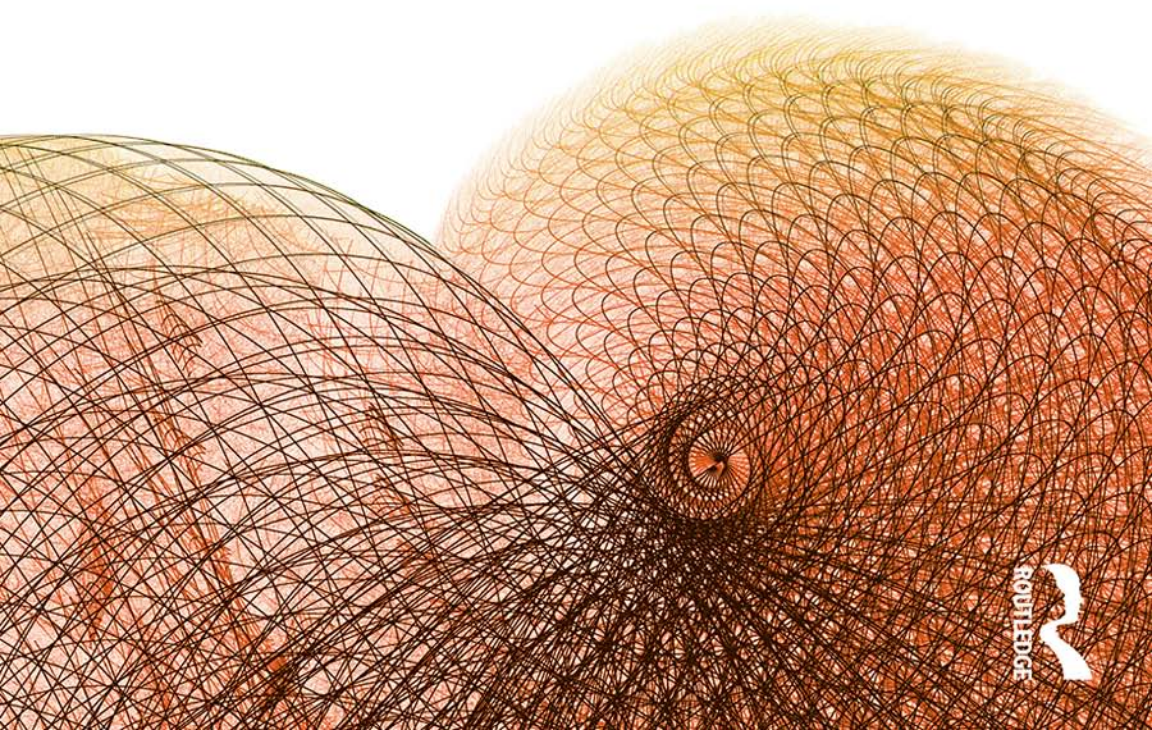


DOING MORE DIGITAL HUMANITIES

Open Approaches to Creation,
Growth, and Development

EDITED BY CONSTANCE CROMPTON,
RICHARD J. LANE, AND RAY SIEMENS



DOING MORE DIGITAL HUMANITIES

As digital media, tools, and techniques continue to impact and advance the humanities, *Doing More Digital Humanities* provides practical information on how to *do* digital humanities work. This book offers:

- A comprehensive, practical guide to the digital humanities.
- Accessible introductions, which in turn provide the grounding for the more advanced chapters within the book.
- An overview of core competencies, to help research teams, administrators, and allied groups make informed decisions about suitable collaborators, skills development, and workflow.
- Guidance for individuals, collaborative teams, and academic managers who support digital humanities researchers.
- Contextualized case studies, including examples of projects, tools, centres, labs, and research clusters.
- Resources for starting digital humanities projects, including links to further readings, training materials and exercises, and resources beyond.
- Additional augmented content that complements the guidance and case studies in *Doing Digital Humanities* (Routledge 2016).

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INTRODUCTION

*Constance Crompton, Richard J. Lane,
and Ray Siemens*

There is always more to uncover in the Humanities: more to aggregate, more to augment, more to analyse, and more to act on. We offer *Doing More Digital Humanities: Open Approaches to creation, growth, and development* in the spirit of trying more, doing more, and experimenting more. *Doing More Digital Humanities* is a complementary volume to *Doing Digital Humanities* (2016), but can be read separately, as the one volume does not depend on the other. Whether you are looking to develop new Digital Humanities skills, start a Digital Humanities research project, evaluate Digital Humanities resources, or bring Digital Humanities teaching into or out of the classroom, we invite you take up this book.

This volume grows out of the broader community Digital Humanities Summer Institute (DHSI), held at the University of Victoria every June. The DHSI started as a small gathering of a few scholars willing to come together across disciplines to share the new digital methodologies with which they had been experimenting. Now entering its 20th year, the DHSI spans two weeks and has recently drawn over 800 participants every summer. However, it still retains that original goal of open and collaborative knowledge sharing, grounded in the desire to help one another develop new scholarship. It is in this spirit that we offer *Doing More Digital Humanities*. You may not be able to come to Victoria or to attend Digital Humanities workshops where you live, but through this volume, you have become a member of the greater the DHSI community. Just as at the DHSI, we are glad that you will join us in considering new ways to build, study, collaborate, and learn all underpinned by an ethos of open shared knowledge.

