Social Knowledge Creation and Emergent Digital Research Infrastructure for Early Modern Studies

by

Daniel James Powell
M.A., University of Victoria, 2010
A.B., The College of Charleston, 2007

A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of

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Supervisory Committee

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Abstract

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This dissertation examines the creation of innovative scholarly environments, publications, and resources in the context of a social knowledge creation affordances engendered by digital technologies. It draws on theoretical and praxis-oriented work undertaken as part of the Electronic Textual Cultures Laboratory (ETCL), work that sought to model how a socially aware and interconnected domain of scholarly inquiry might operate. It examines and includes two digital projects that provide a way to interrogate the meaning of social knowledge creation as it relates to early modern studies. These digital projects – *A Social Edition of the* Devonshire Manuscript (BL Add. 17,492) and the Renaissance Knowledge Network – approach the social in three primary ways: they approach the social as a quality of material textuality, deriving from the editorial theories of D. F. McKenzie and Jerome McGann; as a type of knowledge work that digital technologies can facilitate; and as a function of consciously designed platforms and tools emerging from the digital humanities. In other words, digital humanities practitioners are uniquely placed to move what has until now been customarily an *analytical* category and enact or embed it in a *practical*, applied way. The social is simultaneously a theoretical orientation and a way of designing and making digital tools — an act which in turn embeds such a theoretical framework in the material conditions of knowledge production. Digital humanists have sought to explain and often re-contextualise how knowledge work occurs in the humanities; as such, they form a body of scholarship that undergirds and enriches the present discussion around how the basic tasks of humanities work—research, discovery, analysis, publication, editing—might alter in the age of Web 2.0 and 3.0.

Through sustained analysis of *A Social Edition of the* Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network, this dissertation argues argues that scholarly communication is shifting from a largely individualistic, single-author system of traditional peer-reviewed publication to a broadly collaborative, socially-invested ecosystem of peer production and public facing digital production. Further, it puts forward the idea that the insights gained from these long-term digital humanities projects – the importance of community investment and maintenance in social knowledge projects, building resources consonant with disciplinary expectations and norms, and the necessity of transparency and consultation in project development – are applicable more widely to shifting norms in scholarly communications. These insights and specific examples may change patters of behaviour that govern how humanities scholars act within a densely interwoven *digital* humanities.

This dissertation is situated at the intersection of digital humanities, early modern studies, and to discussions of humanities knowledge infrastructure. In content it reports on and discusses two major digital humanities projects, putting a number of previous peer-reviewed, collaboratively authored publications in conversation with each other and the field at large. As the introduction discusses, each chapter other than the introduction and conclusion originally stood on its own. Incorporating previously published, peer-reviewed materials from respected journals, as well as grants, white papers, and working group documents, this project represents a departure from the proto-monograph model of dissertation work prevalent in the humanities in the United States and Canada. Each component chapter notes my role as author; for the majority of the included material, I acted as lead author or project manager, coordinating small teams of makers and writers. In form this means that the following intervenes in discussions surrounding graduate training and professionalization. Instead of taking the form of a cohesive monograph, this project is grounded in four years of theory and practice that closely resemble dissertations produced in the natural sciences.

Keywords: Devonshire Manuscript, Renaissance Knowledge Network, digital humanities, early modern studies, social edition, humanities, metadata, research environments.

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Throughout my education, from preschool to this doctorate, my family has always demonstrated unwavering support. Although this work has carried me far from home and to several countries, I carry home's lessons with me always.

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Introduction

Social Knowledge and the Changing Nature of Humanities Scholarship

The way scholars in the humanities *do* scholarship seems to be changing, largely in response to the ways that those in academy collectively leverage the fully-formed Web 2.0 connectivity of today's online networks. Within the humanities, these trends can, arguably, be most easily seen within the digital humanities; it is within digital humanities that social knowledge work seems most active. Representatively, Lisa Spiro has written that "[b]uilding digital collections, creating software, devising new analytical methods, and authoring multimodal scholarship typically cannot be accomplished by a solo scholar; rather, digital humanities projects require contributions from people with content knowledge, technical skills, design skills, project management experience, metadata expertise, etc."[1] She goes on to detail a roughly 45% difference in collaborative authorship rates between *American Literary History* and *Literary and Linguist Computing*. The first is a well-respected quarterly publication in literary studies; the second is the disciplinary journal for digital humanities. Although collaborative authorship is perhaps a rough proxy for discussing social knowledge creation more broadly, it is a useful snapshot of a community in practice over time. It is also representative of larger shifts of the sorts discussed by, amongst many others, Kathleen Fitzpatrick, Jo Guldi, Dan Cohen, Ray Siemens, and Nancy Fjällbrant.[2] More than other disciplinary groups, digital humanists seem to have adopted the view that better connections between and amongst scholars, not to mention outside the academy, will and should irrevocably change the ways scholarship is gone about. Yet observing and thinking through such shifting patterns of knowledge work can be difficult.

In some ways, however, the tendency to treat this social interconnectivity as a new way of making knowledge is a diversion. Knowledge is not only now becoming social in a digital age, but has always been so. What has arguably shifted with the advent of a specifically *digital* humanities is that such patterns of production and interaction have been rendered more fully transparent and traceable than the print medium encouraged or, at its extremes, allowed. The roles and contributions of diverse

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[1] Spiro, "Collaborative Authorship in the Humanities," http://digitalscholarship.wordpress.com/2009/04/21/collaborative-authorship-in-the-humanities.

[2] See the following works for representative discussion: Fjällbrant, "Scholarly communication—Historical development and new possibilities;" Fitzpatrick, *Planned Obsolescence*; Fitzpatrick, "Beyond Metrics;" Siemens, "Scholarly publishing at its source, and at present;" Cohen, "The social contract of scholarly publishing;" Guldi, "Reinventing the academic journal."

individuals are much easier to trace in digital media than they have historically been in print. The brief comparison if manuscript and digital patterns of production undertaken below illustrates how different platforms might facilitate or hinder the tracing of individual moments of contribution to shared work. As a way of making knowledge, digital platforms allow for a clarification and sharpening of the multiple ways individuals come together to produce scholarly work. Such traces are not new to the digital age nor historically unique, as the following chapters on the Devonshire Manuscript forcefully illustrate. Nevertheless, the evolution of print as a media form has often elided the contributions of multiple authors, textual producers, and the multiplicity of actors operating within and around print outputs. The sharpness of schematic critiques that combine reading and material production into an ecosystem of cultural work are notable in the humanities precisely because they explicitly trouble the easy flattening effect that print has on the contributions of collaborators, of editors, of designers, of printers, and so on.[3] Publication platforms like Wikibooks or content management systems like Wordpress help to reveal the patterns of social interactivity that have always typified knowledge work. Of course, as much as technology might reveal, it constitutes the relations it might aid in uncovering. Within book history, does the author precede the printed book as a historical artifact? Or does the printed book precipitate the formation of "the author" in western literary culture? The answer, of course, is both, and neither: culture and technology are mutually constitutive.

This dissertation is an attempt to think through aspects of this mutually constitutive relationship. Drawing on *A Social Edition of the* Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network project, I hope to read the social as a type of knowledge making practice through the lens of digital humanities projects designed, in an example of exactly this tension, to facilitate the development of such relations amongst and between both scholars and the public. Social relations can thus be read through material artifacts like a scholarly edition on Wikibooks or a manuscript play from the 16th century; at the same time, however, those same material artifacts are what

[3] Robert Darnton's communications circuit, for example, maps readers, authors, publishers, booksellers, printers, suppliers, and shippers onto a single diagrammatic visualisation of "the entire communication process" of books. See Darnton, "What is the History of Books," 67 - 68.

constitutes those relationships. The medium is the message, as McLuhan claimed, but in more ways than one. Or, perhaps more properly in this case, the medium is the relationship.

Social interconnectivity as a way of structuring relationships in knowledge work, accompanied and produced by technological platforms, manifests as at least partially a new phenomenon made clear by the minute traceability of our digital lives. This is a misapprehension of how cultural artifacts were, and continue to be, produced. Every artifact is social, but when humanities scholars turn to internal discursive practices, the categories that are easily applied to the objects of study begin to slip and become contentious. This is not to dismiss such concerns, but rather to note that this difficulty stems at least partially from the very specific ways many scholars are habituated into fields of study and how terminology is deployed in analytical versus everyday, practical contexts. It is impossible to encounter scholarship outside of a material artifact, and every material artifact is analyzable in terms of its material production, sociality, and socio-cultural embedded-ness.[4]

Within humanities scholarship and when referring to the artifacts produced by scholars themselves, exploring these types of relations can become contentious. It is hardly unusual to insist that cultural materials produced safely in the past are social in their nature; what does it mean to assert that the journal article, the scholarly monograph, or the doctoral dissertation is of a similar nature? All knowledge work, and all scholarship, is social. Understanding how that broad assertion manifests itself in local and particular terms, whether in the print shop of early modern England or the academic department of the contemporary university, is subtler. In the digital humanities, as suggested above, the social nature of scholarly work is evident in the emphasis on collaboration and, to a lesser extent, by patterns of coauthorship. Many scholar-practitioners in the field take such collaboration as a central tenet of the discipline, and reporting and reflection on the realities of digital humanities projects and

[4] I would here note that even spoken debates and dialogues take place because of minute vibrations in air molecules and bones in the inner ear. Such *vive voce* moments are also highly influenced, if not structured, by the physical settings where they occur; room design, materials choice, machinery, and so on can and often do deeply effect even this seemingly non-material form of scholarly discourse.

labs bolster such thinking.[56] Despite this, as Spiro's observation highlights, explicitly social ways of working are still seen as rare, on the whole, within the humanities. This too is a mistake. If we reframe scholarly work and its outputs – the knowledge creation practices of the modern academic working in the humanities – as artifacts that can themselves be understood in social contexts, then social relations and material practices of that are explicitly ignored can be thrown in to relief. This point partially explains the continual reassertion here, and in the pages that follow, that all scholarship is social, if for no other reason than all scholarship manifests as a singular and whole material artifact. Deeply embedded patterns of behaviour and thinking that foreground the seemingly single authored and individualistically produced nature of much scholarship mean that such reassertion is intentional and necessary. When assumptions are so normalized that they are rarely vocalized, much less challenged, explorations like this are forced to constantly remind readers of the theoretical framework of the project. Coauthorship specifically and, more broadly, collaborative work on digital humanities projects, are two avenues through which this research begins to approach the social nature of digital humanities scholarship more widely. They are also the overall thematic orientation of this document.

Culture and knowledge have always been social, produced and consumed within networks. The scholarly landscape is rapidly changing; not only is collaborative authorship becoming (slowly) more widespread, but innovative publication practices for academic work are quickly becoming mainstream. Alongside peer-reviewed journal articles, academic blogging is everyday practice for those working in many fields. At in-person conferences and symposia, there is often now a Twitter-based back channel posing questions, linking to materials, or carrying on discussion. Conference panels are put together on Facebook, and an institutional repository or Academia.edu page might matter more than a formal pedigree. The modern scholar lives in a deeply interconnected world of information, and the manifold connections between those bits of information, and between those bits and people are, inexorably,

[5] See chapter three ("The Social Life of the Digital Humanities") in Burdick et al., *Digital_Humanities*, 73 – 98, for an excellent overview of the many ways "the social" manifests itself in digital humanities. *Collaborative Research in the Humanities*, Deegan and McCarty, eds., is exemplary and indicative of disciplinary reflections on the nature of collaborative work. See also Siemens' work on teams in digital humanities environments in "'It's a team if you use "reply all"', DOI: 10.1093/llc/fqp009.

shifting long-understood processes of academic work. Knowledge work now is, or can be, transparently social, outwardly iterative, and incredibly fast-moving. My research attempts to grapple with the making of culture and of knowledge in the 21st century as both shift from long-understood modes of print production to collaboratively, socially facilitated systems of shared production and ownership. In mapping past practices and putting those practices in conversation with contemporary, digitally facilitated phenomena, this dissertation thinks through the realities of what has begun to be called "social knowledge production" in a digital age.

To bracket "the social" as an adjective describing knowledge work is a problematic opening gesture, but one that nonetheless carries a certain force precisely because it highlights the antisocial nature of much academic work in the humanities throughout the last century. In *Keywords*, Raymond Williams sketches out a trajectory of society as a linguistic and cultural concept in modernity. By way of definition, he writes that "[s]ociety is now clear in two main senses: as our most general term for the body of institutions and relationships within which a relatively large group of people live; and as our most abstract term for the condition in which such institutions and relationships are formed."[7] In his view, and backed up by eclectically selected samples throughout the last approximately 600 years, the development of "society" is largely a history of movement from the Latin sense of "ally" or "confederate" through to "company" or "companionship" to the definition cited above. Along the way, Williams notes that the tension between the "general and abstract" vs the "active and immediate" senses was always present, but that by the 19th century, the latter sense had almost entirely been abandoned in favour of the former. The idea of "the social" followed a similar trajectory, moving steadily from a sense of genial association to objective generalizability. Thus while in up to the 17th century "social" might appear as a synonym for "civil" — as in the Social War of Rome against its longstanding allies in the 1st century BC — by the 19th century, "society" as such had become externalised to such an extent that it became possible to speak of social reformers, social diseases, social geographies, social status, and so on — and in fact many of these terms and those like them formed

[7] Williams, *Keywords*, 291.

during the emergence of society as an objective, outside construct during the 100 year period of 1810 - 1910.[8] As this brief summary illustrates, the social is a contested term that has shifted in meaning over the last several centuries. I would suggest that through 500 years of print hegemony we have culturally forgotten the nature of knowledge production as a fundamentally social activity.

I would like to frame the chapters that follow by claiming that many of the ways that we think about knowledge production, about remediation in an age of digital reproducibility, and about digital scholarly editing have been deeply influenced by the multivalent nature of society and the social as terms and constructs – if only by drifting away from ideas of knowledge work as inherently a collaborative, complex set of relation-based processes. For example, Elena Pierazzo's recent book *Digital Scholarly Editing* summarises social editing in essentially two contexts: the first is the rise of social media connectivity and web 2.0, and the second is developments in discourses of social textuality.[9] The first set of ideas is obvious from the way many of us live our lives (there are nearly 1.5 billion monthly users of Facebook, for instance), and the second comes to us through Donald McKenzie and Jerome McGann.

I want to argue instead for the idea of social knowledge as a set of relationships in academia that is connected to both social media connectivity and to the analytical categories scholars might bring to bear, in the manner of McKenzie or Robert Darnton, on the inscription-bearing artifacts of knowledge work in the humanities. This leads to two claims: first, scholars must accept and take seriously the McKenzian view that all texts are socially constructed in both their production and interpretation. Although scholars often invoke the sociology of texts when examining culturally distant or remote texts, there is often a decided reluctance to relinquish the discourse of single authorship and individual intellectual responsibility in discussions of academic output.[10] If applied to academic work, then it is difficult to claim that the outcomes produced in the academy — from scholarly editions to journal articles to white papers to undergraduate essays — are also not texts of some sort, subject to the same analytical categorization as McKenzie and others apply to historically distant works. For

[8] Ibid., 291 - 295.
[9] Pierazzo, 18 - 25.
[10] See, for example, the sheer unthinkability of a coauthored dissertation in academic study on pages 40 – 41.

McKenzie, social production could easily be seen in the printing shops of early modern England, where the lines between authors, editors, publishers, and printers became hopelessly muddled. This is a way of understanding the production of textual artifacts. On the other hand, the McKenzian reading of land as text in pre- and post-treaty New Zealand is illustrative of how textual meaning is intricately bound up in social norms, expectations, technologies, and religious systems. Sociality can inform how we understand artifacts themselves as well as how we can think through the set of socio-cultural relations from which textual meaning may emerge. No reader ever makes meaning alone, and no creator makes texts in isolation. This is especially true if scholars remember that all texts are connected to documents, whether those documents are written manuscripts, letterpress printed codices, or ones and zeroes on magnetic disk. Inscription is unavoidable, and no inscription happens in a vacuum. By definition it leaves traces that lead us to a multiplicity of hands.

In 2001, and again in 2009, Jerome McGann has said that "[i]n the next fifty years the entirety of our inherited archive of cultural works will have to be re-edited within a network of digital storage, access, and dissemination."[11] While the time scale may be ambitious and seems more a provocation than a plan of action, the realities of cultural practice indicate that such a transition is well underway. It must be noted, however, that McGann ignores the crucial role that collaborative work and social production has to play in this transition. Scholars have a valuable role to play in this collective remediation of our intellectual patrimony. To take a leadership role, to remain and become more relevant to policymakers, the private sector, and the public overall, scholars must redefine scholarship as an expansive, welcoming process of collective cultural work. In short, I truly believe that for humanities work to survive as more than a set of disciplines increasingly under siege by legislators and dismissed by an underinvested public, humanists must not only accept that knowledge is and always has been social and that digital communications technology are changing the ways that knowledge work can be done, but embrace such a renegotiation of the scholarly landscape. Instead of standalone models of individual, isolated scholarship wherein which editors and authors insist that control remain centralised in authoritative hands, humanists must grapple with the necessity of a scholarship that is public facing,

[11] McGann, "Our Textual History," 13.

that integrates diverse groups into creative knowledge—making activities, and that is social in the most positive sense. The Devonshire Manuscript Project and the Renaissance Knowledge Network are two attempts to enact this belief.

It is worth remembering Williams' definition here, especially because of the way that "social knowledge" as a theoretical construction fits so neatly into his narrative of objectifying and generalising relationships between actual people, much like the spate of "social x-y-z" that formed in throughout the 19th century. Humanists have, collectively, often placed internal practices of knowledge work into a black box closed to outside scrutiny, and even more so to outside involvement or investment. As I outline briefly below, this has resulted in a false sense of separation, but one that has become so normalised that it no longer requires comment or explicit mention. One goal of this dissertation is to open up the quasi-black box of knowledge production in the digital humanities by making clear the processes and decisions that go into a digital humanities projects. Such work is assumed to be closed and individualistic by many humanists; one goal of the case studies, published content, and prototypes gathered here is to push back against some these assumptions, as well as advancing discussions about how best to create and encourage social knowledge work in specific content areas. This follows logically from the idea of "the social" as an analytical construct — as a way of interpreting texts and the world writ large — and the social as a way of practically and effectively re-mediating our "inherited archive of cultural works." These two meanings of the social — as analytical construct and as a way of discussing real-world interconnections facilitated by primarily digital means — are two sides of the same proverbial coin; namely ways of exploring social knowledge as practice within the contemporary humanities.

This dissertation explores two of the major scholarly functions that digital humanists often find themselves undertaking: digital scholarly editing (remediating cultural content for publication, dissemination, and reuse online) and research infrastructure planning and execution (putting the systems in place that will facilitate future humanities research in self-reflexive ways). The nature of both functions, this dissertation argues, is shifting from long-accepted modes of individualistic production to an ethos of social creation; such a shift tracks wider movements in social media connectivity. This

prompts us to reconsider knowledge work as social in a way that, ironically, it would have made sense centuries ago: as a corollary to building fellowship and of fostering community. Approached in this way, social knowledge creation, whether it takes the form of editing, peer review, authorship, project building, or other activities within the ambit of digital humanists at work today is a way of remaking and remediating knowledge in practical and institutional terms; social knowledge creation acknowledges the historical realities of knowledge work and takes account of contemporary trends in collaborative work and social ownership of ideas. Scholarly communication cannot and does not exist in the absence of communities of practice that bring it in to being. And in this it is tied to material production, dissemination, and circulation of knowledge in concrete terms amongst those communities. Artifacts can productively reveal relations between embodied individuals, and subsequently be iteratively reconsidered to further foster such necessary ties. This dissertation reads two digital humanities artifacts – *A Social Edition of the* Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network – to analyse and explore precisely these relations.

Crowdsourcing

The term "crowdsourcing" is integral to debates about certain types of collaboratively produced knowledge in academia. This section defines the term, emphasising especially how it has shifted from a primarily business-oriented activity to an expansive catch-all term for public-facing, collaborative scholarship.

As a distinct term, crowdsourcing dates from a 2006 *Wired* article by Jeff Howe. In that piece, he details "The Rise of Crowdsourcing" as business practice:

> Technological advances in everything from product design software to digital video cameras are breaking down the cost barriers that once separated amateurs from professionals. Hobbyists, part-timers, and dabblers suddenly have a market for their efforts, as smart companies in industries as disparate as pharmaceuticals and television discover ways to tap the latent talent of the crowd. The labor isn't always free, but it costs a lot less than paying traditional employees. It's not outsourcing; it's crowdsourcing.[12]

[12] Howe, "The Rise of Crowdsourcing," http://archive.wired.com/wired/archive/14.06/crowds.html.

Going on to write a book—*Crowdsourcing*—on the topic, Howe promulgates two definitions for the term on his site:

> The White Paper Version: Crowdsourcing is the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call.
>
> The Soundbyte Version: The application of Open Source principles to fields outside of software.[13]

These are radically different definitions, although Howe easily conflates them. In fact, many open source advocates would likely claim that their principles are antithetical to the "white paper version" of crowdsourcing. Framed as free labour, crowdsourcing can be seen as, at its worst, exploitative and, perhaps at its best, as an inefficient way of tackling academic workflows.[14] Crowdsourcing is often turned to by librarians and humanists as a way to facilitate bulk transcription or tagging – a sort of piecemeal work that might be said to represent one model of collaborative production. This is striking especially in the frequent identification of crowdsourcing as practice with Amazon's Mechanical Turk, which pays piecemeal workers very small amounts to complete very small tasks.[15] In disciplines more interested in human computation, algorithmic processing, or programming workflows, crowdsourcing is often taken to mean only the use of Mechanical Turk in algorithmic chains.[16] Setting aside these debates about labour, however, is necessary because of a key fact: academic conceptions of crowdsourcing have far outgrown the easy identifiably with crowdsourcing as business practice as outlined by Howe outlined in 2005.

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[13] Howe, "Crowdsourcing," http://crowdsourcing.com/.

