Smith, Richard. (2006). Peer review: A flawed process at the heart of science and journals. *Journal of the Royal Society of Medicine*, 99(4), 17–182.
- Swales, John. (1990). *Genre analysis: English in academic and research settings*. Cambridge, UK: Cambridge University Press.
- Tenopir, Carol, & King, Donald W. (2000). *Towards electronic journals: Realities for scientists, librarians, and publishers*. Special Libraries Association. Retrieved from http://works.bepress.com/carol_tenopir/7/
- Ventola, Eija, & Mauranten, Anna. (1996). *Academic writing: Intercultural and textual issues* (Vol. 41). Amsterdam, Netherlands: John Benjamins Publishing.
- Warner, Allison Brovey. (2007). Constructing a tool for assessing scholarly webtexts. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 12(1). Retrieved from <http://kairos.technorhetoric.net/12.1/topoi/warner/>
- Whitworth, Brian, & Friedman, Rob. (2009). Reinventing academic publishing online. Part II: A socio-technical vision. *First Monday*, 14(9). Retrieved November 11, 2015, from <http://firstmonday.org/ojs/index.php/fm/article/viewArticle/2642>
- Willinsky, John. (2006). *The access principle: The case for open access research and scholarship*. Cambridge, MA: The MIT Press.