From seasoned practitioners to emerging leaders, the contributors to this volume represent a broad community of instructors, managers, technologists, and fellows in English, History, Computer Science, Information Science, Fine Arts, and beyond. For many of the contributors here, when they first started in the Digital Humanities it was a nascent, and perhaps even esoteric, discipline. The growing

field generated excitement through the 1980s, 1990s, and 2000s but was difficult to navigate—sure pathways and clear precedents were hard to come by. This volume—and the community it represents—work to mitigate the challenges at all levels, including those inherent getting started, “levelling up,” or becoming an expert on one’s own. We invite you not only to read this volume but draw on in the spirit of community: the contributors have unearthed histories, developed best practices, and benefitted from insights that would have been unrealized without the community-led scholarship the characterizes the Digital Humanities. It is a community for all of us.

As an editorial team we have certainly benefited from the community that underpins collaborative Digital Humanities scholarship. Constance Crompton is Canada Research Chair in Digital Humanities and director of the Humanities Data Lab at the University of Ottawa. She is co-director, with Michelle Schwartz, of the Lesbian and Gay Liberation in Canada project and a researcher with Implementing New Knowledge Environments (INKE). She also serves as an associate director of the Digital Humanities Summer Institute. Ray Siemens is Distinguished Professor in the Faculty of Humanities at the University of Victoria, in English and Computer Science, and past Canada Research Chair in Humanities Computing. He directs the Implementing New Knowledge Environments (INKE) project, the Digital Humanities Summer Institute, and the Electronic Textual Cultures Lab. Richard J. Lane is Principal Investigator of the MeTA Digital Humanities Lab and Professor of English at Vancouver Island University. He is the author or editor/co-editor of 15 academic books, including most recently *The Big Humanities: Digital Humanities/Digital Laboratories* (Routledge, 2017). It is in these roles, and most notably through the DHSI, that we on the editorial team have been able to expand our own Digital Humanities scholarship.

Doing More Digital Humanities is divided into three sections. The first is dedicated to growing and sustaining Digital Humanities at the individual, institutional, and national scale. Laura Estill, Scott Paul McGinnis, Lisa Goddard, and Dean Seaman offer best practices for developing projects with long-term sustainability in mind, while Paige Morgan offers guidance to scholars in the earliest stages of their careers. John Maxwell and Clare Warwick conclude the section with reflections on the substantive ways that historical and disciplinary legacies shape Digital Humanities research and practice. The second section turns to the question of making and doing: what do we do when we *do* DH? Jon Martin, Christine Walde, Jana Millar-Usiskin, Caroline Winter, Belaid, Moa and Stephen Ross introduce a number of the technologies that underpin computational and online circulation of knowledge at a fundamental level. Aaron Tucker, John Barber, Jessica Rajko, Amiée Knight, and Alex Razoumov introduce a number of techniques ranging from 3D printing and sound design to on-screen visualization and embodied performance and why and how they can extend Humanities scholarship in new directions. The concluding section offers a multiplicity of ways to think about learning in the Digital Humanities. Emily Murphy, Shannon Smith, Brian Greenspan, and James Cummings offer reflections on how to build Digital Humanities curriculum in

non-traditional learning venues, while Christopher Friend, Robin DeRosa, Jesse Stommel, and John Bonnett introduce ways of bringing the Digital Humanities into the classroom. Alyssa Arbuckle invites readers to consider the bigger picture: the role of social knowledge creation in DH. Janet Simons and Angel Nieves conclude the section with perspectives on how to build Digital Humanities into sustained curriculum.

Acknowledgements

The editors wish to thank all those who have contributed to this volume as well as those who contribute to the growing community that sustains it. In addition to the large community of DHSI instructors and speakers in the last 20 years, we wish to thank the institute's many dedicated directoral, advisory, and operational team members. Please see dhsi.org to find out more about the teams, instructors, participants, and affiliates of the Digital Humanities Summer Institute.

The editors would like to thank S. Paige Maskell especially. Her keen interest in the Digital Humanities and sharp attention to detail have been invaluable in the completion of this volume.



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PART I

Sustaining and growing



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1

LEGACY TECHNOLOGIES AND DIGITAL FUTURES

Laura Estill

Flossing my teeth. Wearing sunscreen. Going to the gym. Thinking of the long-term preservation of my digital projects. These are all things I *should* be doing, but I sometimes don't quite get to. But I'm not in love with the idea of "shoulds" in the first place.

The start of every digital project is as exhilarating as it is overwhelming. But when should you start looking ahead to the end? And does there have to be an end? In this chapter, I'd like to consider some best practices for thinking about your DH project in the long term, from workflow and technologies to people and resources. I will share my experience on a long-standing existing digital project, *The World Shakespeare Bibliography Online*.

Like our hesitance to embrace *should*, I'd like us to question what it means to have a "best practice."¹ Each project is different; each researcher is different; there is no out-of-the-box solution that will work for everything. Rather than trying to tackle the (impossible?) task of outlining how to update and preserve all projects, in this chapter, I share what worked (and what didn't) for the *World Shakespeare Bibliography*, in hopes that you will know how and when to ask the questions you need for your project to survive.