[14] For an excellent blog series covering many of these issues, see Nikolas Bentel's "The Problem of Crowdsourcing" on the HASTAC website: https://www.hastac.org/blogs/nikolas-bentel/2014/04/01/problem-crowdsourcing-part-1-modern-form-exploitation. For a perceptive analysis of the efficacy of crowdsourcing from an economic perspective, see Causer et al., "Transcription maximized; expense minimized?," http://dx.doi.org/10.1093/llc/fqs004.

[15] For demographic information on Mechanical Turk, see Ipeirotis, "Demographics of Mechanical Turk," http://hdl.handle.net/2451/29585.

[16] See Lasecki, "The Effects of Sequence and Delay on Crowd Work" or Law and Zhang, "Towards Large-Scale Collaborative Planning" for representative examples.

Broadly, current usage of the term crowdsourcing has shifted; in academic contexts specifically, humanists often deploy the term crowdsourcing with a remarkably different valence than Howe did a decade ago. At least as early as 2006, Howe himself began to notice that the term was being coopted by others to mean broadly participatory types of digitally-facilitated interaction: crowdsourcing "is being used somewhat interchangeably with Yochai Benkler's concept of commons-based peer production."[17] This separate term—commons-based peer production—was defined by Benkler as follows:

> a socio-economic system of production that is emerging in the digitally networked environment. Facilitated by the technical infrastructure of the Internet, the hallmark of this socio-technical system is collaboration among large groups of individuals, sometimes in the order of tens or even hundreds of thousands, who cooperate effectively to provide information, knowledge or cultural goods without relying on either market pricing or managerial hierarchies to coordinate their common enterprise.[18]

These are rather different cases of leveraging digital connectivity. Crowdsourcing, as originally understood, was a large business exploitatively drawing on "the crowd" to achieve a business-oriented productivity-based purpose; commons-based peer production suggests something different; namely, collaborative production of cultural or knowledge materials without distinctly hierarchical oversight. This is perhaps easier to see when Benkler and Nissenbaum write that "peer production is a model of *social* production."[19]

It is this second idea that tends to become the object of attention and study within the digital humanities. As Mia Ridge has noted, it is precisely when digital projects treat contributors like a standing resource rather than a set of potential or actual peers that they encounter difficulties.[20] Crowdsourcing now often encompasses what might more properly be called commons-based peer production alongside more task-oriented conceptions of the term; this can lead to misunderstandings about what and what is not possible within collaborative environments, especially as what are

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[17] See Howe, "Crowdsourcing: A Definition," http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html..
[18] Benkler and Nissenbaum, "Commons-based Peer Production and Virtue," 394.
[19] Ibid., 400. Emphasis mine.
[20] See Ridge, "Introduction," 1 - 8.

considered simple, mechanical tasks (categorisation, tagging, transcription, geomatching, etc.) "scale up" to more complex knowledge creation work (editing, controlled metadata creation, coauthorship). Social knowledge creation is a spectrum ranging from piecemeal, rote contribution to fully shared intellectual ownership. Recognising how social knowledge manifests in digital humanities projects and, more importantly, considering critically how it should manifest in those situations and platforms, is another goal of this dissertation. It is also a spectrum that has existed for some time, especially in popular contexts.

Cultural production is a collaborative, networked practice, as book historians have amply demonstrated and as publishers have long known. When such interaction is digital in nature, its pathways are more easily traced. Central to any discussion of social culture and social knowledge is an understanding of how profoundly normal such activity is now taken to be by the public. Threadless, for example, is a blend of artistic community and t-shirt company. Users submit artwork to the site; the community up or down votes a design; winning designs are printed on t-shirts, which are then for sale. According to a *Wired* profile in 2005, the company earned over $1.6 million USD in 2004.[21] An *Inc.* profile puts the company in perspective when it notes that Threadless "resembles . . . Web 2.0 firms," in that it "is an online business, built around a social network, in which users collaborate with one another. The difference is that Threadless is not a software or media company. It designs, manufactures, and sells actual stuff."[22] While the contrast between 'stuff' and information is in my view dated, Threadless was first and foremost a community of users; the 'thread' in the title is a pun on forum threads. The community is about fun art; the t-shirts are an expression of that. The equivalent, in discussions of scholarly communication, might be that the academic community is invested in knowledge production and exchange; that is what it is about. Articles, monographs, and other outputs are expressions of that goal. Knowledge production does not

[21] Luman, "Open Source Softwear," http://archive.wired.com/wired/archive/13.06/play.html?pg=3.
[22] Chafkin, "The Customer is the Company," http://www.inc.com/magazine/20080601/the-customer-is-the-company.html.

Science fiction author Hugh Howey and his *Wool* series illustrate a similar point. Howey has, as TechCrunch writes it been, "a yacht captain, a computer guy and, most recently, a bona fide publishing sensation."[23] Howey is also the author of the post-apocalyptic *Wool* series, a five-part story set in a future where humanity is confined to a single silo-city. Rather than a traditional book deal, though, Howey self-published his stories with Amazon using Kindle Direct Publishing. Each of the five parts was 99 cents on Amazon; within a year of the first section being published, he was earning over $100,000 per month from online sales. Eventually, Howey signed a contract for print publication with Simon & Schuster, although unusually he retained electronic publication rights (thus allowing him to keep the 70% royalty rate Amazon provides versus the 18% publishing industry standard).[24] Interestingly for the topic of this dissertation, he sees himself as an author, but one operating in a tradition of fan fiction; he has opened the *Wool* universe to other potential authors via the Kindle Worlds service.[25] After opening "his" world this way, he writes that "writers got in touch and expressed shock that I would allow people to dabble and profit off my characters. But I was profiting while writing about Joseph Campbell's singular hero of a thousand faces. We are all telling the same story with slight variations. Worrying about ownership seems strange to me."[26] While the *Wool* collection itself is not coauthored, the universe in which the stories take place has quickly become a site of cultural production with dozens of short stories, novellas, and novels included in the "Silo Saga."[27]

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[23] Biggs, "Hugh Howey," http://techcrunch.com/2014/05/19/hugh-howey-author-of-the-silo-saga-talks-about-making-it-big-in-self-publishing.

[24] See the following for more information: Deahl, "Self-Made Bestseller Weighs Traditional Deals," http://www.publishersweekly.com/pw/by-topic/industry-news/publisher-news/article/51416-self-made-bestseller-weighs-traditional-deals.html; "Hugh Howey Goes From Bookstore Clerk to Self-Publishing Superstar," http://www.wired.com/2013/04/geeks-guide-hugh-howey.

[25] Howey, "Writing in Vonnegut's World," http://www.slate.com/articles/arts/books/2014/01/wool_author_hugh_howey_on_fan_fiction_and_kurt_vonnegut.html.

[26] Ibid.

[27] Fantasy and science fiction seem particularly adept at such moves. Author David Weber, for example, has published over a dozen science fiction military novels based on a futuristic version of Horatio Hornblower named Honor Harrington. In the last several years, he and his publishers, Baen Books, have opened the universe to a number of authors under Weber's general editorship. Numerous stories have been published in anthology collections, sub-series, and parallel novels. For an orientation to the shared "Honorverse," see the terms Wikipedia page: https://en.wikipedia.org/wiki/Honorverse. For an example of the type of shared universe storytelling mentioned here, see the first "Honorverse" anthology: Weber, Drake and Stirling, *More than Honor*. Eric Flint (also an author in the Weberian Honorverse) has followed a similar path with his *1632* world. Centred initially on a small West Virginian town flung back in time and space to early modern Germany, Flint wrote the first novel alone; fan involvement on fora and message boards inspired a number of smaller, multi-authored collections, as well as prompting an entire sequence of novels written by a number of individual or small groups of authors. For the first novel in the series (authored individual by Flint), see Flint, *1632*. For an orientation into the large-scale collaborative writing effort the series has engendered, see its Wikipedia page

These examples—of which there are more to be found—are relevant to academic work in the humanities because they illustrate trends which are already becoming dated in the world of pop culture and entertainment; they also provide models of possibility for how shared ownership and social modes of scholarly communication might function in academia. That similar types of production are still resisted within many academic disciplines might be taken as indicative to the rate at which socio-cultural change is resisted by academic institutions. These brief examples are also important because they point towards what Henry Jenkins and others have called "participatory culture." As outlined in a 2006 white paper, participatory culture is defined as "a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices."[28] More than existing as a type of sub-culture, cultural production is in fact now often participatory as a default; in other words, it is not a subset of cultural production, but the inclination of the field itself. Threadless and the Silo universe are emblematic of the shift from individual ownership and an atomized field of production to an ethos of sharing and collaboration in popular cultural production. At the same time, though, they are not fundamentally different from how artistic and critical work has emerged in the past. It is only that our ability to analyse and understand patters of production that has altered. We can now see and understand the work of many hands in any single material artifact more easily, and, furthermore, we can see open systems being designed to facilitate such interactions. As experiments with crowdsourcing and the expectation to produce increasingly public-facing scholarship illustrate, humanities is already attempting to catch up to where participatory culture and commons-based production have already established substantial histories of practice.

(https://en.wikipedia.org/wiki/1632_series#Collective_collaborative_effort) as well as the first The many works set in this universe are too numerous to list here, but currently number approximately seventeen novels, four anthologies, three fan-produced but professionally edited and canonical short-story collections, and vibrant forums where fans originate new stories.

[28] Jenkins, et al., *Confronting the Challenges of Participatory Culture*, http://www.newmedialiteracies.org/wp-content/uploads/pdfs/NMLWhitePaper.pdf.

Contemporary and Historical Patterns of Social Production

Patterns of social knowledge production can easily be found when material practices are examined closely. Although print culture often elides the contributions of multiple individuals into a flattened product, returning to the manuscript cultures of pre-print hegemony can allow us to see such relationships in a way similar to how the digital affords us now. Comparing the textualities of manuscript and print, gives ample evidence of this. The medieval scriptoria, after all, is at its core a highly complex system of divided labour, devoted to producing standalone material artifacts. In the European Middle Ages, monasteries raised animals expressly for the production of parchment; these animals were slaughtered for their skins; goose quills were plucked and cut; ink was mixed, often by individual scribes; pigments for illumination were hand made. None of this happened in individual isolation. Larger scriptoria had a number of scribes, and a number of roles for those scribes. In simply describing how such a site of production operates, Frederick Kilgour creates it as a social place:

> Large monasteries had four types of scribes: (1) those who did the common copying work of the house; (2) those trained in calligraphy, who copied fine book manuscripts; (3) the "correctors," who collated and compared a finished book with the exemplar from which it had been copied; and (4) the rubricators and illuminators. Some of the calligraphers and illuminators were laity. The manager of the scriptorium was often the choirmaster; very likely a person who could lead and direct singers could also direct copyists. Only the abbot had the authority to decide that a copy should be made, a scribe could write only with permission from the director, and scribes could not exchange assignments; also, no monk appointed to write could refuse to do so. A thirteenth-century Carthusian statute required unwilling scribes to be punished by depriving them of wine.[29]

Besides being an amusing anecdote about wine, this last sentence points to an important point: cultural production was a set of practices subject to control and chaos, involving numerous participants completing discrete tasks. Books, then as now, were and are unavoidably the product of many hands – as are the infrastructures, archives, and editions emerging from the digital humanities.

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[29] Kilgour, *The Evolution of the Book*, 71.

This can be seen in the early modern period as well. *Sir Thomas More* is an Elizabethan manuscript play held by the British Library, and a telling example of collaborative (re)production as a way of transmitting and remediating knowledge and culture. It is primarily in the handwriting of Anthony Munday, a well-known Elizabethan author, but also contains the hand of Sir Edmund Tillney (the Master of Revels) and at least six other authors.[30] Tillney's criticisms of the play apparently torpedoed the production, as it was deemed too religiously contentious for late 16th century England. After this intervention and set of written criticisms, a number of authors made additions to the play, written separately and added in on loose sheets or, alternatively, written in the margins. These authors are generally accepted as Henry Chettle; possibly Thomas Heywood; a playhouse scribe; William Shakespeare; and Thomas Dekker. Heywood, Dekker, and Shakespeare are well known Elizabethan dramatists. The material oddness of the play, though, confronts us with two questions, both of which are often flattened in print: what exactly is the play (i.e., does it include the main body content, the additional notes, and the inserted pages?) and who wrote it? The additions are often themselves pasted in, giving the manuscript a piecemeal and composite structure. Different hands are spread throughout the text, and indeed some additions contain multiple hands in dialogue with each other. Single hands sometimes go through the entirety of the manuscript and revise the text. And so on.[31] By any usual or expected standard, the play is a complicated mess of authors, materially re-constructed narratives, and non- or quasi-authorial interventions. It forces scholars, though, to understand that the production of dramatic texts in early modern drama in England—a domain so often reduced to the singular genius of Shakespeare—was a deeply social place, where literature was produced, revised, and published extensively in collaborative settings even before reaching the stage.[32]

Sir Thomas More is an easy example, as are the medieval scriptoria that involved dozens of men in the production of a single text, although with different roles in that process. In the same vein, the academic artifacts of today are also social texts. Consider the academic journal. It is often run by an

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[30] See Merriam, "The Misunderstanding of Munday as Author of Sir Thomas More," 540-581.
[31] See Bald, "*The Booke of Sir Thomas More* and Its Problems," 45 – 50 for a detailed overview of the manuscript and its hands.
[32] Thus dramatist Thomas Heywood's claim to have had "an entire hand or at least a maine finger in two hundred and twenty plays" in the preface to 1633's *The English Traveller*.

editor, or team of editors. There may be one or a dozen. Anyone can submit content to be considered. That content is read by the editor and may be sent out to peer reviewers who might be otherwise unaffiliated with the journal. They return reports. Submission are rejected or accepted. They are revised by authors based on reviewer and editorial feedback. A publisher sets them in type, digitally, using the Adobe Creative Suit. Content may be sent to a traditional ink and paper printer or converted to a PDF or HTML and posted online. Printers run the printing presses that produce print journals, handlers load the trucks that carry issues to libraries, where more handlers unload them and staff place them appropriately for discoverability and use; they thus enter into the web of knowledge. If documents are posted online, its unlikely that the journal owns its own servers. Those servers have network administrators or IT departments keeping them live and updated. Someone else made the browser that can successfully display the files on the server to users. And so on. The digital humanities, and digital platforms for knowledge making, can make these relations easier to parse, as well as hinder or encourage them via design.

More is a convenient pivot to briefly discuss the realities of digital humanities centres and laboratories, and how such physical spaces can encourage or hinder social knowledge creation practices. Digital editions, archives, or resources are published by the Centre for Manuscript Genetics (Universiteit Antwerpen); the Maryland Institute for Technology in the Humanities (University of Maryland); the Centre for Digital Humanities (University College London); the Center for Digital Research in the Humanities (University of Nebraska Lincoln); the Electronic Textual Cultures Lab (University of Victoria); the Scholar's Lab (University of Virginia); or the Humanities Research Institute (University of Sheffield).[33] Knowledge work in these spaces is inherently grounded in networks of interpersonal interactions and material creation. This dissertation seeks to illustrate these interactions and the projects they give rise to. Anyone who has attempted such a digital edition or a similar, large-scale digital project will quickly apprehend the reality of collaborative digital workflows. The work of making digital knowledge is material, interpersonal, iterative, recombinatory, and social.

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[33] For example, in order, editions or archives based out of these institutions include: *The Samuel Becket Digital Manuscript Project*; *The Shelley-Godwin Archive*; *The Walt Whitman Archive*; *A Social Edition of the* Devonshire Manuscript; *Notes on the State of Virginia*; and John Foxe's *The* Acts and Monuments *Online*.

I would suggest that to continue understanding how culture and knowledge are made today as social productions, we need to let go of the idea that either ever were in fact anything else. Culture circulates. Knowledge is shared. Any artefact is the result of complex networks of individuals and cascading sequences of processes that come together to produce what masquerades as a standalone, detached work. Such practices are always material and always social, even if the existing infrastructure of scholarly communication largely treats outputs as sole, individual outputs. Turning to the material genesis and internal processes of such work provides an entrance to discuss academic work as social knowledge. Threadless is a combination art-t-shirt printing community that uses community voting and open submission to produce trendy clothes. Hugh Howey, along with a number of other fantasy and science fiction authors, have created elaborate shared universes allowing multiple types of contribution. Books and manuscripts have always been collaborative, especially when considered from the perspective of a materialist book history. Such relations might be easier to see in manuscript or via digital platforms, but it is true for all knowledge work; this suggests that to effectively critique contemporary patterns of scholarly communication, its social nature must be taken as a starting point. And even as august an author as Shakespeare likely co-authored a number of works, in a fashion completely typical of Elizabethan England. Projects like *The Shelley-Godwin Archive* and *The Walt Whitman Archive* both took shape as academic archives-editions created by large teams of collaborative knowledge workers, capturing the reality of such work in the age of a digital humanities. These are samples, but they are representative.

As mentioned above, Jerome McGann made the following claim: "In the next 50 years the entirety of our inherited archive of cultural works will have to be re-edited within a network of digital storage, access, and dissemination. This system, which is already under development, is transnational and transcultural."[34] Noting the decades-old turn away from philology, editing, and the more 'objective' practices of literary scholarship he argues that now, or "the day after tomorrow," "we will be needing young people well-trained in the histories of textual transmission and the theory and practice of scholarly method and editing." At the same time, "our universities are seriously unprepared to educate

[34]McGann, "Textonics," 246.

such persons. Electronic scholarship and editing necessarily draw their primary models from long-standing philological practices in language study, textual scholarship, and bibliography." To effectively achieve this translation of materials into digital forms, their social nature must be understood. McGann himself picks up on this a number of years later, claiming that the "historical record is composed . . . of [a vast] set of specific material objects that have been created and passed along through an even more vast network of agents and agencies. The meanings of the record—the interpretation of those objects—are a function of the operations taking place in that dynamic network."[35] The most powerful role of a digital humanities is that it can take an active and critical role in bringing the cultural record to digital form. McGann himself notes that often this digitisation—this active shaping of the culture and knowledge—is undertaken by for-profit and non-academic groups like Google or Elsevier.[36] While it is certainly easy to take issue with McGann's time horizon of "the next 50 years," it seems commonsensical to acknowledge that cultural heritage materials, for tangible reasons of access and dissemination, are increasingly being digitized in some fashion and made available in online spaces. Such re-production is social creation, although the inertia of expectations and norms in scholarly production might suggest otherwise. Contemporary publishing in academic journals, for example, extensively uses digital platforms and tools; although monographs in the humanities lag behind digital access to journals, e-books are increasingly to be found linked from library catalogues. Large cultural institutions like the British Library and the American Library of Congress have put explicit strategies in place to manage this wholesale digitization of heritage materials. The digital humanist can actively intervene in these transitions not least of all because digital technologies can help us see always extant patterns of social production, consumption, dissemination, and re-production more clearly. Thus during the Devonshire Manuscript Project, for example, a digital humanities team sought to build a scholarly edition of a 16th century collaboratively written manuscript miscellany in Wikibooks, a platform that allows all changes to be tracked but is open to anyone.[37] In other contexts digital

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[35] McGann, "Our Textual History," 13 - 14.
[36] Ibid., 13.
[37] See the following for further discussion of the Devonshire Manuscript Project and the social edition: Siemens et al., "Drawing Networks in the Devonshire Manuscript (BL Add Ms 17492),"

connectivity is harnessed differently. Nevertheless, cultural materials are social in their creation, social in their transmission, and social in the manifold ways they are re-purposed, revised, re-mediated, and re-created. As McGann notes in his mention of Google Books and Elsevier, this transition is happening regardless of humanist protest or reservation. This makes it vital that digital humanists, especially, take an active role in re-making such resources, for such processes are anything but neutral.

In spring of 2013, journalist and author Amanda Filipacchi published an op-ed in the New York Times titled, bluntly, "Wikipedia's Sexism Toward Female Novelists." In the article, she details how Wikipedia editors were in the process of moving women, one by one, from the "American Novelists" category to "American Women Novelists" subcategory. She writes:

> 'The intention appears to be to create a list of "American Novelists" on Wikipedia that is made up almost entirely of men. The category lists 3,837 authors, and the first few hundred of them are mainly men. The explanation at the top of the page is that the list of "American Novelists" is too long, and therefore the novelists have to be put in subcategories whenever possible.
>
> Too bad there isn't a subcategory for "American Men Novelists.'"[38]

One can easily see how, at the end of this process, in this new ontology, "American novelists" as a category have become, by definition, entirely male. Filipacchi's short piece quickly went viral, attracting attention from newspapers like *The Independent*, magazines like *Forbes*, *Salon* and *The New York Review of Books*, and, eventually, the Wikipedia community itself—where it set off a vicious cycle of edit wars, revenge edits, and invective hurled on various Wikipedia Talk pages. Unusually, Wikipedia founder Jimmy "Jimbo" Wales weighed in on his Talk page asking, bluntly. "WTF." Eventually it was discovered that the most active editor in moving authors between categories, as well as in a number of "revenge edits" was a fiction writer who had, on numerous occasions, made changes to Wikipedia

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http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/146/201; Siemens et al., "Toward Modeling the *Social* Edition," http://dx.doi.org/10.1093/llc/fqs013; Siemens et al., "Underpinnings of the Social Edition?," http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/182; Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492*),* http://en.wikibooks.org/wiki/The_Devonshire_Manuscript; and Siemens et al., "Pertinent Discussions Towards Modeling the *Social* Edition: Annotated Bibliographies," http://www.digitalhumanities.org/dhq/vol/6/1/000111/000111.html.