Survival for digital projects is an issue: a big, important, and looming issue. As Robin Camille Davis reports, 45% of projects discussed at DH 2005 are no longer available (see Figure 1.1); that is to say, almost half of the digital projects that were robust enough to be presented at an international digital humanities conference were lost just ten years later. The same loss rates do not hold true for print books. Even terrible books—which might sell poorly, be remaindered, and languish unread on bookshelves—don't disappear in the same way as digital projects. In 2014, Jerome McGann, the pioneer of hypermedia and digital editions, said of his magnum opus, the *Rossetti Archive*, "I am now thinking that, to preserve what I have come to see as the permanent core of its scholarly materials, I shall have to print

Accessibility of online project in 2015

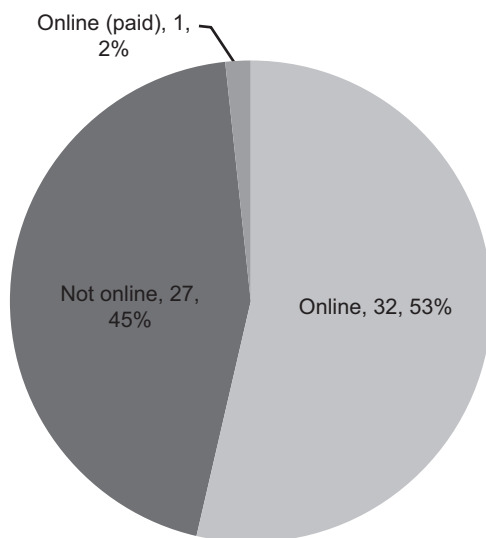


FIGURE 1.1 Robin Camille Davis, “Accessibility of online project in 2015,” an analysis of digital project availability from the DH 2005 conference (from “Taking Care of Digital Efforts”).

Source: Reproduced courtesy of the creator.

it out” (*A New Republic* 137). Archiving and other forms of future-proofing are important considerations, but they are not the thrust of this chapter. Here, I focus on a different kind of long-term planning: keeping a project alive and updated even after its creator, maintainer, or original visionary is no longer at the helm.

This chapter has three main sections: first, I discuss the exigence for thinking about long-term project planning; second, I turn to the recent *World Shakespeare Bibliography* update as a case study; and third, I outline some general principles for long-term project planning. In short, this chapter explores *why* we need to think about digital preservation, *what* it takes to migrate a project from legacy technologies, and *how* we can help secure futures for digital projects.

Bibliographies of online scholarly projects: why we need to think of digital futures

As Davis convincingly shows (see Figure 1.1), the loss rate for digital projects is high. When I consult bibliographies of early modern digital projects, this same rate is borne out across the subfield. To show how the loss of digital projects affects a specific field, in this case, the field of early modern literary studies, I turned to three bibliographies of early modern digital projects from 2001 and 2002: Robert C. Evans’s

“Internet Resources for Teaching Early Modern Women Writers,” Georgianna Ziegler’s “Women Writers Online: An Evaluation and Annotated Bibliography of Web Resources,” and Lisa Hopkins’s “Shakespeare and the Renaissance on the Web.”

Of the 52 resources that Evans listed, 65% of the sites are now lost. Similar loss rates plague projects that Georgianna Ziegler discussed, which might be expected given the overlap in their coverage. Of the 35 sites Hopkins surveyed, 20 are still around (though seven have moved to new pages and cannot be accessed through the URLs that Hopkins cites and need to be found using a search engine). Fifteen of Hopkins’s surveyed sites, or almost half, are lost: this includes two sites that still exist but have changed their purpose. Items on Hopkins’s list had a slightly better chance of survival partly because she included major sites such as the *Internet Movie Database* (IMDB) that were not specific to early modern studies.

Of the websites listed by Evans, Ziegler, and Hopkins, those that still survive are more likely to be university affiliated and have a .edu domain. Unsurprisingly, websites that seem to have been maintained by an individual (for instance, on AOL) are less likely to still be around. Other still-extant websites include those affiliated with major institutions such as the Royal Shakespeare Company and Shakespeare’s Globe, although the latter is one of the sites that changed its domain name and so cannot be accessed with the URL described in Hopkins’s bibliography. Naturally, the sites for the Royal Shakespeare Company and Shakespeare’s Globe have been updated quite a bit in 10+ years since Hopkins pointed scholars to them: a visitor today will see vastly different content than a visitor would have a decade ago, but the sites still serve the purpose of providing information about these two cultural institutions. Other sites remain essentially the same as when they were described in 2001 and 2002, for better or worse. Susanne Weber’s *17th Century Women Poets* is technically still a live website, but most of the links to the online poetry are broken—it remains useful primarily as a table of contents for an online anthology that no longer offers most of its texts. Some of the sites to which Weber points are still online but have simply moved or updated their URL structure, such as the University of Toronto’s *Representative Poetry Online* (ed. Plamondon, still currently updated). Others, like the *Emory Women Writers Resource Project* (ed. Cavanagh, updated 2006), exist but no longer have the content online that Weber points to, such as the works by Margaret Cavendish.

As *17th Century Women Poets* demonstrates, hyperlinking can be one of the most important features of a digital project and also, in an ever-changing online landscape, one of the most challenging to maintain. Eduardo Urbino’s *Cervantes Project* is another site that is starting to falter: as of mid-2017, some images no longer load and functionality is being lost. *17th Century Women Poets* is hosted by the University of Cologne; the *Cervantes Project* is based out of Texas A&M and the Universidad de Castilla-La Mancha. While institutional support might have led to the creation and decades-long existence of these sites, it has not guaranteed their continued survival and their full functionality. Both projects have, remarkably, existed for decades: the *Cervantes Project* since 1995 and *17th Century Women Poets* since 1997; but their continued existence is not guaranteed.

The Geistesgeschichte der Renaissance: internet ressourcen (GGRenir), cited by Evans, was particularly forthright about their inability to stay up-to-date. A banner displayed prominently across their homepage and in variations on different pages announces: “The GGRENir database, useful as it may be, has not been updated since sometime in 2003—as making new entries there and periodically updating existing entries takes more time than I have (and will have in the foreseeable future). Thus—*unless someone or some institution provides us with considerable financial or other support for this*—there will be no updates” (Kuhn, emphasis in the original). What does Heinrich Kuhn need to keep his resource working? Money and time. Anyone who has managed a digital project understands these needs.

While we can look at the state of digital projects as a binary, either still online or not still online (as in Figure 1.1), these early modern digital projects demonstrate that there is more of a continuum—and each part brings its own difficulties. If, as discussed earlier, a still-extant but not updated site causes difficulties, a site that is consistently updated can also cause challenges. Frequently updated sites might delete old material (as the Folger Shakespeare Library did in their 2016 site relaunch) or change their website structure, resulting in new URLs (as *Representative Poetry Online* did). Early discussions of these sites might quote altered or deleted texts or analyse now-lost functionality.

Although changing URLs can be a challenge, sometimes, ultimately, changing URLs can be in the best interest of a digital project. R. S. Bear’s site, *Renascence Editions* (cited by both Hopkins and Ziegler), offers an example of a successfully archived project that has moved. Initially, *Renascence Editions* appeared as part of the *Early Modern Literary Studies Journal* and was also mirrored through the larger *Luminarium* website. Anniina Jokinen’s *Luminarium* main site (cited by Hopkins, Ziegler, and Evans), a mainstay of online literary studies, hasn’t itself been updated since 2007. The EMLS-hosted *Renascence Editions* was last updated in 2007; the *Luminarium Renascence Editions* site’s last update was in 2009. This information would be more troubling if *Renascence Editions* had not been successfully archived by the University of Oregon libraries in 2004. The archived site is not quite as functional as the live webpages (for instance, the editions exist only in pdf and are not all visible from a single-page table of contents), but the digital archive preserves the materials, presumably for the long-term. In this case, changing the URL and slightly mitigating the functionality are certainly worth keeping this important site live.

Online journals offer a strong case study of the challenges of lost pages and broken links. Both Ziegler’s and Evans’s online bibliographies are full of links that no longer work; some of these could be fixed because they point to a site that has moved; others point to now-lost websites. By comparison, Hopkins’s printed bibliography, which is not available online, also gives now-broken web-links, but there is no way to update this without wholly rewriting and republishing her article. Furthermore, many links from websites to Ziegler’s bibliography itself (including those cited by Hopkins and Evans) result in an error, because the online journal *Early Modern Literary Studies* is no longer hosted with Sheffield Hallam University. Similarly, Evans’s bibliography is not findable through a simple Google search: searching

for the title in quotation marks and his name (“Internet Resources for Teaching Early Modern Women Writers” Evans) brings up a single result in Google, and when you click through to it, it is the introduction to the issue of *Working Papers on the Web* in which his bibliography appears. This introduction page itself has no links to his article, to the journal homepage, or to the table of contents for the volume. Evans’s contribution now needs to be found by searching for the journal or altering the URL from the introduction to take you to the volume. Despite being university supported and having a legitimate editorial board, *Working Papers on the Web* is now defunct. But why do we care about an out-of-date bibliography in a defunct journal about inaccessible resources? Because this is the norm, not the exception.

Even maintaining lists of digital resources about a given topic takes work to maintain; it can provide an important service to the field. For instance, *Mr. William Shakespeare on the Internet* was a well-known site from Palomar College that offered a curated list of important digital resources for the study of Shakespeare. Now, when you visit the site, you see simply, “Mr William Shakespeare is now retired”—not coincidentally, the retirement of Mr. William Shakespeare coincided with the site’s creator, Terry A. Gray. Hopkins points to the University of Toronto’s Center for Reformation and Renaissance Studies website as one that offers a “list of electronic resources for research” (Hopkins 69); visiting their site now reveals no such list. Presumably, it was too much work to maintain an up-to-date overview of reputable sites related to Renaissance and Reformation studies.

Writing evaluative or analytic arguments about the resources in a given field is important work. Current scholars need these articles and bibliographies to introduce them to new resources, to updates to existing resources, and to ways of using digital resources and tools that they might not have considered. Future scholars will turn to articles that list or analyse current-at-the-time digital resources in order to discuss the state of the field at a given point, as I have here.