[38] Filipacchi, http://www.nytimes.com/2013/04/28/opinion/sunday/wikipedias-sexism-toward-female-novelists.html.

pages designed specifically to discredit competing authors, take revenge for in-person slights, and generally play out grudges on Wikipedia.[39] Many observers reduced the conflict to his interventions. As Filipacchi and others have pointed out, though, actually a number of editors were involved at every stage of the conflict, from re-categorisations to attacking Filipacchi's page directly. The episode is now considered one chapter in discussions of sexism on Wikipedia, whose editorial community is about 90% male. As the Wikimedia puts it in the Executive Summary of their 2011 editor survey, "if there is a typical Wikipedia editor, he has a college degree, is 30-years-old, is computer savvy but not necessarily a programmer, doesn't actually spend much time playing games, and lives in the US or Europe."[40]

I bring this up underline that the ways we build knowledge are changing. Publications like Wikipedia are qualitatively different in their ethos and norms than peer-reviewed, single-authored scholarly publications. Such environments operate on a model of contributor gestalt rather than expert quality control. Wikipedia is ranked by Alexa as the 6th most visited site on the internet.[41] It is where students begin research, and humanists can ill afford to ignore the ways that cultural and scholarly knowledge is continually re-constructed in such spaces. To ignore or refuse the socially constructed world of knowledge creation that Wikipedia might be taken of emblematic as is to refuse to take part in the democratisation of knowledge work. Wikipedia is undoubtedly the most well-known and easily accessible example of social knowledge creation, a still amorphous concept that might be defined as a fundamentally open scholarship, involving multiple stakeholders, diverse practitioners, interdisciplinary contributors, and technologically facilitated patterns of production. It also desperately need reasoned, critical contributors who actually reflect the public at large. Disengagement equals acceptance, and scholars are uniquely disposed to not engage in the collaborative knowledge creation practices to which they might make important contributions.

Responding to the Filipacchi episode, Andrew Leonard of *Salon* wrote that the saving grace of these "edit wars" is that "all the ugly evidence of 'revenge editing' is preserved for eternity for anyone

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[39] Leonard, " "Wikipedia's Shame," http://www.salon.com/2013/04/29/wikipedias_shame; Leonard, "Revenge, ego and the corruption of Wikipedia," http://www.salon.com/2013/05/17/revenge_ego_and_the_corruption_of_wikipedia.
[40] "Executive Summary," *Wikipedia Editors Study*, https://meta.wikimedia.org/wiki/Editor_Survey_2011.
[41] As of November 2014. See http://www.alexa.com/topsites.

curious enough to investigate in the 'talk pages' that reveal precisely how Wikipedia's knowledge is constructed."[42] This quote is revealing, for parsing how knowledge is constructed in the age of social media and networked relationships is in fact one of the primary tasks facing contemporary scholars working with the cultural record.

In the mid 1990s, Eric Raymond, a Linux developer, published an essay, later expanded to a book, called *The Cathedral and the Bazaar*. In the original essay, he recounts his time building fechmail, an email retrieval program; while doing so, he also outlines two divergent models for software development. In the cathedral model, as he puts it, software "needed to be built like cathedrals, carefully crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time."[43] He contrasts this with the Linux community: There was "No quiet, reverent cathedral-building here—rather, the Linux community seemed to resemble a great babbling bazaar of differing agendas and approaches (aptly symbolised by the Linux archive sites, who'd take submissions from anyone) out of which a coherent and stable system could seemingly emerge only by a succession of miracles."[44] Perhaps my favourite quote from this essay is this: "The fact that this bazaar style seemed to work, and work well, came as a distinct shock. As I learned my way around, I worked hard not just at individual projects, but also at trying to understand why the Linux world not only didn't fly apart in confusion but seemed to go from strength to strength at a speed barely imaginable to cathedral-builders."[45] Scholarship has, for centuries, been conceived of as individual cathedrals, profound undertakings that stand as monuments to a individual thought, with an abstruse nature understandable only to the elect. Moving to a bazaar model is scary, messy, and chaotic. As section one recounts, the communities that project organisers expect to form often do not take shape, and the communities that do form are often unexpected. Section two should be considered a further refinement and exploration of how exactly to move in this direction in early modern studies. Together, both make the case that there is worth in moving to a cooperative model of scholarly work

[42] Leonard, "Wikipedia's Shame," http://www.salon.com/2013/04/29/wikipedias_shame.
[43] Raymond, *The Cathedral and the Bazaar*, 21.
[44] Ibid., 21-22.
[45] Ibid., 22.

and that we might learn from experiments in that direction, but that how exactly to best effect or manage this transformation is yet to be settled. This transformation means that scholars might conceive of their work, publication, outreach, and knowledge production overall in a dramatically different way. The bazaar already exists, and it will continue to evolve; humanities scholars must learn to effectively intervene, to build open resources, and to engage with increasingly varied worlds of social knowledge production. Doing so means that the substantial insights of scholars might be applied in a shared landscape of digital cultural heritage materials and publicly-integrated scholarly communication.

It would also serve as a valuable way to ensure sustainability. As any librarian would be able to report, well-used and often-accessed resources are unlikely to be deaccessioned. Scholarly monographs that see little use are likely to be be moved offsite or destroyed entirely. Use and access are simply aspects of sustainability, used to justify decisions in a world of scarcity; the type of knowledge work discussed here — social knowledge creation — is in fact an always-emergent network of relationships that can facilitate sustainability through encouraging and realizing that such networks exist; acknowledgement is a key moment in the development of sustainable academic resources. Fritjof Capra hits on this when he writes that sustainability

> is a community practice. This is the profound lesson we need to learn from nature. The way to sustain life is to build and nurture community. A sustainable human community interacts with other communities — human and nonhuman — in ways that enable them to live and develop according to their natures. Sustainability does not mean that things do not change. It is a dynamic process of coevolution rather than a static state.[46]

Our world is a system of unparalleled complexity. Realizing and leveraging the deep connectivity amongst and between any individual quantum of knowledge work is a way to encourage not only nuts and bolts sustainability, but a fundamentally different way of building scholarly knowledge in a digitally connected world. Rather than a system of siloed and isolated disciplinary activity, digital platforms can facilitate the growth and development of knowledge systems that are shared, publicly integrative, and

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[46] Capra, "Life and Leadership for a Sustainable Community," http://www.ecoliteracy.org/article/life-and-leadership-sustainable-community-0.

holistic in their orientation. This is a primary way that the digital humanities, almost uniquely amongst the array of disciplines that constitute the humanities, might help to reconstitute the arts and letters as a whole: by developing and building the knowledge infrastructure that will undergird the development of knowledge and culture over the next several decades not only as a way to facilitate newer and better research but as a way to begin changing what scholars mean when words like research, infrastructure, and the social are used.

The two case studies discussed in this document represent possible avenues that such a shift to social knowledge practices might take. As artifacts produced via social knowledge practices *A Social Edition of the* Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network visions of possibility; they are two types of outward-facing, socially produced resources that may be adopted, in part or in whole, by many disciplines in the humanities that have found themselves isolated and left behind by the pace of techno-cultural change. Systems thinking may indicate a way forward theoretically that has already begun to be put in practice by initiatives emanating especially from the world of library and informant science. The Canadian Integrated Digital Scholarship Ecosystem (IDSE) is, for example, an attempt by the Canadian Research Knowledge Network (CRKN) to advance digital scholarship in Canada by providing an integrated digital scholarship ecosystem.[47] This effort would bring multiple stakeholders into conversation around the library as a type of central broker. The stage 1 report for IDSE notes that the emphasis is "not building a solution but nurturing an ecosystem . . . . The strategies and tactics recommended are presented through the lens and role of the academic library but their success rests on how tightly interconnected they are with the larger digital scholarship ecosystem recognizing the holistic nature of the work done by all the stakeholders."[48]
CRKN notes in its mission statement that it "is a partnership of Canadian universities dedicated to expanding digital content for the academic research enterprise in Canada," and that "[t]hrough the coordinated leadership of librarians, researchers, administrators and other stakeholders in the research community, CRKN undertakes large-scale content acquisition and licensing initiatives in order to build

[47] See "Integrated Digital Scholarship Ecosystem," http://crkn.ca/programs/integrated-digital-scholarship-ecosystem.
[48] Ridley and Pagotto, *Integrated Digital Scholarship Ecosystem (IDSE)*, 2.

knowledge infrastructure and research and teaching capacity in Canada's universities."[49] Although CRKN's orientation has long been towards acquiring content for research purposes, the mission of the organization is consonant with initiatives like the IDSE. It is also an indicative shift, one paralleled in Europe, the Network for Digital Methods in the Arts and Humanities (NeDiMAH), Digital Research Infrastructure for the Arts and Humanities (DARIAH), and the Common Language Resources and Technology Infrastructure (CLARIN). These initiatives are attempting to foster similar infrastructure community on a large scale.[50] In my view, these are explicit attempts to put in place a series of technical platforms and infrastructures that can then facilitate new types of knowledge making and sharing in a way that shifts focus from acquiring content for the use of others to fostering the internal management of knowledge ecosystems. Although these efforts are often transdisciplinary in scope and centred on national or international (in the case of the European Union) capacity, they are attempting to do for scholarship as a whole what ReKN focuses on for early modern studies; namely, to find models for the future of digital scholarship ecosystems, ecosystems that are inherently networked, social platforms. The case studies discussed in the following chapters are in this way models for one possibility for the future of scholarly communications in a socially networked age.

Towards an Anthropology of the Humanities

In their postscript to the second edition of *Laboratory Life*, Bruno Latour and Stephen Woolgar write that the "common assumption" of succeeding laboratory studies like theirs "is that our understanding of science can profitably draw upon experiences gained while immersed in the day- today activities of working scientists." Latour and Woolgar self-consciously chose the term "anthropology of science," they recall, in an attempt to denote a particular "presentation of preliminary empirical material, our desire to retrieve something of the craft character of science, the necessity to bracket our familiarity with the object of study, and our desire to incorporate a degree of "reflexivity" into our analysis."[51] I

[49] "Mission, Vision, Values," http://crkn.ca/about/mission-values.

[50] Network for Digital Methods in the Arts and Humanities (NeDiMAH), http://www.nedimah.eu; Digital Research Infrastructure for the Arts and Humanities (DARIAH), https://dariah.eu; Common Language Resources and Technology Infrastructure (CLARIN), https://www.clarin.eu.

[51] Latour and Woolgar, *Laboratory Life*, 277 - 278.

propose that humanists must readjust how we think through how knowledge work happens in the humanities, and that doing so through the lens of laboratory studies is a way to take seriously the quickly changing realities of humanities work in increasingly digital forms. Existing categories of analysis in the humanities are, however, insufficient to reckon with models the more resemble the natural or 'hard' sciences. To understand digitally facilitated collaborative knowledge work, we must adopt a sort of anthropology of the humanities — and key to any understanding of how the humanities work now, today, is an account that balances discussion of such environments with the tools used in such work, the expectations and systems in place to reward or punish certain types of activity, and the disciplining which is concomitant with student acculturation into the professional work of the humanities. Chapters detailing work on *A Social Edition of the* Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network take steps towards this type of analysis, as indeed many reflections on digital humanities projects parallel. To shift discussions of knowledge into discussions of social knowledge, humanists must reflect on the spaces, technologies, and norms in daily use. Social knowledge production happens in social spaces (the lab, the centre), using social technologies (platforms of communication, research, discovery, analysis, etc.), and employs variants on the expectations and norms arising from specific disciplines.

The point of this mindset is not to diminish any discrete addition of intellectual work in a complex network, but to argue that making knowledge is about much more than authorship narrowly construed (which itself does not necessarily take place in individualistic settings). In other words: it is extraordinarily difficult to know where to draw the line saying *this* is knowledge creation and *that* is not when materially and intellectually these processes are intertwined to a degree as to make them codependent. Digital innovations and platforms can help us see these connections ever more clearly, and they may make such practices easier, but the patterns of activity have always been present. But to build the tools of tomorrow, the platforms that facilitate such knowledge work, scholars should account for the models and experiments that have come before. These can often be found in the early efforts of the digital humanities.

Central to discussions of the changing nature of scholarly communication and professional knowledge work is how the infrastructures for making and sharing knowledge in the humanities are shifting. Initiatives like the IDSE demonstrate the comprehensive difficulties of such a shift; the role of libraries, for example, seems to be shifting from a body that houses content and provides access to one that aids in co-creating and fostering scholarship. This is one example of how knowledge work happens in a specific, but often tacit, system of standards, expectations, organisation, and spatial arrangement. Libraries are in a transitional moment from one system of tacit, understood set of expectations to another, uncharted paradigm. To encounter the implicit norms and unvoiced expectations of a disciplinary community, that community, it seems, must be approached obliquely. This dissertation is an attempt, via its format as a portfolio, to answer the questions that Susan Leigh Starr and Geoffrey Bowker use to open their book *Sorting Things Out*: These standards and classifications, however imbricated in our lives, are ordinarily invisible . . . . But what *are* these categories? Who makes them, and who may change them? When and why do they become visible? How do they spread?"[52] Internal systems, community-based ways of structuring time for work, governing how knowledge is made and shared, are extraordinarily difficult to pin down, as anyone who has interacted extensively with university bureaucracy has experienced. There is also a resistance to this type of introspective analysis on the part of academics embedded within university cultures; while often adept at reflecting and critiquing safely distant cultural artifacts and practices, applying similar frames to labour, material production, and power within academia is often a contentious practice. What is true of standards and classifications generally is perhaps especially true of the university:

> Remarkably for such a central part of our lives, we stand for the most part in formal ignorance of the social and moral order created by these invisible, potent entities. Their impact is indisputable, and as Foucault reminds us, inescapable. Try the simple experiment of ignoring your gender classification and use instead whichever toilets are the nearest; try to locate a library book shelved under the wrong Library of Congress catalogue number; stand in the immigration queue at a busy foreign airport without the right passport or arrive without the

[52] Bowker and Starr, *Sorting Things Out*, 2 - 3.

> transformer and the adaptor that translates between electrical standards. The material force of categories appears always and instantly.[53]

This discussion of social knowledge, and the inclusion of several concrete examples of what this type of activity might look like at the intersection of literary-historical studies and the digital humanities, is an effort to reveal some of this hidden arrangement in both a specific content area of humanities research—early modern studies—and with respect to graduate training and credentialing.

It is, as I touch on in below, also an anthropology of graduate training and disciplinary acculturation in practice. Such an approach is wide ranging in terms of scope, but narrow in focus. It encompasses the circulation of texts in a variety of formats (word processor files, PDFs, bound journals, codices); physical spaces of knowledge creation (departments, university layouts and grounds, research laboratories, office placement); research tools (card catalogues, the physical arrangement of library holdings, what you can check out and what you can't); and the general "stuff" of academic life: computers, paper, pens, pencils, desks, stairs, classrooms, coffee cups, and so on. This list is infinitely extendible, but this introduction is concerned with the dissertation as an object, and how that document can be modelled anew and leveraged to intervene in debates about graduate training in the humanities.

Scholarly Communication and Knowledge Infrastructure

Scholarly communication might be productively thought of as a variation on the idea of the public sphere articulated by Jürgen Habermas. In theory, academic research is oriented towards a public good and is composed of innumerable contributions that, taken together, become a specific type of discourse. If we take the scholarly sphere as analogous to the public sphere, we might look to the material components that helped it to rise. In the public sphere we find the newspaper and the social club; academia has the journal and the department. The rise of the public sphere is a complex alchemy of material circulation of abstract ideas; Benedict Anderson's discussion of the rise of the nation state—an abstract entity given real, material form, or perhaps vice versa—addresses this directly. He pegs the development of nationalism directly to a print-capitalism reliant on massive levels of textual

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[53] Ibid., 3.

circulation, circulation that served to juxtapose disparate events in one place, thereby creating a shared, imagined community:

> [Newspapers] began essentially as appendages of the market. Early gazettes contained—aside from news about the metropole—commercial news (when ships would arrive and depart, what prices were current for what commodities in what ports), as well as colonial political appointments, marriages of the wealthy, and so forth. In other words, what brought together, on the same page, *this* marriage with *that* ship, *this* price with *that* bishop, was the very structure of the colonial administration and market-system itself. In this way, the newspaper of Caracas quite naturally, and even apolitically, created an imagined community among a specific assemblage of fellow-readers, to whom *these* ships, bridges, bishops, and prices belonged.[54]

Shared print is both a product and process, the means by which the nation comes into shape and the result of such a knitting. Here scholars encounter the same difficulty as noted above: material reality and abstract social relations are mutually constitutive, and it is difficult, if not impossible, to bracket one from the other. Practice and product are difficult to disentangle. Part of what I am proposing here is that scholarly communication functions in a similar way, and is the material product of shared intellectual community while also serving a vital role in bringing about and maintaining such a collectivity.

This idea parallels insights that are influential within book history; namely, Robert Darnton's idea of the communications circuit, elaborated in his important article "What is the History of Books?" Elaborating on what a lifecycle for printed books might look like, he writes that

> It could be described as a communications circuit that runs from the author to the publisher (if the bookseller does not assume that role), the printer, the shipper, the bookseller, and the reader. The reader completes the because he influences the author both before and after the act of composition. Authors are readers themselves. By reading and associating with other readers and writers, they form notions of genre and style and a general sense of the literary enterprise, which affects their texts, whether they are composing Shakespearean sonnets or

[54] Habermas et al., "The Public Sphere," 62. Emphasis in original.

> directions for assembling radio kits. A writer may respond in his writing to criticisms of his previous work or anticipate reactions that his text will elicit. He addresses implicit readers and hears from explicit reviewers. So the circuit runs full cycle.[55]

This model of a communications circuit—quite popular and influential within histories of the book, textual studies, and sociologies of knowledge—seeks to integrate both material and what might be called procedural or relational elements. Genre, style and the literary enterprise are not usually thought of as materially definable, but they are, undoubtedly, linked to the material objects they influence and which give rise to them in the first place. The resonance with Anderson, and with Habermas, is unmistakable: it is precisely by coming together and associating that the conditions of material production are worked out, conditions which set the stage for further material production. Digital humanists have a key role to play in designing and implementing platforms and projects that engender a shared public sphere of social knowledge work. Participatory digital projects, and the infrastructures that underlie them, are mechanisms by which to re-knit and encourage shared ownership of cultural content. While mounting quite distinct arguments about the development of public society (as distinct from religious society, especially), the development of the nation (as opposed to the state), and the development of reading and the book in the West, each of these three critics attempts to map the complex relationship between material objects and socio-cultural beliefs as an iterative feedback loop that both determines and is determined by material documents moving through space and time (and for Anderson, such documents explicitly include people as the bearers of spoken language). In all three, printed text plays a crucial role as material artifact.

Scholarly communication deserves a similar approach. Do scholars have an operational model of how knowledge is made and circulated, how disciplinary communities form and disintegrate, and how power circulates within scholarship? Those of us in the academy often write and speak as if these are self-evident truths, decided long ago—despite the fact that English as a formalised discipline in universities, dates back only to the late 19th century.[56] Or that African American Studies or Gender

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[55] Darnton, "What is the History of Books," 67.
[56] See Eagleton, 15 - 45, for an account of "The Rise of English" as a formalized discipline.

Studies have only coalesced after much sustained effort since the 1960s. Disciplines and departments, not to mention the university itself, are large-scale organisations of material and intellectual capital that deeply effect individuals and societies. Understanding what the university is *about* historically and at the present moment is crucial to thinking through and building the scholarly infrastructures of tomorrow. It is also simply good practice to know one's self in a system of intricate power relations.

A circuit of *scholarly* communication might have a number of components. Faculty, students, administrators, parents, editors, publishers, and librarians might be considered broad classes of individual and collections of people who impact matters. Documents of many sorts circulate ideas throughout these communities: emails, PDFs, paper notes, dissertations, term papers, print-outs, books, journals, calendars, course schedules, syllabi, and so on might be said to the inscription bearing materials that never cease moving. As Anderson realised, though, people move as well. They move to conference centres, to classrooms, to departmental offices, to the library, or across campus to the cafe. How these many pieces fit together to become scholarly communities is complex at the best of times and made more so by the tendencies of scholars to reflect sparingly on their own practices in public fora. Of course, this is not to say no work has been done. David R. Shumway wrote in 1997 in *PMLA* about the "star system in literary studies," noting that "[t]he emergence of academic stars, which has occurred only within the past twenty years, marks a fundamental shift in the profession of literary studies."[57] His article ties together popular understandings of Hollywood stars, academic reputation, technological changes in jet travel, guidelines for tenure and promotion, and the rise of theory to explain what is often seen as simply "how things are."

In a similar reflexive vein, Liz Losh has argued that "a document archive as a physical space is constituted by prohibitions on reading."[58] Losh focuses especially on the Bibliotheque Nationale de France and the British Library to break down how the multiple levels of surveillance, access control, and physical design combine to form strictly controlled and unwelcome spaces. The main thrust of her argument, though, is that such a gestalt cannot help but influence the development of digital libraries

[57] Shumway, "The Star System in Literary Studies," 90.
[58] Losh, "Reading Room(s)," 374.

and archives; in other words, the politics of space and power bleed through to the creation of new media resourced. Losh ends with a call for the type of research I believe is vital to understanding where the humanities especially has found itself, and were we might go: "Perhaps more ethnographic approaches to the subject could be used as avenues to future research, in that our attitudes toward libraries, both real and virtual, as cultural institutions are shaped by shared beliefs about the function of physical spaces for public reading and by our epistemological expectations about how knowledge should be ordered."[59] Exploring the often tacit and unspoken ways in which scholars work, the materials they circulate, and the spaces they inhabit, is crucial to consciously shaping our disciplines in the future.

How do we, in the face of ever-present connectivity, in the age of crowdsourcing, in the face of the many affordances of digital platforms, best remediate and re-present the cultural record? For those working in the digital humanities, in early modern English drama in performance and textual transmission, and in scholarly editing, this is a real and pressing question. Because remediation, representation, or modelling is, really, the act of editing—as suggested by the fact that Wikipedia contributors are called "editors." Scholarly editing has long been the domain of deep thinkers whose engagement with questions of media specificity, of disciplinary standards and knowledge construction, of technology writ large, has at times been underwhelming. The world of the print edition has reigned supreme in scholarly editing, and indeed in academia at large. But knowledge no longer moves only in the codex, and if we are to effectively bring the textual patrimony of our past into the present then we must understand how that is best accomplished, and, what's more, be able to envision the shape of the scholarly edition, and of scholarly knowledge more broadly construed, to come. What should become our guiding principles when we attempt to create knowledge-bearing objects like the scholarly edition or design knowledge production systems? What can digital humanists, librarians, and #altac practitioners learn from the Devonshire Manuscript Project and the Renaissance Knowledge Network as initial forays into a scholarly landscape that may in the end operate according to radically different rules than the print-based ecosystem that has dominated for centuries? Based on on *A Social Edition of*

[59] Ibid., 384.

the Devonshire Manuscript (BL Add 17,492) and the Renaissance Knowledge Network, as well as on a number of trends in book history, scholarly editing, and digital humanities, this tendency towards shared ownership and participatory creation should be thought of as open source scholarship. Less any final, distinct object than a set of interlocking processes, open source scholarship—whether found in the form of articles, journals, monographs, new media projects, knowledge platforms, or datasets—is never finished, and far from controlled; instead, scholarship become a site of intersection for a number of activities which, taken together, indicate how scholarly works might take shape in collaborative technological and social environments.

Praxis Based Doctoral Work

This dissertation is a modest contribution to modelling and thinking through new ecosystems of scholarly communication. It serves as an example of academic work in the humanities in practice, providing evidence of what "goes on" in the digital humanities. As it consists of published materials, grant documents, conference presentations, and digital prototypes, it pulls together the types of outputs that are absolutely typical in academic work in the digital humanities but which sometimes fit uneasily into established systems of review and credentialing. This introduction points this out. Rather than focussing largely on the argument of the work in the dissertation (which I will address briefly below), the remainder of this section is instead an argument for a different way of thinking through the work of the PhD, one that is part of much wider-ranging scholarly discussions on graduate training in the humanities and the nature of humanities praxis in a digital age. By its existence, it is an intervention into existing scholarly discourse on digital humanities and early modern studies, as well as an effort to put forward a portfolio or dissertation by publication as opposed to the customary five chapter proto-monograph.

Praxis based efforts like this dissertation do not happen in a vacuum. Propelled especially by the "crisis" of the last 40 years of academic hiring, there is increasing debate about the forms scholarship might take, and indeed how innovative forms of scholarship might fit in to long-standing knowledge infrastructures governing membership in academia. Key to such debates are the ways in which graduate training serves as a system of acculturation into the standards and mores of academic practice. In the

United States and Canada, such progress is measured against a more or less predictable set of milestones. For those earning a PhD, the first requirements are customarily coursework, followed by comprehensive exams in two or three fields of research, with a dissertation prospectus serving as a project precis. Alongside more idiosyncratic requirements like pedagogy courses, teaching experience, proficiency in multiple languages, and so on, the progress to degree usually ends with an oral defence (viva) of the book-length dissertation project.

This is not a value-free or apolitical process. It is inherently conservative, encouraging new entrants to proceed as others have "always done." It is perhaps unsurprising to encounter this inertia. The PhD was institutionalized in its modern form largely in the early 19th century German university system. Generally speaking, the shape of the PhD in the humanities continues to parallel the progression outlined above. Goodchild et al. note this when they write that "[a]lthough doctoral programs vary across the national stage of higher education, almost all require the dissertation as a demonstration of original, creative work."[60] This seems to be in line with historical practice, with a focus on a dissertation as an essential credential for entrance into the guild-like community of scholars who contribute original research to a discipline. Original research of this kind is usually meant to be of "publishable quality," meaning it should, theoretically, be of sufficient quality to be published in a peer-reviewed journal in the appropriate field. Taken together, each individual chapter should roughly stand as an article, with the entire manuscript being equivalent to a scholarly monograph.

Unfortunately, both the dissertation as proto-monograph and the long-form scholarly monographs they train academics to research and write are facing difficulties of economy and culture. Goodchild et al. devote much of their editorial introduction to a volume on dissertation reform to attacking the requirement in its current form:

> The arguments against its continuation are based on its marginal utility in advancing knowledge and the negative impact it has on the cost and completion rates of doctoral programs. Doctoral education sans dissertation would be less expensive, less time-consuming, and altogether more sensitive to student needs as well as marketplace and academic realities . . . . The dissertation is

[60] Goodchild et al., "Editor's Notes," 1.

> only rarely publishable without major reconstruction, often taking so long to finish that it is outdated by the time of its completion. It generally sees its greatest use collecting dust on library shelves. Furthermore, an estimated 20 to 30 percent of doctoral candidates never complete their dissertations. These abandoned educational plans waste time and money. For those desiring academic positions, the time spent in completing a dissertation may be more profitably spent in learning how to teach. Why maintain a requirement that is difficult to fulfill, leads to elusive gains for society, and causes despair for so many?[61]

While this is certainly a pessimistic view, it is one that serves as a sharp counterpoint to the widespread and, more importantly, often unquestioned assumption that the dissertation forms an integral part of what it means to earn a doctorate in the humanities.[62]

Such criticisms are hardly new. In 1963, David Tronsgard was writing in *The Journal of Higher Education* that there are "a few reasons the dissertation is required:"

> 1. *The dissertation is a traditional step in the education of scholars*.- From medieval times on, students at the highest level of academic training have had to prepare and defend a thesis. The practice has a long and distinguished history and should not be discontinued without sound reasons.
>
> 2. *The dissertation is designed to be a contribution to knowledge*.- Many have been. Most, like John Brown, lie mouldering in their library graves.
>
> 3. *The dissertation should acquaint the student with research techniques and make him more sophisticated in their use*.-It should serve as proof of the candidate's skills, but it usually falls short of fulfilling this purpose. Most dissertation writers utilize only one or two techniques, leaving a great many methods unexamined. If a knowledge of techniques is the goal, it would seem that a more efficient means of reaching it could be found.

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[61] Ibid, 2 - 3.

[62] It is a curious fact that although it is central to the process of acculturation and credentialing in the humanities, it is rare to find humanists in the core disciplines (literary studies, philosophy, history) writing about the dissertation as a historical artifact. Matthew Barton's dissertation, "Dissertations: Past, Present, and Future," is one exception. Instead, much of the discourse surrounding the role of the dissertations has come, until quite recently, from those working in educational studies or higher education administration.

> 4. *The dissertation is a device to ensure the maintenance of high standards for the doctoral degree*.-Often this is the only criterion it truly meets. Unfortunately, the phrase "high standards" frequently means the scholarly standards of professors. The relevance of the dissertation to the proposed career of the student is usually ignored. If screening of students is still necessary during the terminal period of advanced education, I am sure more effective ways of doing it can be found.[63]

Tronsgard's ire is particularly reserved for the primary "unstated objective" of the dissertation; namely, that it has become "a 'rite of passage,' a ceremonial suffering. Many arguments in its defense, purged of erudition, merely say, 'You do it because I did it.' These arguments are closely related to long-since-repudiated claims. 'Education in order to be good must be painful and difficult.' 'Training of the mind occurs through disciplined academic studies.'"[64] Again, while hyperbolic, these examples demonstrate that such criticisms have perhaps always been directed towards the dissertation and its role in graduate study. Moreover, and more positively, they can prompt scholars to reflect on their own practices and the economics of knowledge in which we find ourselves.

It has become a truism that the economy of scholarly communication in which most humanists find themselves is facing unprecedented difficulties. Writing specifically about first academic books, but in words that are applicable for monograph publishing in general, Kathleen Fitzpatrick writes: "The first academic book is, however, in a curious state, one that might usefully trouble our associations of obsolescence with the "death" of this or that cultural form, for while the first academic book is no longer viable, it is still required. If anything, the first academic book isn't dead; it is undead."[65] And if this is the case, Fitzpatrick wisely asks "[i]f the traditional model of academic publishing is not dead, but undead – again, not viable, but still required – how should we approach our work, and the publishing systems that bring it into being?"

Dissertation as Monograph

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[63] Tronsgard, "A Common Sense Approach," 493. Italics in original.
[64] Ibid, 494.
[65] Fitzpatrick, *Planned Obsolescence*, http://mcpress.media-commons.org/plannedobsolescence/introduction/undead/.

This dissertation project is partially organised to trouble the idea of a humanities dissertation as proto-monograph. In doing so, it hearkens back to historical models for the dissertation. Although the first American doctorate holders earned their degrees in German universities, the American PhD as we know it emerged in the late 19th century driven largely by Daniel Coit Gilman; Gilman, who spent several years in Germany and seems to have been deeply influenced by the German model of graduate education and credentialing, lobbied for the PhD at Yale, at the newly formed University of California, and finally at Johns Hopkins University as president of the institution. The dissertation was always a crucial component of the PhD. Lester F. Goodchild and Margaret M. Miller write that "completing and defending the dissertation demonstrated professional academic competence. As the research university developed, dissertation requirements became more formal. Yet the demand for originality was straightforward from the beginning."[66] Drawing on contemporary administrative documents from Hopkins, Goodchild and Miller recount that "[t]his thesis must be the result of original investigation in the main subject for examination" and that the "dissertation . . . shall be, not a mere compilation, such as could be worked up in a good library, but a discussion of some problem on the basis of experiments undertaken by the candidate for the purpose of solving the problem."[67] Alongside Yale, during the next several decades, degrees became standard at Pennsylvania, Harvard, Columbia, Princeton, and Brown; the establishment of the first crop of American research universities like Hopkins, Clark University, the Catholic University of America, and, most importantly, the University of Chicago in 1892 quickened the pace of doctoral degrees earned in a variety of disciplines.

Importantly, these dissertations were meant for self-publication and subsequent circulation amongst research institutions: "Most of these early dissertations were written as articles to be published in journals. Therefore, they tended to be shorter and did not have the extensive literature reviews common today. Longer works were published as books, however."[68] Proving that the more things change the more they remain the same, Goodchild and Miller quote several individuals who chafed under the increasingly formalised and regulated processes surrounding doctoral education. Regarding

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[66] Goodchild and Miller, "The American Doctorate and Dissertation," 22.
[67] Quoted in Ibid., 22.
[68] Ibid., 26.

the comprehensive exams for a PhD in history, Arthur Schlesinger complained that "I'm so sick of cramming my head with facts and theories and views. . . . This kind of mental training I am now going through is deadening." Carroll Atkinson claimed that "The greatest disillusionment of the Ph.D. is the dissertation…. [It] is so hemmed in with mossbacked traditions that original work is nigh impossible."[69] The dissertation has for at least 150 years been a site of contentious debate around the formal design and quality assurance of a capstone project; "originality" and "quality" are not stable metrics, but have emerged as roughly understood givens only after years of habituation and negotiation. I argue that the dissertation as proto-monograph needs reassessment as not only a disciplinary convention for the digital humanities, but for the humanities as a whole. This dissertation is designed to demonstrate that it is possible to demonstrate the qualities of originality and disciplinary mastery via praxis and through compiling published materials into a document that resembles, but has a different history than, the monographical dissertation that is the norm in the humanities.

Amongst major scholarly organisations, the Modern Language Association has recognised that the ground is shifting under formal disciplinary conventions in the humanities. The MLA Task Force on Doctoral Study in Modern Language and Literature met from 2012 - 2014 and was charged with exploring "the prospects for doctoral study in modern language and literature in the light of transformations in higher education and scholarly communication."[70] After discussion with directors of graduate studies, department chairs, administrators, graduate students, non-academic employers, and the MLA membership, the group published their report in 2014. The report touches on the digital turn in scholarly communications, lengthy time to degrees, and the casualization of the academic workforce. It also puts forward ten recommendations, the first three of which are

> *Redesign the doctoral program*. Departments should review their programs to align them with the learning needs and career goals of students and to bring degree requirements in line with the

[69] 29. See also the role of organizations like the American Association of Universities and the American Association of University Professors in structuring and controlling the awarding of doctoral degrees in the United States from 1900 - 1950.
[70] MLA Task Force, https://www.mla.org/Resources/Research/Surveys-Reports-and-Other-Documents/Staffing-Salaries-and-Other-Professional-Issues/Report-of-the-Task-Force-on-Doctoral-Study-in-Modern-Language-and-Literature-2014.

> evolving character of our fields. Non course-based activities are essential in today's career environment.
>
> *Engage more deeply with technology*. Doctoral programs should support technology training and provide ways for students to develop and use new tools and techniques for the study and teaching of languages and literatures.
>
> *Reimagine the dissertation*. An extended research project should remain the defining feature of doctoral education. Departments should expand the spectrum of forms the dissertation may take and ensure that students receive mentoring from professionals beyond the department as appropriate.[71]

These three categories are interrelated. As part of redesigned programs, the report recommends that the amount and type of course work be reconsidered in light of practice or smaller-credit modules; non-course based alternatives to demonstrate competencies; "modes of evaluation that equip students to participate in scholarly discourse;" the "scope, shape, media, and function of," and audiences for, qualifying exercises like comprehensive exams; and the "character, purpose, and timing" of the dissertation process. A key part of these reforms are deeper engagement with in-depth technical training for research and pedagogy, both in terms of data modelling or sculpting and innovative pedagogy—not least because multimodal, online publication platforms will become more mainstream over time.

Finally, the task force turns it attention to the dissertation. They choose their words carefully: "We believe that an extended research project is and should remain the defining feature of doctoral education and a key contribution to the life of the scholarly community in our fields and in the world . . . . The dissertation is the pivot point for change in doctoral education."[72]

In effect, the group believes that the dissertation as capstone research project is valuable and vital, but that the form of the project as a proto-monograph may be untenable: "Today alternative modes of scholarly communication challenge the priority of the dissertation as proto–print book;

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[71] MLA Task Force, *Report of the MLA Task Force*, 2. Formatting in original.
[72] Ibid., 14

multimodal platforms for e-books are being developed that incorporate still images, audio, and moving images as well as interactive features and text. The crisis in academic publishing in literary studies also calls into question the traditional book-length print dissertation as the exclusive capstone for graduate study." At the very least, the MLA report urges departments and administrators to approach new models of the dissertation with positivity, in an effort to expand what the dissertation may be. There is a place for the scholarly monograph, but the report suggests that to accept the monograph as the only model for dissertation research is exceedingly problematic given the realities of the modern academy. As the above paragraphs show, the dissertation as — and only as — monograph is in fact fairly recent in the United States and Canada, and might be considered as a historical moment reaching its end. As alternatives, the report moots "a suite of essays on a common theme; Web-based projects that give evidence of extensive research; translations, with accompanying theoretical and critical reflection; public humanities projects that include collaboration with people in other cultural institutions and contain an explicit dimension of research;" and several more. This project is a manifestation of this drive to reform, taking shape as a portfolio of previously published content, grant-funded research materials, digital prototypes, and conference presentations—as a collection of the types of scholarly items that constitute the field of scholarly production.

Although scholars often act as if intellectual labour is unrelated to material production and financial exchange, it is anything but. The field of scholarly production and communication is one in which money and material circulation play a central role. It is the mismatch between internal, highly specific expectations concerning the form and type of scholarship (single author, peer-reviewed articles and monographs) and "external" factors such as material production and financial reality that Kathleen Fitzpatrick addresses in *Planned Obsolescence*. In her persuasive view, "there is a particular form of book, the academic book – or more specifically (given that marketing departments prefer known quantities) the first academic book – that is indeed threatened with obsolescence."[73] In the humanities, it is nearly a given that a scholarly monograph is necessary for promotion and tenure; for scholarly presses and in a

[73] Fitzpatrick, *Planned Obsolescence,* Paragraph 1, http://mcpress.media-commons.org/plannedobsolescence/introduction/undead/

financial sense, however, the monograph is an increasingly untenable form of dissemination. This tension leads Fitzpatrick to declare the first scholarly book as "undead" — necessary and required for the systems of accreditation and reward that the academy has put in place, but no longer viable in most ways. In her discussions of new ways of facilitating peer review, understanding shared authorship practices, and a number of other topics, she often returns to the claim that what hinders progress in discovering new models of scholarly production is so often not technical, but institutional:

> In the end, what I am arguing is that we in the humanities today face what is less a material obsolescence than an institutional one; we are caught in entrenched systems that no longer serve our needs. But because we are, by and large, our institutions, or rather, because they are us, the greatest challenge we face is not that obsolescence, but our response to it.[74]

Fitzpatrick's argument throughout *Planned Obsolescence* is vital because of how it reconceives of authorship and textual production. Most relevant to this project are her views on collaborative authorship, peer review, and the form that scholarly argumentation might take. In their briefest forms, she argues for a system of peer-to-peer review subtler than the current system; a reformulation of authorship that understands the collaborative nature of intellectual production; and a manner of networked knowledge production that fully leverages digital connectivity.

In her section on authorship, for example, she writes that "the degree to which our deconstruction of the notion of authorship has been, in a most literal sense, theoretical."[75] Although we are adept at dissenting authorship as an analytical category, when it comes to academic practice, we easily enter into a system that seems utterly natural. Such a rethinking is bound up with publishing and employment practices, and changing any one element means a ripple effect throughout a large and complex system. And the system is silent indeed. As Fitzpatrick mentions briefly, the work of Lisa Ede and Andrea A. Lunsford is illuminating here. In their article "Collaboration and Concepts of Authorship," they write that "the ideologies of the academy take the autonomy of the individual-and of

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[74] Fitzpatrick, *Planned Obsolescence,* Paragraph 7. http://mcpress.media-commons.org/plannedobsolescence/introduction/overview/

[75] Fitzpatrick, *Planned Obsolescence,* Paragraph 8. http://mcpress.media-commons.org/plannedobsolescence/two-authorship/.

the author for granted."[76] This comes through in the ways we organise CVs, structures of promotion, and the many ways graduate students are acculturated to professional academia. In a phrasing that might well be taken as the inspiration for this project, the pair write that their "examination of a number of university statements about PhD dissertations did not turn up a single explicit prohibition against collaborative dissertations. The most deeply held taboos are, after all, rarely specified in writing."[77] For Fitzpatrick, these questions intersect with developments in digital publication, the easy transparency of multiple ways of contributing to digital work, and slowly evolving systems for innovative scholarly work. But examples of the types of work she touches on, and which others like Ede and Lunsford circle around but stop short of advocating for, are often difficult to locate and are not contextualised in terms of these conversations about scholarly communication more broadly. This dissertation sits squarely within them.

Non-Monograph Dissertations

As much as it is the result of many hands and varied contributions, this document is structured in a way that closely resembles the traditional monographical dissertation in humanities fields. Despite this, the materials that constitute chapters are derived from varied sources; it meets the requirements for dissertations written in fulfilment of the requirements for a doctorate in English, but also attempts to think through what a portfolio-based dissertation looks like, and how might such a project evolve? Given the rise of digital humanities over the last several years, often compounded by the #altac movement and the drive to public-facing scholarship, this effort is not without models, nor without company. It rarely goes as far as more unusual projects. Melissa Dalgleish and I have collected a number of examples of such innovative efforts as part of a project based on the ground-breaking MediaCommons site. First coming together at a panel of the Modern Language Association in 2014, these examples illustrate the many ways that scholarly contribution might be assessed in the humanities and beyond. In his contribution to the evolving project *Graduate Studies in the 21st Century*, Justin Schell discusses his multimodal dissertation *We Rock Long Distance*. Composed of long-form text, sound files,

[76] Ede and Lunsford, "Collaboration and Concepts of Authorship," 357.
[77] Ibid., 357.

and video, his work grapples with the ethnographic implications of diasporic hip-hop communities; the final form of his dissertation is, for his home department at the University of Wisconsin, a conventional PDF with embedded images. In his words, though, he "chose a very basic Google site as the platform for my dissertation . . . . [e]ach chapter became its own page on the site, with all of the media embedded in the text."[78]

Similarly, Dani Spinosa pushed the boundaries of formal requirements for the dissertation at York University. Rather than a proto-monograph, her dissertation project was imagined as an evolving blog that integrates the comments and responses of colleagues and the general public. Partially the result of her discomfort with taking sole ownership of what she considers collaborative work, her contribution to *Graduate Study in the 21st Century* begins with words to that effect: "I also felt like assigning my name alone to this project would be a lie. I knew I'd have a long and extensive Acknowledgements page, but tucked into the paratext of the doctoral thesis, this page felt less like I was acknowledging the multiplicitous and communal authorship of my work and more like an awards-show acceptance speech."[79] As is common in innovative models for doctoral work, Dani had to convert the web-based version of her work to print for submission and credentialing. This has the effect, she argues, of flattening out the contributions of many voices—troubling especially since one of her explicit concerns is opening closed academic work to such collaboration: "What I am primarily concerned with, in welcoming other voices into this project, is that my work enter into a discourse with other scholars, ultimately producing better and more nuanced scholarship on both sides."[80] There are a number of examples along these lines, in our collection and elsewhere on the web. Nick Sousanis produced a dissertation that takes the form of a graphic novel, for example, in a widely lauded effort that has resulted in its acceptance for publication by Harvard University Press before he had

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[78] Schell, "A Multimodal Dissertation as an Alt-Ac Launching Pad," http://mediacommons.futureofthebook.org/alt-ac/pieces/multimodal-dissertation-alt-ac-launching-pad. For his dissertation, see Schell, *We Rock Long Distance*, https://sites.google.com/a/umn.edu/wrld/.
[79] Spinosa, "No Authors," http://mediacommons.futureofthebook.org/alt-ac/pieces/no-authors-writing-and-supervising-digital-commons.
[80] Ibid., http://mediacommons.futureofthebook.org/alt-ac/pieces/no-authors-writing-and-supervising-digital-commons.

defended.[81] At the University of Maryland, Amanda Visconti has successfully defended (as of 2015) a digital dissertation project based around her prototype of a crowdsourced, annotated edition of *Ulysses*; integrating a white paper, a digital prototype, public repositories of code, and blog posts. It is a public-facing project that lives entirely on the web and is a landmark in not only the world of dissertations, but as a model for successful social knowledge creation.[82]

Although these examples are recent, innovative, digital dissertations began to appear at least in the late 1990s. Virginia Kuhn, now Associate Professor of Cinema, Director of Honors in Multimedia Scholarship, and Director, Digital Media and Culture Graduate Certificate at the University of Southern California, defended a born-digital, multimedia dissertation in 2005 at the University of Wisconsin at Milwaukee. As a *Chronicle of Higher Education* article points out, the major hindrance with Kuhn's project was largely due to the university's reluctance to accept the document on account of copyright and permissions concerns.[83] Kuhn's dissertation was multimedia rather than simply text, and as such, it cited video and audio clips, using hyperlinks, in the same way that many projects cite textual sources: "The form of Ms. Kuhn's dissertation is based on that of a regular book, but with many nonstandard features. Its online pages are heavy with text, like a printed book, but when a user moves the cursor over the pages, hyperlinks pop up, leading to embedded information. And images, when clicked on, open windows containing more-detailed captions, or a film clip, or citations. An electronic "sticky note" feature lets users record comments and reactions for their own later reference."[84] It is interesting to note that the objections were not to the intellectual content of the project, but to the mechanics of legal regimes. A member of her committee noted at the time that "I don't see what Virginia did as anything less than a solid, original dissertation . . . . It met all the requirements: good argument, exploratory, full references and sources, innovative."[85] In common with the work of Schell and Spinosa, Kuhn's committee was in agreement that the work she produced merited the awarding of the doctorate. At the

[81] Sousanis, "Why Not?," http://mediacommons.futureofthebook.org/alt-ac/pieces/why-not-partial-postmortem-creating-dissertation-comics-form.
[82] Visconti, *How Can You Love a Work*, http://dr.amandavisconti.com.
[83] See Monaghan, "Digital Dissertation Dust-Up," A41 – A43.
[84] Ibid.
[85] Ibid.

local level, individual faculty members were accepting of innovative digital models for the dissertation. The inertia of the institutional requirements was more forceful and more difficult to satisfy. Administrative and legal frameworks are deeply embedded in institutional settings.