Evans correctly predicted that “almost by definition the Internet, and everything connected with it, is shifting and ephemeral. By the time this piece is electronically ‘published,’ many of the sites described in it will have changed in numerous ways, and some of them may even have disappeared.” Evans called for an “archival mega-site” that would preserve the sites he discussed. He did not know of the then-recently launched *Wayback Machine* from the Internet Archive, which is that “archival mega-site” he wished for—but it is not a complete archive and at times suffers from the same difficulties as the aging sites themselves, including broken links and lost functionality.

I argue that we need more lists of, articles about, reviews of, and bibliographies on digital projects, precisely because they document a rapidly changing field. The more detailed that each can be will make them more valuable: although listing URLs or simply providing a series of links is at least something, annotations or evaluative statements about digital projects will be of even more use. Archiving and maintaining digital projects is one step towards preservation: but to understand the nature of a given field, we need to continue the critical work we do as scholars and preserve not just individual projects but also a broader view of the landscape.

The *World Shakespeare Bibliography* rebuild: what it takes to update legacy technologies

Of course, maybe I'm such an advocate for bibliographies because of my involvement in the *World Shakespeare Bibliography*. As the homepage explains, the *WSB*

is a searchable electronic database consisting of the most comprehensive record of Shakespeare-related scholarship and theatrical productions published or produced worldwide from 1960 to the present. [It] is an essential tool for anyone engaged in research on Shakespeare or early modern England [that covers] international Shakespeare scholarship including articles, books, chapters, dissertations, editions, adaptations, and digital projects.

(Estill, WSB)

Aside from providing annotations, a very important service to the field, we also include reviews of books and performances as well as cross-references between related articles (for instance, an article that analyses Kurosawa's adaptation of *King Lear* would link to the entry for the film). As you can imagine, this massive project, with almost over 120,000 entries, 1,000,000 reviews, and countless cross-references is not one that I undertake all by myself.

The *World Shakespeare Bibliography* began as a single article by Sidney Thomas in the inaugural volume of *Shakespeare Quarterly* (1950) that listed 333 publications from 1949.² Thomas acknowledged the collaboration of ten international scholars. By 1965, the bibliography had swelled to an entire issue of *Shakespeare Quarterly* and comprised hundreds of pages rather than hundreds of entries (Dent 1965). The final print volume of the *World Shakespeare Bibliography* was published in 2001; at 374 pages, containing 4,705 entries and cross-references, it was almost larger than all of the year's preceding *Shakespeare Quarterly* issues combined (Harner, 2001). This project's goals, scope, and methodology were created for print: in some ways, we still have a hangover from those early print days in our workflow and in our output.

The move to digital was an exciting leap for the *WSB*. The first CD-ROM was released in 1996 and covered four whole years of scholarship (Harner, 1996). Previously, scholars interested in a particular topic (for instance, the stage history of actor Ira Aldridge) would have to search through a growing pile of print bibliographies for each year—and that assumes they had a continuous run of *Shakespeare Quarterly* at their institution. The *World Shakespeare Bibliography* moved online more than a decade ago, in 2001, which enabled subscribers to search all entries at once. The bibliography no longer has print or CD-ROM components and is entirely on the Web. The *WSB* was a digital humanities project before the term *digital humanities* found popularity.³

If you had visited the *WSB* website any time before 2016, you would have seen that our web design stopped in 2001 (see Figure 1.2). I took over the editorship of the *World Shakespeare Bibliography* from James L. Harner (Jim) in 2013–2014. The





WORLD SHAKESPEARE BIBLIOGRAPHY <i>Online</i>		Produced by  SHAKESPEARE QUARTERLY				
Home		Introduction	Browse	Search	Advanced Search	About
Index Location		30.74.10.30 Individual Works — Plays; <i>The Taming Of The Shrew</i> ; Productions And Staging; Film, Cinema, Radio, Television				
Name		Bertucci, Christopher.				
Title		"Rethinking Binaries by Recovering Bianca in <i>10 Things I Hate About You</i> and Zeffirelli's <i>The Taming of the Shrew</i> ."				
Venue/Publisher		<i>Literature/Film Quarterly</i> 42 no. 2 (2014): 414-26.				
Date		2014				
Notes/Performers		[Argues that Franco Zeffirelli's <i>The Taming of the Shrew</i> (q.v.) and Gil Junger's <i>10 Things I Hate About You</i> (q.v.) display a sisterly bond between Kate and Bianca that creates a space for feminist resistance. Attempts to rethink binary interpretations that label these films either repressive or progressive by shifting attention away from Kate towards the portrayal of Bianca.]				
Persons		Zeffirelli, Franco; Junger, Gil				
Descriptive Terms		Katherine, Bianca				
Document Type		Article				
See Also		 Junger, <i>10 Things I Hate About You</i>  Zeffirelli, <i>The Taming of the Shrew</i>				
Language		English				
Record Number		bbbd172				

FIGURE 1.2 Pre-2016 display from the *World Shakespeare Bibliography Online*.

Source: Image courtesy of the *World Shakespeare Bibliography Online*.

World Shakespeare Bibliography was, and is, perhaps, too big to fail. The job ad for the position I took at Texas A&M University specifically mentioned the editorship of the *WSB*. Although I had fair warning about taking this job, there is no way I could have known what I was getting into.