Many of these projects are noteworthy in their own regard as original scholarship in a particular disciplinary field. They are also vital to a more complex understanding of current shifts in how those working in the humanities and digital humanities might be trained and credentialed in a shifting media landscape. The dissertation of the future is already digital, although it may masquerade as print in the form of a PDF; these projects, and the many others like them, push the boundaries of the silent, unspoken — and therefore highly ideological, it seems — assumptions about what scholarly work in the humanities looks like. Knowledge circulates on the web and is not now, if it ever was, fixed in print. These projects reflect that by taking shape in cyberspace as opposed to the galaxy of print and by enacting the critical vantage points they argue in form as well as argumentation.

This dissertation is an intervention into these discussions. Rather than a book-in-training, it is modelled on a portfolio or, perhaps, a collection of related materials. This model is recognised in a number of contexts, although outside of the norm in the United States or Canada. In Sweden, for instance, the thesis by compilation is common. The Faculty of Engineering at Lund University (one of the oldest universities in Europe), states that a "compilation thesis comprises an introductory summary chapter (*kappa*), which the doctoral student writes independently, and appended copies of a number of research articles." Included articles may be written by multiple authors, with the "contribution of the doctoral student" being "made clear in the summary chapter."[86] The Faculty of Education at the University of Gothenburg lays out similar guidelines:

- A compilation thesis refers to a number of separate works within a related problem area that, together with a summarising chapter, comprise a doctoral thesis.
- Three to five works are normally included and may comprise articles that have been published or accepted for publication in peer-reviewed scholarly journals, manuscripts for such articles, which

[86] PhD Office, "Guidance on the structure of a compilation thesis," http://www.lth.se/english/staff/teaching-and-research/phd-studies/public-defence/compilation-thesis.

are considered to be publishable at the time of the final review, book chapters, reports published in the department's report series, licentiate theses, contract or research assignments or essays published in some other way. The form and nature of reports, book chapters and essays must be considered to be academically acceptable at the final review or in another similar context.

- The text of the various works may be written together with both the supervisor and other individuals. The doctoral student should normally be the first author of at least one of the works.
- The summarising chapter is to adequately supplement other parts of the thesis. This means that the content of the summarising chapter may vary from being essentially a summary to being a piece of work that integrates and synthesises the component parts and substantially contributes to the content and quality of the thesis. It is important that the summarising chapter clarifies the connection between the component parts.[87]

At both Lund and Gothenburg, it is not only acceptable, but encouraged, for those pursuing a doctorate to publish in appropriate venues and, subsequently, to include those publications as part of a thesis. Such an approach is also common throughout Australia, where, at the University of Queensland, for instance, candidates are "encouraged to publish the results of [their] research during the period of candidature and incorporate published work that contributes directly to the argument . . . in [the] thesis."[88] Although integrated content should be reformatted to departmental standards, author contributions must be outlined in the case of coauthored pieces, and so on, it is largely quite feasible to include previously published content as the majority of a submitted thesis for the doctorate.

Dissertation as Portfolio

This dissertation is a portfolio document, comprised of individual, coauthored, previously published and peer reviewed materials; coauthored conference presentations; a white-paper that was written collaboratively and with the substantial support of the Andrew W. Mellon Foundation; a digital prototype of an innovative scholarly edition that is expressly porous and open ended with regards to contribution; and a digital scholarly resource which is the result of years of effort on the part of a large,

[87] These guidelines are abridged. See Board of the Faculty of Education, "Guidelines for compilation theses," http://uf.gu.se/digitalAssets/1496/1496666_1492428_guidelines-for-compilation-theses.pdf.
[88] "Including Publications in the Thesis," http://www.uq.edu.au/grad-school/including-publications-in-the-thesis.

geographically diverse team of digital humanities researchers. The genealogy of each chapter in this document is noted in each initial note. Those citations clearly indicate authorship credit for individual sections. As is frequent in print production, the necessities of the medium, compounded by the requirements for dissertations in literary studies, may seem to have elided the nature of these contributions. I am responsible for the entire document presented here. Despite this, the document incorporates the intellectual and authorial contributions of many different individuals. In the parlance of the humanities, my role might be considered equivalent to a combination of general editor and intensively involved co-contributor. Although I will go in to more detail on each of these individual contributions below, it is worth noting here that this dissertation may resemble a single-author proto-monograph, but it is emphatically a collaborative document with specific histories tied to previous publications and writing.

The multiple works contained in this volume are unavoidably social, and each is unmistakably a moment in many intertwined, larger processes. Each chapter might be considered a snapshot of scholarship in progress, gathered together and placed in conversation to illuminate the evolution of social knowledge creation as evidence through two case studies. Reframed thusly, the dissertation moves from being unique type of scholarly object—one often suited only to transformation, many years onward, into a scholarly monograph. This project, by contrast, builds extensively on work undertaken throughout my time as a doctoral student and candidate at the University of Victoria. It draws on a larger research trajectory that is still in progress, one implicated heavily in the ongoing work of digital humanities laboratories, large project teams, publications, conferences, and the other interlocking aspects of a scholarly identity. It is a culmination of applied research that incorporates scholarship that has already been reviewed and circulated in scholarly communication, as opposed to a large project that may later be revised for publication and circulation.

Overview of Document

This is a portfolio document, one that integrates a diverse range of content into a cohesive whole. As discussed in the overview above, this model is often used in Europe and Australia, but is rare in the humanities in the United States or Canada. This unfamiliarity means that although the structure

of the document may resemble more traditional, proto-monographical dissertation of the humanities, in reality individual sections are fulfilling much different roles. This is especially true of the introductory and concluding sections. First, a compilation thesis (in the language of the University of Gothenburg) rarely includes a conclusion. The work of critical summary, synthesis, and contextualization is done in the introductory chapter, or *kappa*. The University of Gothenburg states in their requirements that

> The summarising chapter [*kappa*] is to adequately supplement other parts of the thesis. This means that the content of the summarising chapter may vary from being essentially a summary to being a piece of work that integrates and synthesises the component parts and substantially contributes to the content and quality of the thesis. It is important that the summarising chapter clarifies the connection between the component parts.[89]

In line with this articulation, this introduction is designed to provide academic context for both the digital projects themselves and the publications that emerged from sustained work on them. It is not a literature review, although it does provide an overview of current debates on crowdsourcing, the sociology of texts, and the forms of humanities credentialing. It is contextual rather than argumentative, providing information in which to situate the previously published component parts of the dissertation; each component, however, makes its own argument, all of which address the connecting theme of the document: social knowledge creation as an *analytical* category and as an enacted, *practical*, applied way via two major digital humanities projects. The conclusion provides a summary and overview of the arguments explored in further detail by individual chapters. It also provides an update on the Renaissance Knowledge Network; while the chapters included in Section two range from 2013 – 2015, the concluding section offers a snapshot of the project from 2015 – 2016.[90]

Section one outlines the development processes behind *A Social Edition of the* Devonshire Manuscript (BL Add.17492), our team-based reflections on the project after several years, and the digital scholarly edition itself. Chapter one ("Building *A Social Edition of the* Devonshire Manuscript")

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[89] These guidelines are abridged. See Board of the Faculty of Education, "Guidelines for compilation theses," http://uf.gu.se/digitalAssets/1496/1496666_1492428_guidelines-for-compilation-theses.pdf. This quotation restates content from note 83.

[90] This dissertation was defended in February 2016 and saw final deposit in March 2016.

reprints an article of the same name originally appearing in *Renaissance and Reformation / Renaissance et Réforme* 37.4. Published in 2014, this article was coauthored by Constance Crompton, myself, Alyssa Arbuckle, and Raymond G. Siemens, with Maggie Shirley and the Devonshire Manuscript Editorial Group.

Dating from the 1530s to the 1540s, the Devonshire Manuscript is a collaborative verse miscellany authored and compiled by a number of sixteenth-century contributors in and around the court of Anne Boleyn. As an originally collaboratively produced text, the project team though it appropriate as a basis for experimentation with the concept of the social edition. The social edition is an innovative project with deep roots in ongoing Canadian scholarship on Renaissance literature, scholarly editions, and digital humanities prototyping; it attempted, as the chapter discusses, to bring scholarly editing as traditionally conceived in to conversation with established social media platforms and patterns of communication. In building a prototype, we sought to address how to integrate multiple groups with diverse cultures and standards into an editorial community; how to integrate numerous social media platforms for equitable discussion; and how to de-centre the all-powerful editor into a diffuse group whose interactions and personalities might reflect a new method for remediating historical texts.

Chapter two ("Building the Social Scholarly Edition: Results and Findings from A Social Edition of the Devonshire Manuscript") reprints a long paper that was originally presented at Digital Humanities 2013 at the University of Nebraska - Lincoln. It was coauthored by me, Constance Crompton, and Raymond G. Siemens. Taking shape after two years of dedicated work on the Devonshire Manuscript Project, this paper discusses the formation of what the authors considered to be a new type of editing community, one that we believe is defined by iterative publication of material, multiple communities of interest contributing to a single project, the use of technology to facilitate these contributions, and the growing importance of self-directed learning to scholarly editing. As a partial retrospective, this document also allowed us to dissect our moments of success and failure throughout the project. It is here that we articulate a call for a rethinking of the editorial function, from one of gatekeeping and decision making to facilitation and integration; editors must instead act as focal

points for communities of practice that cut across multiple groups and ways of interacting with historical materials.

Chapter three points outward from this document to the published version of *A Social Edition of the* Devonshire MS (BL Add 17,492). As an attempt to model and prototype a social, digital scholarly edition, the project found its fullest expression in cyberspace. *A Social Edition of the* Devonshire MS is mounted on Wikibooks, and is completely open for any individual to edit, revise, extend, or delete. The digital version of this project represents a number of years of effort on the part of many individuals and teams; my contributions are outlined in the brief chapter, as is my contribution to the overall project. This chapter also contains numerous screenshots of the Wikibooks-based edition, including the back-end editing interface that is accessible to any user.

Section two of this dissertation explores the past development, present status of, and future plans for the Renaissance Knowledge Network. The final aim of ReKN is to build, deploy, and support robust community around an integrated scholarly environment tailored to the needs of humanities scholars studying the Renaissance. ReKN will help scholars answer the questions they already have using new resources while also substantially amplifying their ability to formulate new questions using innovative exploratory and analytical tools. By integrating two scholarly functions—search and analysis— between and across a wide array of disparate resources, ReKN will addresses the growing challenge of diverse, isolated, and siloed digital resources, a bewildering variety of tools and platforms devoted to textual exploration and analysis, and the increasing number of ways scholarship is produced and disseminated in our particular research community.

ReKN is situated within Iter, a not-for-profit partnership dedicated to the advancement of learning in the study and teaching of the Middle Ages and Renaissance (400-1700) through the development and distribution of online resources. Integrating three usually discrete activities vital to scholarly work—research, analysis, and production—will allow ReKN to addresses the growing challenge of diverse, isolated, and siloed digital resources, a bewildering variety of tools and platforms devoted to textual analysis, and the increasing number of ways scholarship is produced and disseminated in particular research communities.

As the materials that enable high-quality scholarship focused on the Renaissance are increasingly moved online in archives, databases, and corpuses, scholars working with these materials face a paradox of abundance: the more digital resources become available, the more difficult it is to locate and effectively use those resources to produce and share scholarship. Federations of aggregated content like the Networked Infrastructure for Nineteenth-Century Scholarship (NINES), 18th Connect, the Mellon funded Medieval Electronic Scholarly Alliance (MESA), and the NEH Digital Humanities Startup grant funded Modernist Networks (ModNets), have made significant advances for their research communities by creating standards and infrastructure for peer review of digital projects, facilitating searches across aggregated collections of digital information, and implementing software and tools that are shared by users of the federation and wider digital research communities.

At the same time, efforts such as the Text Analysis Portal for Research (TAPoR) and Voyant have brought algorithmic textual analysis within the domain of everyday research activities for scholars. Voyant, for example, provides a simple text box interface into which text can be pasted and subjected to a variety of analytical techniques; based on Unix command line tools, the Oxford Concordance Program, WordCruncher, Text Analysis Computing Tools (TACT) and a variety of successor tools, Voyant positions itself as a user-friendly, flexible, web-based text analysis environment. Inspired by the same goals as Voyant, the TAPoR centralizes access to and information on a variety of text analysis tools, providing a "one-stop shop" for scholars looking to apply particular methods to specific texts. Although these analytical tools are powerful, they are widely separated from the content whose exploration they are designed to facilitate. For some, this is no barrier; for others, such separation effectively removes cutting edge research methods from scholarly practice.

While these efforts to discover and analyze cultural textual information for literary and cultural criticism were underway, the third major component of ReKN—scholarly production—was witnessing profound shifts. One need only witness the explosion of scholarly blogs, increasingly active Twitter discussions among academics, open access publication, and the publication of digital scholarly editions to envisage the manifold new models of scholarly production currently evolving in the world of academia. Publication platforms such as the Institute for the Future of the Book's MediaCommons and

experiments in open peer review like that of the journal Nature in 2006 or Shakespeare Quarterly in 2010 suggest that the ways scholarship has been produced, vetted, and disseminated are undergoing rapid and meaningful changes.

The increasingly varied and quickly changing landscape necessitates deliberate intervention, or Renaissance studies risks being left behind by new infrastructure that does not address the needs of this research community. ReKN attempts to address this need by thinking through previous decades of technological change in Renaissance studies as a prelude to building the systems that will ensure vibrant, high quality research over the next. By combining research, analysis, and dissemination in a single scholarly environment, ReKN can address content overload, fold in new analytical methods and tools, and ensure timely publication of new discoveries.

Chapter four reprints and adapts "The Renaissance English Knowledge Network (REKN): Networking Early Modern Scholarly Resources, v2.0," a working paper presented at Research Foundations for Understanding Books and Reading in the Digital Age: E/Merging Reading, Writing, and Research Practices in September 2013 at New York University. This chapter is an introduction to the ReKN project and reflects the team's thinking on partnership possibilities, overall goals, and technical scoping as of summer and fall 2013.

Chapter five reprints and adapts two publications. The first is "Transformation through Integration: The Renaissance Knowledge Network (ReKN) and a Next Wave of Scholarly Publication," originally presented at Sustaining Partnerships to Transform Scholarly Production (INKE Gathering), 27 January. Whistler, British Columbia. A version of this document has subsequently been published: Daniel Powell, Raymond G. Siemens, and William R. Bowen, with Matthew Heibert and Lindsey Seatter. "Transformation through Integration: The Renaissance Knowledge Network (ReKN) and a Next Wave of Scholarly Publication." The second publication, incorporated throughout this chapter, is "Building Alternative Scholarly Publishing Capacity: The Renaissance Knowledge Network (ReKN) as Digital Production Hub." Daniel Powell and Raymond G. Siemens, with the INKE Research Group. *Scholarly and Research Communication.* 5.4 (2014). http://src-online.ca/index.php/src/article/view/183. Taken together, these two documents discuss the evolution of the ReKN project team's thinking about

project goals build on six months of funded exploration. It describes the ReKN project's development after chapter four (authored as we were beginning work) to a midway point through the yearlong grant planning cycle. Rather than a simple metadata aggregator as imagined in September 2013, throughout the planning year we began to articulate ReKN as a networked digital scholarship hub focused on early modern studies. As such, this chapter considers how internetworked resources and a holistic scholarly environment should integrate already-developed publication and markup tools. Key to this process of facilitating new forms of scholarly production is the inclusion of possibilities for middle-state publication; exporting of both primary (in the form of editorial work like transcriptions or markup) and critical (in the form of articles, notes, reviews, etc.) content; and the formation of new types of technologically facilitated scholarly communities.

Chapter six reprints a substantial white paper originally authored as part of our yearlong planning grant for ReKN. Written primarily in spring and summer 2015, this document was produced by myself, Raymond G. Siemens, William R. Bowen, Matthew Hiebert, and Lindsey Seatter, with Kate Siemens, Sarah Milligan, and Alyssa Arbuckle. Titled *Towards a Digital Environment for Early Modern Studies: A White Paper for the Establishment of the Renaissance Knowledge Network (ReKN)*, the white paper was a major working document distributed to the ReKN planning meeting attendees in February 2015; it was subsequently revised based on there feedback. Largely, the white paper focuses on the ways that scholarship of the Renaissance might benefit from the integration of digital resources and methodologies into scholarly work. In exploring this topic it builds upon the substantial work undertaken in this area by a number of individuals, projects, initiatives, and organisations. It is meant to help readers understand two academic areas—early modern studies and the digital humanities—and how those fields of study might productively come together to produce new insights and innovative research. In a very real sense, this document was designed to, as concisely and informatively as possible, provide a roadmap for thinking through and discussing how digital resources, analytical techniques, and dissemination platforms and tools might be brought to bear within content-area scholarship. In addition to the long-form textual content included here, the working document included approximately 70,000 words of annotated resources related to digital early modern studies. These appendices have

been excised from this version of the document, although they are available in digital form via the project's public-facing online resource: http://rekn.itercommunity.org/.

Chapter seven closely resembles chapter three; rather than taking the form of a text-based argument, it points outwards to a digital resource. As I expand on below, I have acted as project manager for the Renaissance Knowledge Network since 2013, overseeing a variety of day-to-day activities and acting as lead author for a number of related documents. The resources pointed to in this chapter are part of a public-facing resource that sought to document projects, publications, and tools relevant to a large-scale digital infrastructure project focussed on early modern studies. This chapter also contains numerous screenshots of the the ReKN site, including the back-end Drupal content management system that is accessible only to administrators.

Throughout this dissertation, previously published or circulated have been included as chapters. They are often situationally specific and have been left unrevised. Had institutional regulations allowed it, copies of the articles as originally formatted would have been included as chapters in their entirety. As that is not possible, revisions to those original texts have been minimal and largely concerned with standardising citation practices and the style of each separate document. In practice, this means that there is a certain amount of repetition in some documents; this reflects the on the ground realities of journal-based academic publication in the humanities. At certain points, the language below might also seem colloquial or somewhat less formal than is customary in a dissertation; these moments, many of which have been revised for assessment within institutional guidelines, result from documentary origins in conference presentations and collected proceedings.

Section One: Social Editing and the Devonshire Manuscript Project

Chapter One: Building A Social Edition of the Devonshire Manuscript[91]

A Social Edition of the Devonshire Manuscript is an unconventional text in that it attempts to bring traditional scholarly editing practices and standards into conversation with comparatively recent developments in online social media environments. In doing so, the edition aims to embody contemporary editorial theories recognizing the inherently social form and formation of texts alongside the social practices of writing, revision, and editing that shaped the original production of the Devonshire Manuscript (BL MS Add. 17,492). Dating from the 1530s to the 1540s, the Devonshire Manuscript is a collaborative verse miscellany authored and compiled by a number of sixteenth-century contributors.[92] We believe that, as an inherently collaborative text, the manuscript calls for an innovative approach to scholarly editing. In this article, we detail the content, context, process, and implications of *A Social Edition of the* Devonshire Manuscript.[93]

A Social Edition of the Devonshire Manuscript is an innovative project, but one with deep roots in ongoing Canadian scholarship on Renaissance literature, scholarly editions, and digital humanities prototyping. Much of this transdisciplinary work has taken place under the aegis of two groups: the Electronic Textual Cultures Lab (ETCL) at the University of Victoria and the Canada-wide Implementing New Knowledge Environments (INKE), both directed by Ray Siemens.[94] The ETCL engages deeply with the study of textual communication in all its historical, present, and future forms. Alongside this research mandate, the ETCL serves as a Vancouver Island-based hub for regional, national, and global digital humanities work and training; the highly successful Digital Humanities Summer Institute (DHSI) held annually at the University of Victoria is perhaps the flagship initiative of the wider digital humanities community.[95] With graduate student researchers, postdoctoral fellows,

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[91] This section reprints, with minor revisions, the following article: Crompton, Constance, Daniel Powell, Alyssa Arbuckle, and Raymond G. Siemens with Maggie Shirley and the Devonshire Manuscript Editorial Group. "Building *A Social Edition of the* Devonshire Manuscript." *Renaissance and Reformation / Renaissance et Réforme* 37 no. 4 (Fall / Automne 2014): 131 - 156.
[92] Following Peter Beal's definition of a verse miscellany as "a manuscript, a compilation of predominantly verse texts, or extracts from verse texts, by different authors and usually gleaned from different sources" in *A Dictionary of English Manuscript Terminology*, 429. Beal lists the Devonshire Manuscript as a pertinent example of a verse miscellany in Beal, *Dictionary*, 430.
[93] Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492*),* http://en.wikibooks.org/wiki/The_Devonshire_Manuscript.
[94] Electronic Textual Cultures Laboratory (ETCL), http://etcl.uvic.ca; INKE, http://inke.ca.
[95] Digital Humanities Summer Institute (DHSI), http://dhsi.org.

affiliated faculty, visiting speakers, and regular community events, the ETCL is a vibrant research collective engaged in the wider examinations of the types of intellectual issues prompted by *A Social Edition of the* Devonshire Manuscript. As a research and prototyping initiative, INKE describes itself "as an interdisciplinary initiative spawned in the methodological commons of the digital humanities that seeks to understand the future of reading through reading's past and to explore the future of the book from the perspective of its history."[96] Divided into three research areas—textual studies, modelling and prototyping, and interface design—INKE members interrogate the nature of textuality in the digital age. To date, the various INKE groups have produced a number of publications, sponsored several conferences, and built numerous digital tools and prototypes for scholarly use.[97]

As these brief synopses might indicate, the intertwining research communities present around the ETCL and INKE provide context for *A Social Edition of the* Devonshire Manuscript. The prototyping and consideration of what a digital, *social*, scholarly edition might look like is an expression of longstanding and well-funded Canadian research into the nature of the book in a digital age. It also attempts to put into practice Ray Siemens's argument that social media environments may enable new editing practices, itself an argument formulated in an article emerging from the collaborative research environment of the ETCL.[98]

By publishing on Wikibooks (a partner site to Wikipedia focused on book-length projects) we emphasize the collective, social ethos of the original document itself. Throughout this process we have attempted to model the *social scholarly edition* and address the questions a social edition, and social editing, raise: How do we effectively integrate multiple communities with varying cultures and editorial standards while pushing the boundaries of editorial authority? How do we employ various social media platforms with different degrees of openness to ensure a safe space for numerous individuals and opinions? And how do we shift the power from a single editor who shapes the reading of any given text to a group of readers whose interactions and interpretations form a new method of making

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[96] "About," INKE, http://inke.ca/projects/about.
[97] For publications, see: "Publications," INKE, http://inke.ca/projects/publications; for featured tools and prototypes, see: "Featured Tools and Prototypes," INKE, http://inke.ca/projects/tools-and-prototypes.
[98] Siemens et al., "Toward Modeling the Social Edition," http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/177/220.

meaning out of primary source material? To attend to these questions, this article begins with a description and consideration of the document itself—BL MS Add. 17,492. Next, we recount the processes involved with building a digital social edition of this idiosyncratic text. To conclude, we interrogate the affordances and drawbacks of digital scholarly editing in collaborative, Web 2.0 contexts.

The Multivalent Text of the Devonshire Manuscript

Acquired in 1848 by the British Museum, the Devonshire Manuscript contains approximately two hundred items (including complete lyrics, verse fragments, excerpts from longer works, anagrams, and other ephemeral jottings) on 198 pages (including endpapers) bound in a handwritten volume and inscribed in over a dozen hands by a coterie of men and women centred in the court of Queen Anne Boleyn.[99] Despite steadily growing scholarly interest in the Devonshire Manuscript, no authoritative critical edition existed during the production of *A Social Edition of the* Devonshire Manuscript.[100] The manuscript has long been valued as a source of Sir Thomas Wyatt's poetry, as he composed 129 of the two hundred items in the manuscript (although they are not in his hand). These verses, in turn, have been transcribed and published by Agnes K. Foxwell, Kenneth Muir, and Patricia Thomson in their respective editions of Wyatt's poetry.[101] Arthur F. Marotti argues that the author-centred focus of these editions "distorts [the] character" of the Devonshire Manuscript in two ways: "first, it unjustifiably draws the work of other writers into the Wyatt canon, and, second, it prevents an appreciation of the collection as a document illustrating some of the uses of lyric verse within an actual social environment."[102] The Devonshire Manuscript is much more than an important witness in the Wyatt

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[99] On the origins, early history, and enumeration of the Devonshire Manuscript, see especially Harrier, *The Canon of Sir Thomas Wyatt's Poetry,* 23–54; Southall, "The Devonshire Manuscript Collection of Early Tudor Poetry, 1532–41," 142–43; Remley, "Mary Shelton and Her Tudor Literary Milieu," 41, 47–48. See also Baron, "Mary (Howard) Fitzroy's Hand in the Devonshire Manuscript," 324–29, and Heale, "Women and the Courtly Love Lyric," 297–301.

[100] Elizabeth Heale's edition, *The Devonshire Manuscript: A Women's Book of Courtly Poetry* is based on a regularized version of the Devonshire Manuscript Editorial Group transcriptions of the manuscript and was published in October 2012. See Heale, *The Devonshire Manuscript.*

[101] Foxwell, *The Poems of Sir Thomas Wiat;* Muir, *Collected Poems of Sir Thomas Wyatt*; Muir and Thomson, *Collected Poems of Sir Thomas Wyatt.* Many of the remaining poems, unattributed to Wyatt, have been transcribed and published in Muir, "Unpublished Poems." George Frederick Nott's important early two-volume edition, *The Works of Henry Howard, Earl of Surrey, and of Sir Thomas Wyatt, the Elder*, does not include diplomatic transcriptions of verses.

[102] Marotti, Manuscript, Print, and the English Renaissance Lyric, 40. Nott's misguided statement, that the manuscript "contains Wyatt's pieces almost exclusively" (2:vii), or Muir's comment, "it is not always easy to decide whether a poem [in the manuscript] is written by a successful imitator or by Wyatt himself in an uninspired mood" (Muir, "Unpublished Poems," 253), are characteristic of the sort of dismissive author-centric views taken to task by Marotti.

canon; it is also a snapshot of the scribal practices of male and female lyricists, scribes, and compilers in the Henrician court, as well as the first example of men and women writing together in sustained fashion in English.

A Social Edition of the Devonshire Manuscript seeks to publish the contents of the original manuscript in their entirety, move beyond the limitations of an author-centred focus on Wyatt's contributions in isolation, and concentrate on the social, literary, and historical contexts in which the volume is situated as a unified whole. In doing so, we are guided by the theories of textuality put forth by D. F. McKenzie and Jerome McGann, among others. McGann believes that "nonauthorial textual determinants" should be considered alongside authorial presence to include in our critical gaze "other persons or groups involved in the initial process of production," as well as the phases, stages, means, modes, and materials of this initial production process.[103] McKenzie's "sociology of texts" further extends this idea by arguing for the significance of the material form of a text and its ability to affect the text's meaning.[104] These theories of textual production have, for some time, prompted critics to re-evaluate the notion of authorship in order to account for nonauthorial (but nevertheless deeply significant) organizers, contributors, and collaborators. Arthur Marotti's assertion that "literary production, reproduction, and reception are all socially mediated, the resulting texts demanding attention in their own right and not just as legitimate or illegitimate variants from authorial archetypes" further illustrates the changing landscape of editorial theory.[105]

In keeping with the theoretical positions of McGann, McKenzie, and Marotti, *A Social Edition of the* Devonshire Manuscript aims to preserve the socially mediated textual and extra-textual elements of the manuscript that have been elided or ignored in previous transcriptions. These "paratexts" make significant contributions to the meaning and appreciation of the manuscript miscellany and its constituent parts: annotations, glosses, names, ciphers, and various jottings; the telling proximity of one work to another; significant gatherings of materials; illustrations entered into the manuscript alongside

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[103] McGann, *The Beauty of Inflections*, 79, 82. See also McGann's earlier study, *A Critique of Modern Textual Criticism*.
[104] McKenzie, *Bibliography and the Sociology of Texts*.
[105] Marotti, *Manuscript, Print, and the English Renaissance Lyric*, 212.

the text; and so forth.[106] In recognizing the various paratextual elements of the text, we challenge (even at a basic level) what it means to transcribe and edit the Devonshire Manuscript.

The manuscript can be roughly divided into the following types of content:

- short courtly verses by Sir Thomas Wyatt (129 items, sixty-six unique to the manuscript) and Henry Howard, Earl of Surrey (one item);
- original verses attributed to Lady Margaret Douglas (two items), Richard Hattfield (two items), Mary Fitzroy (née Howard) (one item), Lord Thomas Howard (three items), Sir Edmund Knyvett (two items), Sir Anthony Lee (one item ["A. I." has three items]), and Henry Stewart, Lord Darnley (one item);
- transcribed portions of medieval verse by Geoffrey Chaucer (eleven items), Thomas Hoccleve (three items), and Richard Roos (two items);
- transcriptions of the work of others, sometimes in addition to original works, by prominent court figures such as Mary Shelton, Lady Margaret Douglas, Mary Fitzroy, Lord Thomas Howard, and perhaps Queen Anne Boleyn;
- some thirty-one unidentified or unattributed pieces.[107]

As we will discuss below, these multiple contributors often comment on and evaluate each other's work through marginal notation and drawing, in-line interjection, exchanging epistolary verse, and selectively altering transcribed texts.

We follow Helen Baron's attribution of hands in the Devonshire Manuscript.[108] Of the roughly twenty hands, including those individuals named above, some are even and regular while others are

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[106] We have interpreted "paratext" broadly, as articulated in Genette, *Paratexts*.

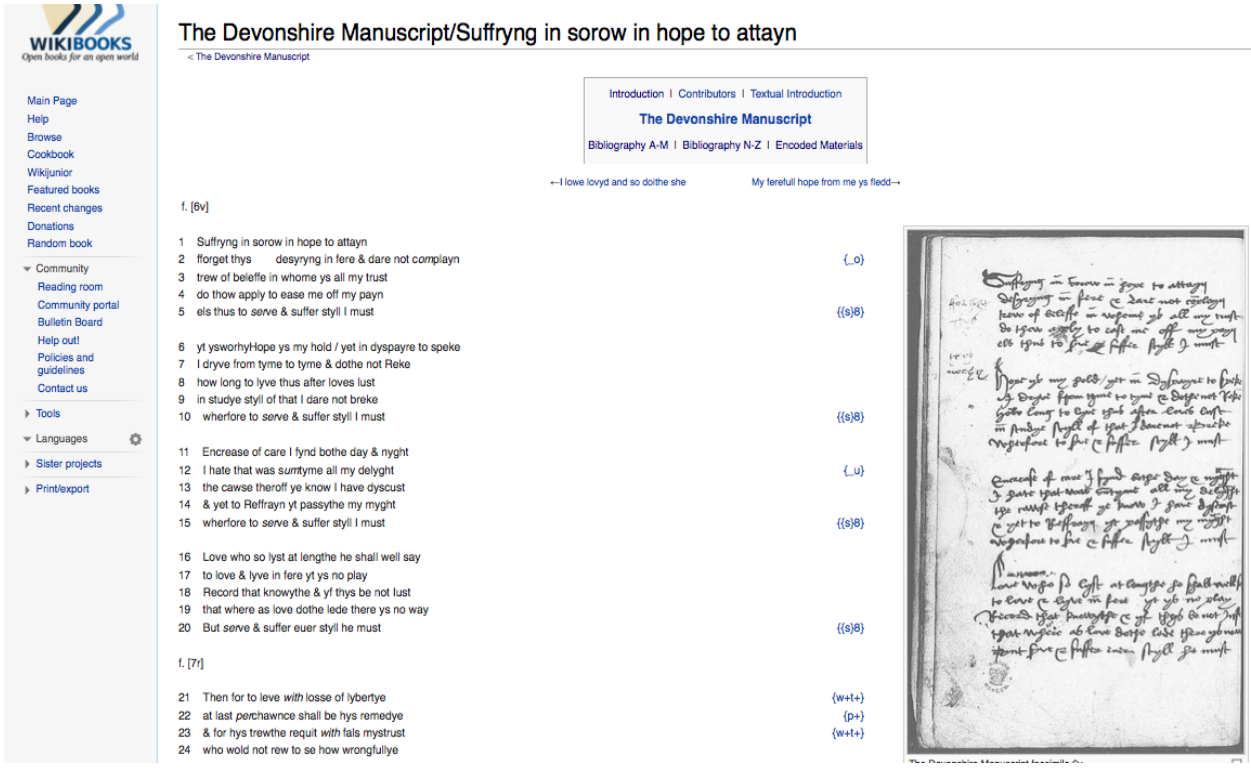
[107] Scholars have only cautiously asserted an approximate number of items preserved in the Devonshire Manuscript: "the number of poems in the manuscript can only be given as approximately 184" (Southall, 143); "the manuscript preserves about 185 items of verse, but it is impossible to obtain an exact figure as many of these are fragments, medieval extracts or the like, and others are divided up differently by various editors" (Remley, 47). Seaton identified the medieval origin of the Richard Roos texts in "The Devonshire Manuscript and its Medieval Fragments," 55–56. Richard Harrier first noted the use of William Thynne's 1532 edition of Chaucer as the source for that poet's verse in the Devonshire Manuscript in "A Printed Source for the 'Devonshire Manuscript,'" 54.

[108] See Siemens et al., "Detailed Hand List Hand 1," http://en.wikibooks.org/wiki/The_Devonshire_Manuscript/Detailed_Hand_List_Hand_1. The most recent examination of the hands in D is that of Helen Baron, especially Table 1 in "Mary (Howard) Fitzroy's Hand." See also the earlier findings in Edward A. Bond, "Wyatt's Poems," 654–55. Where the transcribers differ from Baron's attribution, the project's identification is noted in the underlying TEI markup, available at http://hcmc.uvic.ca/~etcl/Devonshire_Manuscript_poems.zip.

idiosyncratic and variable. The inconstancy of the handwriting has historically made the transcription of the entire manuscript exceptionally difficult, thereby impeding widespread research on the text. Of the two hundred items, approximately 140 entries are copies of pre-existing or contemporary works and bear the signs of copying from other texts. The majority of the pieces may reflect the work of local amanuenses and secretaries with little professional regard for the expected standards of a presentation-copy manuscript. A full half of the manuscript's scribes (Hands 1, 3, 4, 5, 6, 8, 9, 10, 11, and Mary (Fitzroy [MF]) dedicate themselves to only copying extant, pre-existing pieces; another five (Hands 1.1, 2, 7, Thomas Howard 2 [TH2], and Margaret Douglas [MD]) enter a mix of copied, extant material and material that appears to be unique to the manuscript. The remaining five (Hands 12, 13, Henry Stuart [HS], Mary Shelton [MS], and Thomas Howard 1 [TH1]) enter only original materials. The work of the ten hands entering potentially original material to the manuscript amounts to forty-five pieces (fifteen identified and/or attributed). The complexity, density, and interconnection of these multiple layers and many authors make the Devonshire Manuscript an ideal test case for experimentations in social editing.

The collaborative, social editing processes of the original contributors are visibly evident throughout the manuscript. Besides writing epistolary verse, contributors to the manuscript interacted with one another through annotation. Occasionally, these marginal responses appear quite personal in nature. They include responses that evaluate the quality of certain lines or cross out one word and insert another. In doing so, the annotations reveal the compilers' intense social engagement and editorial collaboration. For example, the text of the poem "Suffryng in sorow in hope to attayn" (fol. 6v–7r), written in a male voice appealing for the love of a lady, is annotated in the left margin. Lady Margaret Douglas writes "fforget thys," to which Mary Shelton responds, "yt ys wor[t]hy" (fol. 6v).

"Suffryng in sorow" and "desyryng in fere [fear]," the poet pleads for his unnamed addressee to "ease me off my payn" (fol. 6v, ll. 1–2, 4).



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The Devonshire Manuscript/Suffryng in sorow in hope to attayn

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←I lowe lovyd and so dothe she My ferefull hope from me ys fledd→

f. [6v]

1 Suffryng in sorow in hope to attayn
2 fforget thys desyryng in fere & dare not complayn {_o}
3 trew of beleffe in whome ys all my trust
4 do thow apply to ease me off my payn
5 els thus to *serve* & suffer styll I must {{s}8}

6 yt ysworhyHope ys my hold / yet in dyspayre to speke
7 I dryve from tyme to tyme & dothe not Reke
8 how long to lyve thus after loves lust
9 in studye styll of that I dare not breke
10 wherfore to *serve* & suffer styll I must {{s}8}

11 Encrease of care I fynd bothe day & nyght
12 I hate that was *sum*tyme all my delyght {_u}
13 the cawse theroff ye know I have dyscust
14 & yet to Reffrayn yt passythe my myght
15 wherfore to *serve* & suffer styll I must {{s}8}

16 Love who so lyst at lengthe he shall well say
17 to love & lyve in fere yt ys no play
18 Record that knowythe & yf thys be not lust
19 that where as love dothe lede there ys no way
20 But *serve* & suffer euer styll he must {{s}8}

f. [7r]

21 Then for to leve *with* losse of lybertye {w+t+}
22 at last *per*chawnce shall be hys remedye {p+}
23 & for hys trewthe requit *with* fals mystrust {w+t+}
24 who wold not rew to se how wrongfullye

Figure 1 -1 : "Suffrying in sorow in hope to attayn" (fol. 6v–7r) in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492*)*.

While its authorship within the coterie remains debated, the acrostic of the stanzas suggests that Shelton is the intended recipient: the overemphasized first letter of its seven stanzas spells out "SHELTVN."[109] The scribal annotations, which in some analyses may only refer to the quality of the verse, could therefore take on a more profound and personal meaning, as Douglas recommends rejecting the poem and its suit ("fforget thys"), but Shelton contradicts this advice with "yt ys wor[t]hy." At the end of the poem, Shelton adds a comment that has been variously transcribed as "ondesyard sarwes / reqwer no hyar," "ondesyrid favours / deserv no hyer," or perhaps "ondesyard

[109] The poem is entered in the Devonshire Manuscript by an unidentified hand (H2), and is also preserved in the Blage Manuscript (Trinity College, Dublin, MS 160, fol. 159r). Modern editors of Wyatt's poems commonly attribute the poem to him (Foxwell, 1:257–58; Muir, *Collected Poems*, 96–97; Muir and Thomson, *Collected Poems,* 176–77; Nott, 2: 590). However, this attribution has not been universally accepted: Harrier argues that the poem "must be excluded from the Wyatt canon" since it "may be by Thomas Clere" ("Printed Source," 41, 45), and Joost Daalder silently excludes the poem from his edition, *Collected Poems*. Julia Boffey has argued the author is Shelton, mistaking Shelton's signed comment at the end of the poem as an attribution in "Women Authors and Women's Literacy in Fourteenth- and Fifteenth-century England," 173.

fansies / requier no hyar."[110] The transcription poses an interesting editorial crux: "sarwes" might be read as "service" or "sorrows."[111] Likewise, "hyar" may be read as "hire" or "ear."[112]

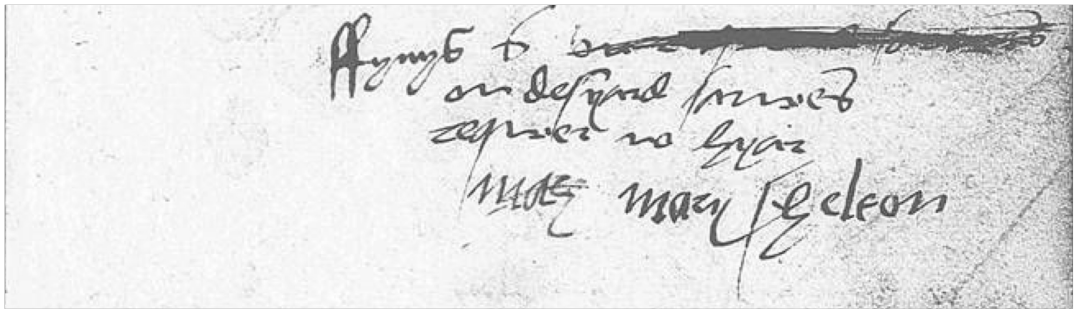

Figure 1 - 2: The disputed comment at the end of "Suffrying in sorow in hope to attayn" (fol. 6v–7r) in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492*)*.

Although the precise intentions behind Shelton's annotations and commentary remain obscure, their potential importance to the meaning and interpretation of the verse cannot be disputed. These types of interactions reoccur throughout the document, offering us an image of a deeply personal—but also interpersonal—set of socio-textual relationships.

In this, the Devonshire Manuscript reflects its compositional origins and circulation within the early Tudor court of Henry VIII, a group that was profoundly concerned with public and private performances of political loyalty and submission.[113] As Marotti notes, courtly manuscript miscellanies and poetic anthologies "represent the meeting ground of literary production and social practices."[114] The Devonshire Manuscript contains numerous examples of this concept, especially in the form of epistolary verse and scribal annotation as outlined above. Proximity and placement of poems often bear

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[110] The first transcription as per Baron, 331; Remley gives "ondesyerd" (50). The second as per Foxwell (1: 258). The third as per Heale ("Women and the Courtly Love Lyric," 301). Heale also gives "ondesiard fansies / requier no hiar" in *Wyatt, Surrey and Early Tudor Poetry*, 43, and "ondesyred fansies / require no hyar" in "'Desiring Women Writing': Female Voices and Courtly 'Balets' in Some Early Tudor Manuscript Albums," 21.

[111] "Searwes" (device) is also possible, but unlikely. Alternatively rendering the word as "fansies" or "favours" is less problematic, but equally less probable.

[112] S. P. Zitner argues, "[w]hether Mary Shelton was saying that undesired service (attention) required no hire or that undesired sorrows required no ear, the response is pretty much the same in tone and substance," "Truth and Mourning in a Sonnet by Surrey," 513. While this comment may be a "remarkable example of an overtly critical rejoinder to a courtly lyric" written in the spirit described by Zitner, Remley argues that "it seems equally probable that her words are meant ironically"; that they offer a "private recognition of the absurd spectacle of a man determined to get his way through protestations of extreme humility" (50). Similarly, Heale contends such "unsympathetic replies may be part of the conventional exchange of courtly verse" and might be offered in jest, as "such jesting offered some opportunities for female subject positions that seem to have appealed to the women using the manuscript" ("Desiring Women Writing," 21).

[113] Alistair Fox writes, "[o]ne striking phenomenon about early Tudor literature is that it was almost invariably concerned with politics, either directly or indirectly, and that this political bearing had a major impact on the nature of its literary forms." Fox, *Politics and Literature in the Reigns of Henry VII and Henry VIII*, 3.