Managing the transition between two people can be a challenge. I was honoured to be able to learn from Jim not just about bibliography but also about how to manage a leadership transition on a large-scale digital humanities project successfully. Jim had taken the project over from his predecessor, Harrison Meserole, and Harry wasn't the person who started the *WSB*.⁴ Even though Jim edited the *World Shakespeare Bibliography* for 30 years, he wanted to pass the baton. Sometimes, when someone has created a project, they can't imagine another person overseeing it. This is where, for me, taking over a project that had already passed hands was a benefit.

Jim set up a simple model for my ~~trial by fire~~, I mean, apprenticeship. We had a very clear two-year handoff period planned. For one year, I shadowed Jim. I was cc'ed on every email he sent about the *World Shakespeare Bibliography*. I attended every meeting. He introduced me to every Shakespearean in the world—well, not quite, but it felt like it! We even had additional meetings, almost every week, where Jim would tell me the stories of the *WSB*: from contract negotiations to delights at past conferences to our international contributors' interests. Learning the history of

the project was really important to me, and it was important to learn not just the written history but also the undocumented history that seems too mundane, too personal, or too scandalous to record officially. I wrote part of the *WSB*'s history down for what might be the first time in an article I published on "Digital Bibliography and Global Shakespeare."

Then, in my second year with *WSB*, I took over. Jim sent any inquiries he received over to me; I steered the ship, but any time I had a question, he was there, ready to answer. For this project, a year was a full cycle for the *WSB*: anything shorter, and I might have missed out on something crucial, like how to order a table for the book exhibit at the Shakespeare Association of America or how to renew our membership with the Deutsche Shakespeare Gesellschaft. For these two years, we shared credit as co-editors of the *WSB*.

After this two-year period (which ended up being two and a half years), Jim left the project entirely. He moved away. We still sent him news and invited him back for big events, but he lived in a different state. We could not truly have passed the baton if he had not been willing to let go during the handoff. Another way Jim prepared for the handoff was by not imposing his vision on the project. Jim was clear from the start: he knew the site needed updating, but, as he said, he wanted the *WSB* going forward to reflect my vision and not his, which is why he didn't undertake the much-needed major overhaul just before he retired.

The *WSB* is a joint production of Texas A&M University, the Folger Shakespeare Library, and Oxford University Press (formerly published by Johns Hopkins University Press). When I joined the team, these relationships had been in place for decades, with little documentation. The system was based on a series of gentlemen's handshakes. When I first assumed co-editorship of the *WSB*, it became clear to me that folks who had been willing to let things stand as they were with Jim were uneasy about collaborating with a newcomer. As such, we put into place a number of Memoranda of Understanding (MOUs) to protect all the stakeholders in the project and to help secure the *WSB*'s future.