[114] Marotti, *Manuscript, Print, and the English Renaissance Lyric*, 212.

further significance. The poem "My ferefull hope from me ys fledd" (fol. 7v), for instance, signed "fynys quod n[o]b[od]y," [the end, says nobody] is answered by the poem immediately following on the facing leaf, "Yowre ferefull hope cannot prevayle" (fol. 8r), in turn signed "fynys quod s[omebody]" [the end, says somebody]. While this kind of playful imitation and formal echoing does not strictly rely on the relative proximity of the poems in the manuscript, the effect is more immediately apparent and more visually striking when the poems are placed, as they are, on facing leaves—itself a fact obscured by the layout of our digital edition.[115] Poetry became yet another venue for the performance of public and private roles within the royal court, and the Devonshire Manuscript reflects this oscillation between public and private, personal and communal: within its pages, the private became public, the public was treated as private, and all was political. In addition to examining the volume as "a medium of social intercourse,"[116] other aspects of the Devonshire Manuscript—its multi-layered and multi-authored composition, its early history and transmission, the ways in which its contents engage with and comment directly on contemporary political and social issues—invite further investigation and demand consideration while making critical assessments.

Alongside these critical realizations, the feminist turn in manuscript studies has caused scholars to stress the importance of the Devonshire Manuscript and its production practices (compilation, annotation, copying, et cetera) to women's literary history.[117] To effectively investigate the role of women in the production and circulation of literary works, Margaret J. M. Ezell has persuasively proposed that the definition of "authorship" needs to be re-examined and broadened.[118] Ezell's study of women's miscellanies demonstrates that these acts of preservation and compilation often serve to

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[115] The teasing blend of jest and earnestness in this pair of unattributed poems points to the role of much of the content in the manuscript as participating in the courtly "game of love." See John Stevens, *Music & Poetry in the Early Tudor Court*, 154–202; see also Boase, *The Origin and Meaning of Courtly Love*; Burnley, *Courtliness and Literature in Medieval England*; and O'Donoghue, *The Courtly Love Tradition*. It is also worth noting that in the manuscript, both "nobody" and "somebody" appear to have been partially erased—a fact clearly visible in our edition's facsimile images.

[116] Love and Marotti, "Manuscript Transmission and Circulation," 63.

[117] Representative scholarship includes Beilin, *Redeeming Eve: Women Writers of the English Renaissance*; Ezell, *Writing Women's Literary History*); Ezell, *Social Authorship and the Advent of Print*;. Lewalski, *Writing Women in Jacobean England*; Walker, *Women Writers of the English Renaissance*; and Wall, *The Imprint of Gender*. See also the following representative essay collections: Haselkorn and Travitsky, *The Renaissance Englishwoman in Print*; Hannay, *Silent but for the Word*; Woods and Hannay, *Teaching Tudor and Stuart Women Writers*; Wilcox, *Women and Literature in Britain, 1500–1700*; Burke, Donawerth, Dove, Nelson, *Women, Writing, and the Reproduction of Culture in Tudor and Stuart Britain*.

[118] Ezell, "Women and Writing,", 79.

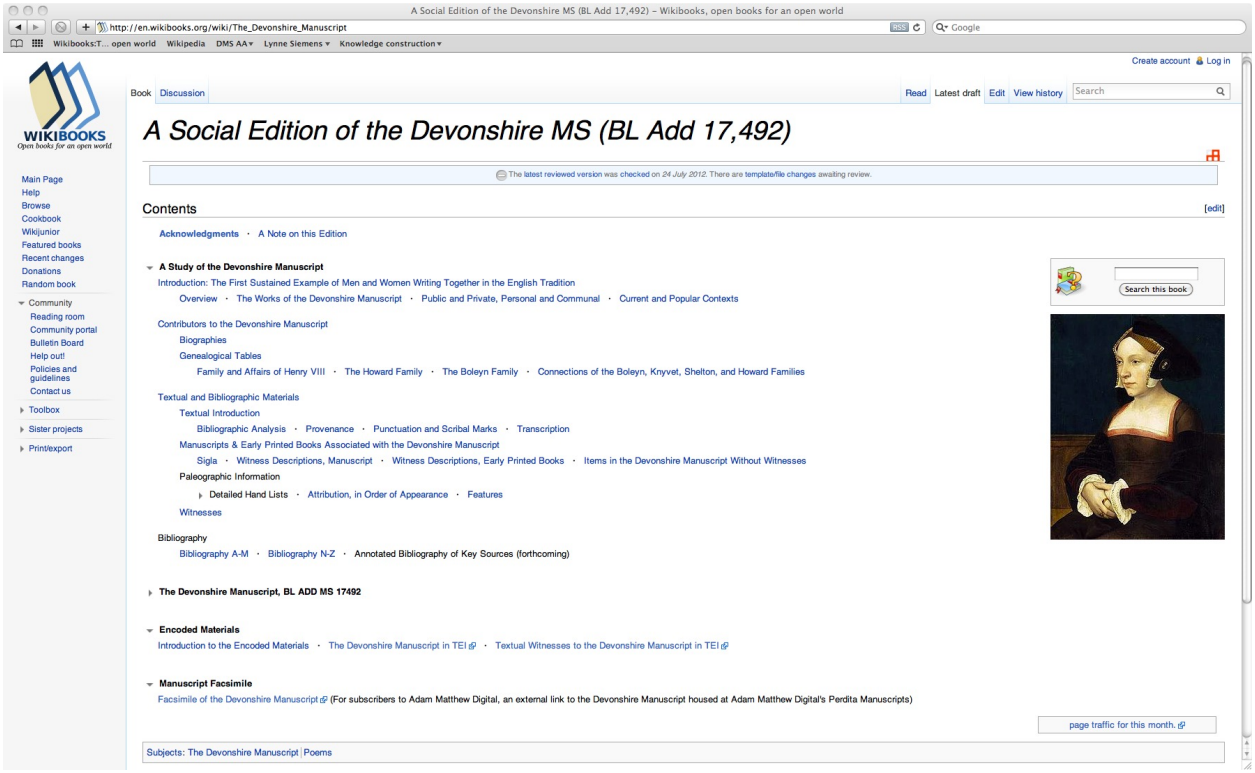

Figure 1 - 3: The homepage and table of contents in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492*)*.

reinforce religious and political loyalties and to "cement social bonds during times of duress" within female literary circles.[119] In a similar vein, Elizabeth Clarke notes that "[c]ompilation, rather than authorship of the writing in a document," was the "dominant literary activity among women who could read and write" in the early modern period.[120] This is certainly true in the case of the Devonshire Manuscript, where women were, for the most part, directly responsible for the compilation and copying of the predominantly male-authored contents of the anthology. Some of the lyrics demonstrate close female friendship—Mary Shelton and Margaret Douglas kept close company, evidenced by the fact that Shelton's hand often immediately follows Douglas's—and these lyrics are now understood to have a definite subversive meaning for a select group of individuals.[121] Like any of the other "nonauthorial" textual determinants described above, compilation is inarguably an act of mediation. The selection of

[119] Ibid., 86.
[120] Clarke, "Women's Manuscript Miscellanies in Early Modern England," 53.
[121] Baron, "Mary (Howard) Fitzroy's Hand in the Devonshire Manuscript," 328. Kathryn DeZur notes that early modern women's participation in circulating love lyrics might also indicate "a possible site of resistance to the idealized cultural paradigm of women as chaste, silent, and obedient." See DeZur, "'Vaine Books' and Early Modern Women Readers," 111. The Continental trend of courtly love made it fashionable for noble ladies at Henry VIII's court to compile miscellanies. Regardless, DeZur emphasizes that the tension between Christian values and courtly expectations meant that a woman's demeanour was always under scrutiny.

verses to be recorded, the manner in which they are entered, and their relative position to one another all contribute to the total meaning of the texts, individually and as a collection. Verses entered into the manuscript may have been selected on the basis of their popularity at court—perhaps accounting for the disproportionate number of Wyatt poems represented—or for more personal reasons. Some, as recent scholarship has drawn attention to, were not simply selected and copied, but adapted and actively revised to suit specific purposes. The Devonshire Manuscript records the seemingly normal practices of compilation, revision, amanuensis, and composition between and among upper-class Tudor women.

The Devonshire Manuscript, then, is a rich, complex document. With its collection of courtly lyrics, pastiche of medieval and contemporary poetry, density of textual voices, and often-uncertain authorship and attribution, the manuscript demonstrates how textual production and interpretation were foundational to those reading and writing within this Tudor coterie. By paying heed to the various items in and around the verses—the annotations, order of leaves, and social context—one may obtain a fuller understanding of various source texts and its various actors. We have argued elsewhere, and repeat here, that the physical and social elements of the Devonshire Manuscript lend themselves to digital editing and publication processes that more readily represent the manifold nature of the volume than publication in a print environment is able to do.[122] *A Social Edition of the* Devonshire Manuscript focuses on the editorial and scribal practices that inform the context and production of the Devonshire Manuscript. By shifting our own editorial process into an environment representative of the inherent collaborative sociality of this text, *A Social Edition of the* Devonshire Manuscript hearkens back to the multi-author roots of the text itself. In the following section, we focus on the specifics of *A Social Edition of the* Devonshire Manuscript, as well as explore the benefits (and drawbacks) of building a scholarly edition on the Wikibooks platform.

Building a *Social* Edition

[122] See Siemens et al., "Toward modeling the *social* edition."

In order to build a scholarly edition on the principles of open access and editorial transparency (in both production and dissemination), we have integrated early modern content and scholarly editing practices with web-based environments maintained by established social and social-editorial communities—most notably on Wikibooks, a cross-section of intellectual research activity and the social media practices that define Web 2.0.[123] Early on, Web 2.0 was described as internet technologies that allow users to be active authors rather than simply readers or consumers of web content.[124] Now, the term is most frequently associated with social media platforms, wikis, and blog applications. As Tim Berners-Lee remarks, the internet was originally developed for workers to collaborate and access source documents; with wiki and Web 2.0 technology, it is now returning to its roots.[125] The successful group of Wikimedia projects (Wikipedia, Wikibooks, Wikiquote, et cetera) emphasizes the importance of multi-authored and multi-edited endeavours. In doing so, Wikibooks instantiates earlier theoretical arguments that texts are created by a community of individuals; as Marotti argues, "production, reproduction, and reception are all socially mediated."[126] To put this into practice, we extended our editorial conversations into multiple pre-existing Web 2.0 and social media platforms, including Twitter, blogs, Wikibook discussion pages, dedicated Renaissance and early modern online community spaces, and Skype-enabled interviews with our advisory group. In creating *A Social Edition of the* Devonshire Manuscript we bring both Web 2.0 and current editorial theories of social textuality and community editing into closer focus. What is the outcome of scholarly editing if, like the originary Devonshire Manuscript contributors, we understand and enact the edition-building process as inherently collaborative? In what follows we offer a brief overview of the methods, process, and thinking that led to the Wikibook instantiation of *A Social Edition of the* Devonshire Manuscript.

Perhaps more than any other editorial choice, the iterative publication of *A Social Edition of the* Devonshire Manuscript departed most clearly from traditional scholarly editing practices. In effect we

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[123] Wikibooks is a Wikimedia project that continues the aim of Wikipedia; namely, to encourage, develop, and disseminate knowledge in the public sphere. Wikibooks differs from other Wikimedia projects in that it is primarily designed for facilitating collaborative open-content textbook building.
[124] See DiNucci, "Fragmented Future," 32, 221–22.
[125] Mahony, "Research Communities and Open Collaboration," www.digitalmedievalist.org/journal/6/mahony.
[126] Marotti, 212.

have published (or are in the perpetual process of publishing) two versions of the edition: a PDF version, distributed to the project's advisory board; and a version housed on the publicly-editable Wikibooks. We are also currently working with multiple publishing partners to produce versions of the edition in other mediums: an SQL-backed edition on Iter: Gateway to the Middle Ages and Renaissance; an e-reader edition designed for tablets; and a print edition, published by the Medieval and Renaissance Text Society. Taken together, these multiple platforms can meet the needs of a broad and varied readership while, for the most part, growing organically out of a central set of texts and practices. These versions were planned to productively inform and influence each other's development, with cross-pollination of editorial input across platforms.

The Wikibook edition pushes the limits of what a print edition can realistically achieve—including in sheer size. Even if the manuscript facsimile pages and the XML files were excluded, *A Social Edition of the* Devonshire Manuscript would run to over five hundred standard print pages.[127] In addition to a general and textual introduction, the online edition includes extensive hand sample tables that open our paleographic attribution process to public scrutiny; witnesses that reflect the poem's textual legacy; biographies and genealogical diagrams that clarify the relationship between the manuscript's sixteenth-century compilers; and an extensive bibliography of quoted and related sources. Courtesy of Adam Matthew Digital, we have also included the facsimile image of each page of the manuscript alongside transcribed content and explanatory notes. Going further, the discussion sections on each wiki page allow conversation on each item. The Wikibook edition extends the social context of the Devonshire Manuscript by providing a space for ongoing discussion and collaboration.

Editorial processes of *A Social Edition of the* Devonshire Manuscript began long before selecting Wikibooks as a publication platform. In 2001, work on a digital edition of the manuscript began with a more recognizably traditional scholarly activity: primary source transcription. The base transcription is based on examination of both the original document at the British Library and a microfilm of the Devonshire Manuscript, also provided by the British Library. Members of

[127] The DMSEG did, in fact, export the Wikibook edition to print format in summer 2013; the two-volume, hardback edition is approximately 1,000 pages.

the Devonshire Manuscript Editorial Group (or DMSEG, a team made up of scholars, postdoctoral fellows, graduate researchers, and programmers,[128] working with two publishers,[129] an editorial board,[130] and self-selected members of the public) prepared and transcribed (in a blind process) two independent transcriptions from the microfilm. The transcribers collated the two paper copies manually, and the resultant rough text was resolved as far as possible using expanded paper prints and enlarged images. Their transcriptions were largely in accord with one another. Remaining areas of uncertainty were resolved with manual reference to the original document itself. This final, collated transcription forms the textual basis for *A Social Edition of the* Devonshire Manuscript, the basis of all editorial activity.

Following this process, the team then encoded the text in XML according to Text Encoding Initiative (TEI) guidelines.[131] While encoding, the team upheld principles of consistency and accountability. Even if the team discovered a choice to be less than optimal, they continued in that pattern until the text was complete. Rather than employ varying practices, consistently encoding the entire manuscript in XML allowed for global changes that could be, and indeed were, made after the conclusion of the initial encoding.[132] Furthermore, while encoding the team maintained regular documentation to ensure that neither the original encoder nor any subsequent encoder would lack a basis from which to proceed. Another practice employed was to encode the manuscript by building layers of TEI in phases. The manuscript was completely encoded at a conservative level before commencing the second phase. The second layer of encoding, complete with annotations and

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[128] Ray Siemens, Karin Armstrong, Barbara Bond, Constance Crompton, Terra Dickson, Johanne Paquette, Jonathan Podracky, Ingrid Weber, Cara Leitch, Melanie Chernyk, Brett D. Hirsch, Daniel Powell, Alyssa Anne McLeod, Alyssa Arbuckle, Jonathan Gibson, Chris Gaudet, Eric Haswell, Arianna Ciula, Daniel Starza-Smith, and James Cummings, with Martin Holmes, Greg Newton, Paul Remley, Erik Kwakkel, Aimie Shirkie, and the INKE research group.

[129] Iter, a not-for-profit consortium dedicated to the development and distribution of scholarly Middle Age and Renaissance online resources in partnership with Medieval and Renaissance Texts and Studies and Adam Matthew Digital, a digital academic publisher. *Iter: Gateway to the Middle Ages and Renaissance*, http://itergateway.org.

[130] Robert E. Bjork (Director, Arizona Center for Medieval and Renaissance Studies; Arizona State University), William R. Bowen (Chair) (Director, Iter; University of Toronto Scarborough), Michael Ullyot (University of Calgary), Diane Jakacki (Georgia Institute of Technology), Jessica Murphy (University of Texas at Dallas), Jason Boyd (Ryerson University), Elizabeth Heale (University of Reading), Steven W. May (Georgetown College), Arthur F. Marotti (Wayne State University), Jennifer Summit (Stanford University), Jonathan Gibson (Queen Mary, University of London), John Lavignino (King's College London), and Katherine Rowe (Bryn Mawr College).

[131] TEI provides a standard for encoding electronic texts. By encoding a text in XML under TEI guidelines, one renders the text substantially more searchable, categorizable, and preservable.

[132] Please note that these global changes were not questions of textual transcription, but of encoding patterns and standards.

regularizations, deepened, clarified, and augmented the first. This tiered process also allowed for the encoding of of doodles, anagrams, and other non-textual materials found within the manuscript.

Although the project began in 2001, the social edition on Wikibooks started with the formation of an advisory group in 2010. Throughout the production of *A Social Edition of the* Devonshire Manuscript*,* we consulted and conducted qualitative interviews with members of this advisory group to gather their perspectives on the content of the evolving edition. Forming an advisory group provided a unique opportunity to invite potential users and reviewers to shape the process and products associated with the social edition. As the final step before moving the text to Wikibooks, the members of the DMSEG working in the ETCL prepared a static digital edition of the manuscript. This fixed edition served as a base text against which our international advisory group of early modern and Renaissance scholars could compare the Wikibooks edition as it evolved.

Before deciding on Wikibooks as a platform, the team had considered hosting the edition on a stand-alone site. In response to public interest in the project, coupled with the team's investment in emerging public knowledge communities, we instead developed a two-pronged strategy: as a control we produced a static PDF version of the edition, and as a variable we moved the same content onto a Wikimedia platform. Most famous for Wikipedia, Wikimedia is a small non-profit foundation responsible for management, fundraising, and technological development of Wikipedia, Wikibooks, Wikisource, Wiktionary, and a number of other projects. Volunteer editors contribute and moderate the content of all projects with self-developed norms and systems of oversight. We considered Wikisource, Wikibooks, and Wikipedia as platforms, eventually deciding to mount our edition in Wikibooks. Acknowledging the dedicated community already engaged in Wikimedia, we sought to discover Wikibooks' affordances for the scholar. Even though Wikipedia has far more editors, Wikibooks is purposefully structured to support the book-like form. And although Wikisource appears as a more appropriate environment for an edition, publishing *A Social Edition of the* Devonshire Manuscript on Wikisource would have disallowed the inclusion of any and all scholarly material outside the transcription itself—including paleographic expansions, appendices, notes, and bibliographies. With a book-like resource as our end goal, we produced a scholarly and peer reviewed edition in Wikibooks

that also enables citizen scholars to access, contribute, and annotate material. Crucially, Wikibooks also archives each change in any content, allowing us to track reversions and revisions to the text.

In order to keep the editorial and encoding process transparent, the Wikibook edition includes links to the baseline XML-encoded transcription. In addition to being able to use the XML for their own projects, readers conversant with XML can see the encoder's TEI-based editorial choices. Anyone can download this XML and continue working with the XML in any way they see fit, allowing the project to potentially evolve in unanticipated ways.[133] With the firm foundation of documented encoding, all those working with the document can refer to, build on, or adapt the project's foundation. Readers can compare our transcriptions to the facsimiles included on each page of the Wikibooks edition and are free to contest (and even alter) our regularizations or corrections.

In November 2011, ETCL-based members of the DMSEG began converting the TEI-encoded text into Wikimarkup, the unique language designed for wiki publication. The team then moved the text, appendices, glosses, commentary, and textual notes into Wikibooks. Wikibooks, like Wikimedia and institutional scholarship at large, has its own self-governing editorial culture, and *A Social Edition of the* Devonshire Manuscript received attention from Wikibooks' existing editorial community. Since then, the ETCL team has amplified the base text with additional images of the manuscript, witness transcriptions, an extensive bibliography, and the XML files containing the encoded transcription of the manuscript. Consequently, the Wikibook became a hybridized edition-research environment for both early modern scholars and Tudor enthusiasts. Various authors have written on these phenomena, and on the value of employing wikis as collaborative research or authoring platforms; best practice standards and protocols have developed as an increasing number of researchers (both academic and not) become versed in Wikipedia methods. We have consciously developed *A Social Edition of the* Devonshire Manuscript, a scholarly Wikibook edition, with these practitioners, priorities, and standards in mind.[134]

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133 For download, see n. 87.

134 Bo Leuf and Ward Cunningham, authors of the first book on wikis, recognize that a wiki must fit the culture of the user community for it to be successful. *The Wiki Way*. Emma Tonkin advises that a collaborative authoring wiki should include the following: a page locking system to deter simultaneous editing, a versioning system to track changes, and the ability to

The Wikibook platform gives us the opportunity to recognize and assign credit for important editorial work that extends beyond the creation of original base text. Activities like discussion and feedback are central to scholarly revision and authorship, but can be difficult to monitor and quantify in a large project. A print edition often only acknowledges these forms of labour with a line or two on the acknowledgments page. Originally, we considered the discussion pages ideal for this type of scholarly discussion and editorial record keeping. Like any private community, however, Wikibooks bears its own social conventions. Through conversation with an established Wikibooks editor we realized that the Wikibooks discussion pages are more often used for personal commentary and disputes than editorial suggestions. Reminiscent of Douglas's note in the margin of "Suffryng in sorrow in hope to attyn" (fol. 6v–7r) to "fforget thys," and Shelton's contradiction "yt ys wor[t]hy," these pages are predominantly venues for editors to offer one another personal support (or criticism) rather than to analytically discuss content in a way scholars might find useful in a research context. Although the technology readily supports our original intention, the cultural practices of the Wiki community required us to alter our expectations. Despite this, **all** edits to **all** pages of the project are recorded on each page's "View History" tab.

Thus, rather than relying on the discussion pages for editorial debate and decisions, we made the most substantive changes in Wikibooks based on Skype and Iter interactions with our advisory group. Although our hope had been to have the advisors edit directly in Wikibooks, many found the technological threshold for contributing too high, and it became more practical to have the ETCL team make the proposed changes to Wikicode. We responded to the advisors' recommendations in near-real time, adding (among other suggestions) navigation menus and facsimile page images. This is, again, a cultural issue rather than a technical one: the social edition has always been, and remains, open for anyone to edit at any time. Short of locking a page by an administrator (an action often undertaken only for repeated vandalism or during edit wars), there is no mechanism for denying anyone the ability to edit. As we found, many avenues for editorial conversation are necessary in order to foster the sense of

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lock editing on a page in the case of an edit war, as well as an efficient search function, and navigation, categorization, and file management abilities. See Tonkin, "Making the Case for a Wiki," http://www.ariadne.ac.uk/issue42/tonkin.

a community that, as one of our advisors noted, is "virtually there, as if everyone is crowded around a page, putting their two cents in on matters great and small." Even when those giving editorial direction do not directly make changes to the edition, the use of multiple social media platforms like blogs and Twitter can productively facilitate social editing discussions. Focusing solely on one single communications platform could potentially impede the success of an evolving edition.