Although Jim and Kris May, the *World Shakespeare Bibliography* associate editor, made the human part of the handoff simple, the technical elements were not simple. When I joined the *WSB*, everyone (our student research assistants, our international correspondents, and the Texas A&M-based editorial team) was encoding each entry in an old system (see Figure 1.3). If someone wanted to contribute to our project, when I arrived, it was standard to ask them to learn this encoding. As incoming editor, I had to learn this code. Each year, when the *WSB* welcomed on board two new research assistants, these graduate students had to learn this code. I believe that it is valuable for graduate students in the humanities to learn text encoding or programming languages. At the time, however, *WSB*'s code was an idiosyncratic, non-standard encoding language that contributors would be unable to apply in other DH projects. In this case, there wasn't even a way to "spell-check" the encoding using a program like oXygen or atom; you worked in a .txt file and hoped that no errors occurred when you submitted the file. As such, I found it unethical to ask graduate students to learn *WSB* encoding. Learning programming


```
%10.55.05
%.10 Kott, Jan.
%.20 Szekspir wspolczesny<7881> [Shakespeare Our Contemporary].
%.27 Second edition.
%.30 Cracow: Wydawnictwo Literackie, 1990. 444 pp.
%.35 1990
%.40 [Second edition of the revision of {iSzkice o Szekspirze} (q.v.), which
includes "Tytania i glowa<48> osla<28> [Titania and the Ass's Head]" (q.v.),
"Gorzka Arkadia Shakespeare'a [Shakespeare's Bitter Arcadia]" (q.v.), and "Dwa
paradoksy {iOtella}" (q.v.). Translated into Turkish (by Teoman Guney<44>) as
{iCagdasimiz<5587a5> Shakespeare}, Tiyatro/Kultur<2454> 32 (Istanbul: Mitos
Boyut, 1999, 290 pp.). For an explanation of his theories, see Kott, "In Defense
of Contemporary Shakespeare," {iShakespeare Newsletter} 19 (1969): 14 |
(translated into Polish as "W obronie wspolczesnego<8891> Szekspira," {iTeatr}
[Warsaw] 3 (1998): 34-35). On Kott's analysis of {iMacbeth}, see Ahrens, "Jan
Kotts Analyse von {iMacbeth:} Drama und kritischer Text" (q.v.); on Kott's
influence on Peter Brook's interpretation of {iKing Lear}, see Brook, "For Jan
Kott" (q.v.); on the critical reception of the book, see Ciglar-Zanic<115e>,"Jan
Kott and the Shakespearean Order of Discourse"; on Kott's influence on Ionesco's
{iMacbett}, see Dolamore, "Evil and Ideal in {iMacbett}" (q.v.); for Horzyca's
response to Kott's criticism of his production of {iMidsummer Night's Dream},
see "Dwie odpowiedzi na recenzje Kotta" (q.v.); on Kott's treatment of the
symbolic meaning of the theatrical properties in his essay on {iKing Lear}, see
Limon, "Buty Krola<31> Leara" (q.v.);
on Kott's engagement with anti-Stalinism in Poland, see Worthen, "Jan Kott,
{iShakespeare Our Contemporary}" (q.v.). For general discussions of the book,
see Capo, "{iHamlet} a varias voces" (q.v.); Elsom, "The Man Who Makes
Connections" (q.v.); Fricker, "Shakespeare und das Drama des Absurden" (q.v.);
Guczalska, "Shakespeare Jana Kotta"; Holoubek, "Shakespeare wspolczesny<7881>?"
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FIGURE 1.3 An example of old *WSB* encoding.

Source: Image courtesy of the *World Shakespeare Bibliography Online*.

or encoding is a valuable skill: however, it has diminishing returns if you cannot apply what you have learned.

My first goal was to get rid of the old encoding system (Figure 1.3) and diminish the technological barriers to contributing to the *WSB*. Even those international correspondents who had been on the team thought they knew this coding system, but few did, leaving it up to editors to basically re-encode each entry by hand. The first thing I did was institute a system where I replaced the arcane percent codes with language; this change enabled contributors to simply take a text template that had categories like "Author" and "Date" and fill in the information. I used a simple find-and-replace to change the language back to the percent codes before submitting entries to Johns Hopkins University Press for publication.

The second major step was launching an online portal for submission, where users could simply fill out an online form. Kris May, the *WSB* associate editor, spearheaded this effort. Quinn Dombrowski set up the Drupal site: it was a wonder to behold and made creating new entries simpler for all contributors. Unfortunately, even this interim online submission system still had to export in the legacy code (Figure 1.3); it still displayed in the old format (Figure 1.2).

Not only was the encoding itself problematic, the *WSB* file storage was a challenge. Each year's entries were stored in three separate .txt files. With over 100 files that were regularly being expanded, editors could not easily search content in queue to be published. Even as editors, we could not change material that was live on the site: if we approved an entry with a typo, that typo would stand until

the next quarterly update. It was a problem that two people (namely, myself, Jim, and Kris) couldn't edit the same document at the same time. And to make matters worse, although we had access to the files on a private server, we learned they were only being backed up weekly and the server was starting to falter. This meant more than once when a full day's work was lost, we would have no way to know if was fully restored.

Beyond the entry encoding—multiple file system that formed the backbone of the site, the *WSB* also had two other major digital workflows behind the scene. The first was the database system where we stored information about all of our books. At any given point, we have 500–1000 books in processing: that is, ordered from interlibrary loan, preordered and awaiting delivery, with graduate students to annotate, and so on. Our old books database was called PC-File—a database program that is literally as old as I am. Jim had to maintain all the info in the PC-File database because he was the only one who could access it (you had to run a Windows 98 emulator to use the program). Liz Grumbach, who was at that time with Texas A&M's Initiative for Digital Humanities, Media, and Culture, managed to get all of our data out of PC-File and into a hot new technology, that is, a spreadsheet. Jim was unsure if a spreadsheet would get the job done, but it has worked so far. As the work by Kris, Quinn, and Liz attest, updating legacy technology is often a team effort.

Along with the archaic encoding, outdated website, and books database you could only run with a Windows 98 emulator, before 2016, the *WSB* also had a content management system for storing all the electronic documents that passed through our system. Essentially, this is our journal articles and reviews workflow manager. Our document management system (DMS) was called "Sugar"—an open source DMS that was last updated in 2008. (SugarCRM is now available as a for-pay "customer relation management" system.) I would say, "if it ain't broke, don't fix it," but the system was starting to break. You couldn't search an article by keywords—you always had to know the first word of the article. This was mostly fine, unless the article started with a quotation and then you had to know how that quotation mark was encoded to browse to the article, either at the start or end of hundreds of items.

In 2016, we launched the new *World Shakespeare Bibliography* site. This site rebuild was programmed by the Web Development Group (WDG) and funded by Texas A&M's College of Liberal Arts and the Folger Shakespeare Library. The new site incorporates the document management into the site itself, as opposed to being a separate entity. The online submission system (which drew heavily on the interim online submission system set up by Quinn and Kris) is part of the newly integrated in-site workflow and can be more easily published by an editor. One of the key improvements we made was to streamline the submission process: this upgrade shows how we value our community of contributors and also makes our project more welcoming to new international correspondents. The site rebuild came with new design, making the *WSB* more intuitive for users (see Figures 1.4 and 1.5).



FIGURE 1.4 The *WSB* homepage (www.worldshakesbib.org) as of May 2019.

Most excitingly, the *WSB* rebuild created new functionality. Most importantly, we have added the ability to access an online journal article if it is open access or if an institution subscribes to it. The new site allows more complex searches with our advanced search functionality, including searching more than one document type or language at once. We have also increased the hyperlinking: you can now click directly from a book collection to each of its chapters; you can click on journal titles, author names, or tags to browse more organically. The *WSB* is now integrated with multiple citation management systems such as EndNote or Zotero. We are now mobile-friendly—the site is navigable from a phone or tablet. The list of *WSB* improvements goes on. These improvements stem directly from the feedback we solicited from our users at the very outset of the site redesign.⁵

Rebuilding the *WSB* was not just a matter of technical upgrades. The *WSB* is the most comprehensive bibliography of Shakespeare scholarship; we carefully reconsidered our taxonomy of how articles are classified, which involved thinking about the landscape of Shakespeare studies and how it is divided. Of course, any project considering changing their taxonomy needs to ensure that it can update old entries with new labels or accept loss of functionality. We added “musical score” as a document type that is separate from “monograph.” We also

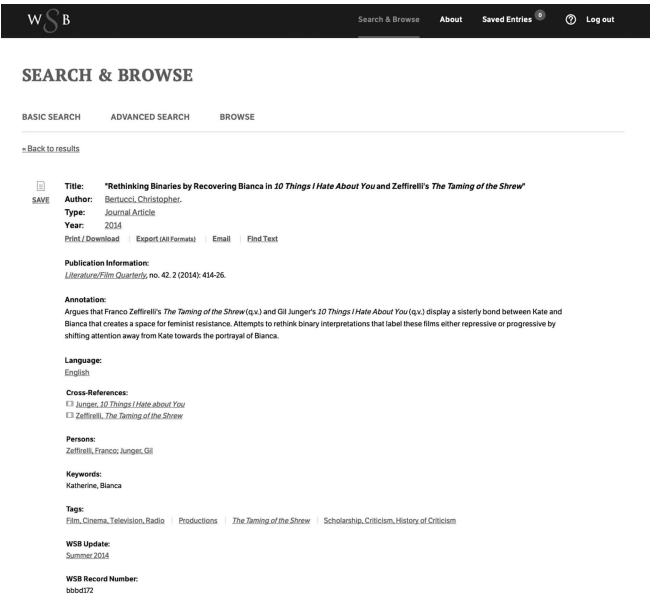


FIGURE 1.5 Sample *WSB* entry as it appears after the 2016 rebuild (cf. Figure 1.2). To note: “Find Text” button; journal titles, author names, and tags clickable for browsing.

Source: Image courtesy of the *World Shakespeare Bibliography Online*.

renamed “computer software” to “digital project.” These changes are not just about keeping up with current nomenclature: they are about accurately reflecting a field of study.

The 2016 *WSB* rebuild was timed to coincide with the #Shakespeare400 and #ShakespeareLives commemorations of the 400th year of Shakespeare’s death. Although we had planned for the site to be live for the Shakespeare Association of America meeting in March 2017, the new site took longer to set up than we anticipated. We did manage to get the site live for the World Shakespeare Congress in July 2017, however! It seems, in the creation and maintaining of digital projects as with all construction work, delays are the norm. But, to paraphrase a writer you might have heard of, “all’s well that ends well.”

The takeaways: how we can think about futures of digital projects

So what can we learn from the *World Shakespeare Bibliography* rebuild about long-term project planning? There are no hard and fast rules to prevent your project from becoming one of the lost majority. But there are some strategies you can use to help

future-proof your project. Indeed, many of these points have been discussed at length elsewhere (see, for instance, Poole, *The DH Curation Guide*, and Johnston, among others).

Although the following suggestions often use the imperative voice, they are, in spirit, conditional: each project will have different needs, and it will be up to you to determine the needs of your project and team. Rather than thinking about “shoulds,” let’s imagine these as “coulds.”

1. When you start, make sure you are using software or programs that have been widely adopted

There is something shiny about new and cutting-edge programs, but if you are using them to build a digital project, you can’t be sure they will last. Who wants to be a Betamax early adopter? Here, I’m not referring to digital tools that you might use for online analysis—I’m talking about what you will use to build your database, edition, or website. Many of the courses offered at DHSI (the Digital Humanities Summer Institute) and its affiliate signal widely adopted standards across the community: for instance, TEI (the Text Encoding Initiative) or Drupal.

2. Sustainability in people is just as important as sustainability in programming

This doesn’t mean that you have to have people commit to the project for a lifetime. If you are doing everything from the ground-up: bravo. If you are partnering with other people (including programmers, other academics/librarians, students, community members), you need to make sure that the work that any one person is undertaking can be replaced. If you have a computer science graduate student on your team, when they graduate, will someone be able to keep working on the programming they’ve done?

While this chapter is too brief to thoroughly address the importance of fair pay and fair credit for work, I will point you to the “Collaborators’ Bill of Rights” (Clement et al. 10) and “A Student Collaborator’s Bill of Rights” (Di Pressi et al). Setting up fair policies for credit and reward will keep your project sustainable—and will ensure you don’t run out of good will from your team as well as potential future collaborators.

3. Document, document, document

To keep your project going even when people, programs, and standards change, you’re going to need documentation. Documentation takes a lot of work and takes regular updating, but it’s worth it. Even if you’re not part of a large project, your future self with thank you for documenting early choices you’ve made.

There are a lot of different ways you can document things, but here are some key ones to consider: workflow documentation, technical documentation, scope