As we discovered, every social media platform attracts and enables specific types of interaction. Using social media allows us to integrate a new step into the editorial process—a step that fills the gap between initial planning stages and concluding peer review reports. Producing an edition "live" in consultation with various groups across multiple media engenders an edition that quickly and productively meets the needs of its readers. Employing and participating in various platforms alerted us to different priorities across platforms, as well as forced us to think through how we might create a polyvocal experience for safe, productive, and equitable interactions.

In addition to producing an edition that allows for multiple editorial perspectives, the DMSEG gathered responses to the social edition-building methodology. In the interest of refining the process and expounding on its utility for collaborative editors in the Web 2.0 environment, the ETCL team used a combination of methods to gather data on the social edition-building process. We invited feedback via Twitter, guest blog posts, and Iter's social media space. We also encouraged direct intervention in the Wikibooks edition of *A Social Edition of the* Devonshire Manuscript. Furthermore, we consulted with members of our advisory group on issues of credit, peer review, and collaborative decision-making. Rather than soliciting anonymous reader reports from our advisors, we brought them into conversation with one another over the fixed edition and the evolving Wikibooks edition. We facilitated this conversation in a social media space housed by Iter, a federated site housed at the University of Toronto that serves a broad community of early modern and Renaissance associations and scholars.[135] In many cases, their suggestions have already been incorporated into the Wikibooks publication; those that have not will be integrated into a final, socially-produced edition of the

[135] See *Iter: Gateway to the Middle Ages and Renaissance,* http://itergateway.org.

Devonshire Manuscript for print and e-publication with Iter and Medieval and Renaissance Texts and Studies (MRTS).[136]

Considered as a whole, *A Social Edition of the* Devonshire Manuscript suggests that social media technologies can be harnessed for productive interaction and discussion by those scholars invested in a content area or project, but that they require comprehensive oversight by dedicated staff to develop and maintain participation in knowledge construction and dissemination. Regardless, social scholarly editions represent a step toward diversifying and democratizing knowledge, and the Wikimedia suite of platforms is an established environment for this sort of work. Todd Presner reiterates this concept by considering Wikipedia as a model for the future of humanities research, deeming Wikipedia "a truly innovative, global, multilingual, collaborative knowledge-generating community and platform for authoring, editing, distributing, and versioning knowledge."[137] Larger than a mere technological innovation, wikis represent a change in the philosophy and practice of knowledge creation. Publishing scholarly work in such an environment is a direct intervention into multithreaded conversations maintained by lay knowledge communities on the web and existing scholarly discourses surrounding scholarly editing.

Digital Affordances for Academic and Non-academic Editing

The Devonshire Manuscript's social structure and content strongly influenced our choice of Wikibooks as a publication platform. Relatively recently emerged social media environments, including the Wikimedia suite itself, reshape the way academic and citizen scholars work by providing new tools and platforms to undertake scholarly activities. These technological innovations can incite academic researchers to open up scholarship and create editions in ways not previously possible or practical. The intersection of social media and scholarly editing has a destabilizing effect, as it prompts models of

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[136] These various avenues of participation met with different levels of success, the overview of which is outside the scope of this article. Our team has presented on this aspect of the project at Digital Humanities 2013 (see Daniel Powell, Constance Crompton, and Raymond G. Siemens, "Building the Social Scholarly Edition: Results and Findings from A Social Edition of the Devonshire Manuscript," http://dh2013.unl.edu/abstracts/ab-300.html.), and a forthcoming article focuses more intently on stakeholder communities and their responses to the project. See Constance Crompton, Raymond G. Siemens, Alyssa Arbuckle, and INKE, "Enlisting 'Vertues Noble & Excelent' Across Scholarly Cultures: Digital Collaboration and the Social Edition," http://www.digitalhumanities.org/dhq/vol/9/2/000202/000202.html.

[137] Todd Presner, "Digital Humanities 2.0: A Report on Knowledge," http://cnx.org/content/m34246/latest.

textual interaction and intervention that represent the scholarly text as a process rather than a product. These significant conceptual shifts in research, writing, and editorial practices have provoked reconsiderations of the ethos and methods inherent to academic scholarship in particular, and knowledge creation in general. For instance, the open source movement has morphed through its open scholarship instantiation to develop a new breed of academic: the open scholar.[138] According to Terry Anderson, open scholars "create; use and contribute open educational resources; self archive; apply their research; do open research; filter and share with others; support emerging open learning alternatives; publish in open access journals; comment openly on the works of others; [and] build networks."[139] The website Academia.edu illustrates this open scholarship, as many of the site's users upload their own work—often in direct contravention of copyright agreements with publishers—and promote its direct dissemination to new readers without recourse to periodically published print journals. Openness as a scholarly virtue requires adopting values that the nature and scale of the electronic medium necessitates: i.e., collaboration and innovation across backgrounds, skill levels, and disciplines.[140] These concepts vary considerably from the closed publication processes and professional cultures that have traditionally typified knowledge creation within the academy.

Technological advances potently shape how individuals and communities create new knowledge. It behooves scholars to think through the affordances and implications of any collaborative publishing platform, space for social knowledge creation, or multi-authored environment. Incorporating social media and Web 2.0 practices into scholarly editing recasts the primary editor as a facilitator rather than progenitor of scholarly editions. Conventionally, a single editor determines and shapes what is important to a passive reader, focuses the editorial and analytical lens, and ultimately

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[138] Don Tapscott and Anthony D. Williams outline five levels of open scholarship: (1) course content exchange; (2) course content collaboration; (3) course content co-innovation; (4) knowledge co-creation; and (5) collaborative learning connection. See Tapscott and Williams, "Innovating the 21st-Century University: It's Time!," 22.

[139] In Mahony, n.p. Fred Garnett and Nigel Ecclesfield discuss the Open Scholar philosophy further in "Towards a Framework for Co-Creating Open Scholarship," http://dx.doi.org/10.3402/rlt.v19s1/7795. Not to be confused with the Drupal software Open Scholar. Garnett and Eccles reference *Academic Evolution*, a blog formerly run by Gideon Burton, who states: "the Open Scholar is someone who makes their intellectual projects and processes digitally visible and who invites and encourages ongoing criticism of their work and secondary uses of any or all parts of it at any stage of its development" (Burton, "The Open Scholar," http://www.academicevolution.com/2009/08/the-open-scholar.html.).

[140] Looking further than a mere series of activities, Charles M. Vest predicts the development of a meta-university: "a transcendent, accessible, empowering, dynamic, communally constructed framework of open materials and platforms on which much of higher education worldwide can be constructed or enhanced." See Vest,"Open Content and the Emerging Global Meta-University," 8.

exerts immense control over reader experience. A social media framework for the electronic scholarly edition pushes the boundaries of this authority, shifting power from a single editor to a community of active readers and mediators. As Kathleen Fitzpatrick writes, introducing different modes of reading and interpreting that take advantage of the capabilities of digital networks allows for new knowledge to develop:

> Scholars operate in a range of conversations, from classroom conversations with students to conference conversations with colleagues; scholars need to have available to them not simply the library model of texts circulating amongst individual readers but also the coffee house model of public reading and debate. This interconnection of individual nodes into a collective fabric is, of course, the strength of the network, which not only physically binds individual machines but also has the ability to bring together the users of those machines, at their separate workstations, into one communal whole.[141]

The social edition models a new kind of scholarly discourse network that hopes to eschew traditional, institutionally reinforced, hierarchical structures and relies, instead, upon those that are community-generated.

A Social Edition of the Devonshire Manuscript brings communities together to engage in conversation around a text formed and reformed through an ongoing, iterative, public editorial process. A central aim of the project is to facilitate knowledge transfer and creation between multiple editorial communities with varying values and priorities. Ray Siemens and others have elsewhere called for scholars

> to extend our understanding of the scholarly edition in light of new models of edition production that embrace social networking and its commensurate tools… [to develop] the social edition as an extension of the traditions in which it is situated and which it has the potential to inform productively.[142]

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[141] Fitzpatrick, "CommentPress," http://dx.doi.org/10.3998/3336451.0010.305.
[142] Siemens et al., "Toward Modeling the *Social* Edition," 447.

Bringing practice to theory, we have attempted to model the digital, social scholarly edition. We have worked as a team to extend scholarly best practice and open access ideas to collaborative Web 2.0 environments. By privileging process over end result, the DMSEG aims to render transparent the production of an online edition of the Devonshire Manuscript.

A Social Edition of the Devonshire Manuscript is, at the same time, designed to fill the void that Ezell notes has been left by the "little effort [that] has been made to catalogue and reconstruct patterns in women's manuscript texts to provide an inclusive overview of literary activities rather than isolated, individual authors."[143] The DMSEG also planned the form of the social edition in response to Greg Crane and others' exhortation that "[w]e need to shift from lone editorials and monumental editions to editors [...] who coordinate contributions from many sources and oversee living editions."[144] The editorial communities that have grown up around social media sites like Wikibooks indicate a public desire to expand knowledge communities using accessible social technologies.

Such goals resonate with other digital projects undertaken around the turn of the century. In Great Britain, the century-old *Oxford Dictionary of National Biography* (*ODNB*) was republished as an extensively updated online database in 2003, an effort that involved numerous contributors and a large dedicated team.[145] In Canada, digital projects were undertaken that were dedicated to re-conceptualizing how we investigate early modern society and culture. *Orlando: Women's Writing in the British Isles from the Beginnings to the Present*,[146] developed at the University of Alberta and currently published electronically and in print by Cambridge University Press, is a dynamic textbase including over eight million words and ranging widely in topic, is a case in point. Although not limited to the English Renaissance, *The Orlando Project*, much like the more general *ODNB*, provides a staggering amount of information on women writers' lives, careers, works, and communities. In doing so, however, it explicitly figures itself as "an unprecedented work of literary scholarship" that is not a book, "though in length the equivalent of about 80 scholarly books, and not a digital edition of an existing text."[147] While in many ways

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143 Ezell, *Social Authorship,* 23.
144 Crane, "Give Us Editors!," http://dx.doi.org/10.3998/3336451.0010.305.
145 Harrison, "The Sequence of Production," http://global.oup.com/oxforddnb/info/print/intro/intro5.
146 *The Orlando Project*. http://www.artsrn.ualberta.ca/orlando/. Accessed 5 November 2014.
147 Brown, Clements, and Grundy, "What is Orlando?," http://www.artsrn.ualberta.ca/orlando.

different from *A Social Edition of the* Devonshire Manuscript, *The Orlando Project* attempts to push the boundaries of how digital tools might improve the foundational tools of scholarship. What *The Orlando Project* and Wikipedia do for the encyclopedia in a world of densely networked information, *A Social Edition of the* Devonshire Manuscript does for the scholarly edition.

As projects like *Orlando* expand the ways we build, use, and reflect on the foundational information that allows for literary criticism, projects like *ArchBook: Architectures of the Book* help us to critique the medium of publication itself.[148] *ArchBook* originated in INKE and is now hosted by the University of Saskatchewan's Humanities and Fine Arts Digital Research Centre. Consisting of encyclopedic, peer-reviewed, and illustrated articles on specific design features, *ArchBook* highlights the historical development of various features of the book. In a similar stream, many decisions during the development of *A Social Edition of the* Devonshire Manuscript were in fact made with a distinct appreciation for what the *medium* of Wikibooks and the *form* of the edition called for. Paratextual materials were determined by which elements of the book, historically construed, our team identified as most valuable to diverse end-users. Moreover, the dynamic table of contents in *A Social Edition of the* Devonshire Manuscript attempts, via its design, to respond to the needs and historically formed expectations of scholars.

Our edition building process and subsequent critical reflection were, therefore, situated at the intersection of multiple vectors of Canadian digital humanities, the history of the book, the rise of social knowledge creation, and the growing cross-fertilization of academic and wiki culture. It is our hope that this model of the social scholarly edition successfully brings together various communities of scholars and modes of creating and disseminating knowledge. In developing an edition that carries forward early production, authoring, and circulation mores, *A Social Edition of the* Devonshire Manuscript enacts textual ideas of the socially produced text. *A Social Edition of the* Devonshire Manuscript is one of a range of possibilities for digital, social, scholarly editing across contemporary editorial communities—communities that need not be limited by social, geographic, or institutional boundaries.

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[148] Cunningham et al., *Archbook*, drc.usask.ca/projects/archbook.

Chapter Two: Results and Findings from A Social Edition of the Devonshire Manuscript[149]

Social Media and the Devonshire Manuscript

History and Context

Social media technologies can extend and enhance scholarly conversation while challenging traditional notions of textual authority and peer review. Twitter facilitates resource and idea sharing with a speed and ease formerly only possible at conferences; Facebook allows the formation of communities of interest founded not on geography but affinity; blogs disseminate research for discussion; and, most significantly, Wikipedia has become the most popular and largest single reference resource in history, with more than 14 million articles in over 250 languages produced by 1 million monthly contributors.[150] This long paper reflects on the construction of a *social scholarly edition* of the Devonshire Manuscript that attempted to harness emerging social media environments like these to produce a new type of scholarly edition, one that allows multiple stakeholders to access, contribute, and discuss its construction.[151]

In this chapter we recount the incipient formation of a new type of editing community, one that we argue is defined by iterative publication of material, multiple communities of interest contributing to a single project, the use of technology to facilitate these contributions, and the growing importance of self-directed learning to scholarly editing. Our successes and, just as importantly, our moments of failure, offer insight into best practices for a type of "facilitative scholarship" that will likely become increasingly common as comfort with social media technologies grows within and adjacent to the academy. As outlined in a previous poster session (at DH2012),[152] from the start we designed the public editing process for the social edition to encourage communication across editorial communities while preserving the peer review process. These communities included the Electronic Textual Cultures Lab

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[149] This section reprints and adapts Powell, Crompton, and Siemens, "Building the Social Scholarly Edition: Results and Findings from A Social Edition of the Devonshire Manuscript," http://dh2013.unl.edu/abstracts/ab-300.html.
[150] WikiMedia Report Card, http://reportcard.wmflabs.org.
[151] For an overview of pertinent critical contexts surrounding the modelling of the social edition, see Siemens et al., "Toward Modeling the *Social* Edition," http://dx.doi.org/10.1093/llc/fqs013.
[152] Crompton and Siemens, "The Social Edition: Scholarly Editing Across Communities," http://www.dh2012.uni-hamburg.de/conference/programme/abstracts/the-social-edition-scholarly-editing-across-communities.

team, the project advisory board, the online Iter Community[153] (part of a group dedicated to the advancement of the study and teaching of the Middle Ages and Renaissance through the development and distribution of online resources), early modern critics and scholars operating in the blogosphere, Wikibook and Wikipedia users, Tudor enthusiasts, and the general public.[154]

Materials of the Project

Our test case for this project was the Devonshire Manuscript (British Library Additional MS 17,492), a verse miscellany dating from the 1530s-1540s. This bound, handwritten volume contains approximately 200 items,[155] including poems, verse fragments, excerpts from longer works, anagrams, jottings, and doodles by a coterie of men and women centered on the court of Queen Anne Boleyn. Inscribed in over a dozen hands, the manuscript has long been valued as a source of Sir Thomas Wyatt's poetry; 129 of the 200 items in the manuscript were composed (although not written by his hand into the manuscript) by him. In addition to these poems, the volume contains other transcribed lyrics and original work by numerous court figures, including Mary Shelton, Lady Margaret Douglas, Mary Fitzroy, and Lord Thomas Howard (Southall, 1964: 143). The extensive involvement of women writers as copyists, editors, and authors in their own right has caused us to label the manuscript as one of the earliest examples of men and women writing together, collaboratively, in a sustained fashion within the English tradition. These multiple contributors often comment and evaluate each other's work through marginal notation and in-line interjection, exchange epistolary verse, selectively alter transcribed texts (such as altering a language in a poem from a misogyny to one praising women), draw in the margins, and so on. The multi-layered, multi-authored complexity of the Devonshire Manuscript made it an ideal text for experimentation in social editing; if the manuscript itself is a "medium of social

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153 *Iter: Gateway to the Middle Ages and Renaissance,* http://itergateway.org.

154 These efforts are in keeping with the aims of the Implementing New Knowledge Environment (INKE) Project, a $2.5 million, 7-year Major Collaborative Research Initiative (MCRI) grant from the Social Sciences and Humanities Research Council (SSHRC) of Canada devoted to "exploring the future of the book from the perspective of its history." See INKE, http://inke.ca and Siemens et al., "Codex Ultor," http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/177/220.

155 Southall, 143; Remley, 47.

intercourse" (as figured by Harold Love and Arthur Marotti in 2002),[156] how better to explore the document through enacting *social* processes of scholarly editing?

A Social Edition of The Devonshire Manuscript (the final volume's full title) enacts Ray Siemens' earlier argument that social media environments might enable new editing practices.[157] In building an edition of an early modern text on the principles of open access and editorial transparency in both production and dissemination, we have integrated scholarly content into environments maintained by the social-editorial communities that have sprung up on the web; primarily, these include the Wikimedia suite of projects (Wikipedia, Wikibooks, Wikisource). We have, in essence, performed an open and public experiment to see how one might build an edition that is scholarly in a traditional sense, but which extends the editorial conversation into multiple pre-existing social media platforms including blogs, wiki discussion pages, dedicated Renaissance and early modern online community spaces, Skype-enabled interviews with our advisory group, and Twitter. The remainder of this presentation will briefly focus on what we have specifically learned from this experiment, as well as what implications our conclusions may hold for future editorial practice within the academy.

Complexities of Contemporary Digital Scholarly Editing Communities

Iterative Publication

Perhaps more than any other editorial choice, the iterative publication of the social edition of the Devonshire Manuscript departed most clearly from traditional scholarly editing practices. We have, in effect published (or are in the perpetual process of publishing) two versions of the edition in two mediums: a fixed PDF version, distributed to the project's advisory board, and a version housed on the publicly-editable Wikibooks (the Wikibook edition can be found at en.wikibooks.org/wiki/The_Devonshire_Manuscript). We are currently working with multiple publishing partners to produce a second online edition, an e-reader edition, and a print edition to meet the needs of a broad and varied readership. These versions were planned to productively inform and influence each other's development, with cross-pollination of editorial input across platforms. Although

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156 Love and Marotti, 63.

157 Siemens et al., "Toward Modeling the *Social* Edition," http://dx.doi.org/10.1093/llc/fqs013.

they did so, each medium also engendered difficulties in communication, coordination, and expectations to be overcome or accommodated—with varying results. Very few academics, for instance, created Wikibooks accounts to directly edit content; members of the Wikibooks community unrelated to the project, however, routinely intervened in matters of formatting, page design, and the behind the scene nuts and bolts of building the edition. As Matt Kirschenbaum has observed, digital projects tend to never be "done," despite reaching certain milestones.[158] Although activity has slowed in the Wikibooks space, changes are still occurring, and can occur in any time. Instead, when it comes to the Wikibook instantiation, we have achieved what David Sewell (in that same issue of *Digital Humanities Quarterly*) calls "done-ness" for purposes of this project.

Communities of Interest and Technologies of Communication

As outlined above, a central aim of the project was to facilitate knowledge transfer and creation between multiple editorial communities, all of whom were invested differently in the project. These ranged from individual academics giving feedback as advisors to interested members of the public in contact with project staff via Twitter. These groups adopted, considered, and, at times, rejected different types of communication technologies. Wikibook discussion pages were considered by established academics to be spaces meant for peer review; wiki editors explained that they were in fact where confrontations over edits usually occurred. Wiki editors were very helpful with questions of coding and technical production of content, while other communities felt deeply uncomfortable editing posted content. Sustained discussions in the Iter Community space proved difficult, while members of the public interested in Tudor culture followed our work avidly and often interacted with us on Twitter. Bloggers focused on the early modern period helped to generate discussion and disseminate reports as our edition building progress, but chose to limit their direct involvement with producing the edition. The technologies of communication each group used came to define, in some cases, the communities of interest and their respective investments. Academics who felt very comfortable discussing and analyzing the project used Skype and email to do so; Wikipedians who were used to Wikibooks

[158] Kirschenbaum, "Done: Finishing Projects in the Digital Humanities," http://www.digitalhumanities.org/dhq/vol/3/2/000037/000037.html.

intervened via the talk pages and directly changing code; the ETCL team used all of these techniques to facilitate the development, analysis, publication, and revision of the project. Considered as a whole, our project suggests that social media technologies can be harnessed for productive interaction and discussion by those scholars invested in a content area or project, but that they require comprehensive oversight by dedicated staff to develop and maintain participation in knowledge construction and dissemination. As I will touch on further below, there is a notable reticence on the part of academics to intervene in what they perceive as another individual's area of expertise or a project that is not "theirs."

Self-Directed Learning

Wikimedia content is, in theory, openly editable by any individual with an internet connection. As recent articles on the #TooFew Wikipedia editing drive (with the goal of rectifying the underrepresentation subjects about/of interest to women and people of colour and the global south in Wikipedia) and the categorization of "American Novelists" and "American Women Novelists" (with women being individually shifted from the "American Novelists" category to "American Women Novelists," leaving only men as "American Novelists") illustrate, Wikipedia is, however, very much a contested space wherein issues of sex and gender, technical proficiency, race, and class are played out in real-time and recorded in minute detail. In the ETCL, project staff quickly reconsidered such a theoretically nonexistent barrier to entry when coding of the edition began in Wikibooks. Resembling a cross between HTML, XML, and CSS, Wikitext language is idiosyncratic and required a great deal of time and experimentation on the part of project staff to use effectively. For comparative purposes, the Wikibook editing interface is a full-text HTML editing window rather than something like the "visual" post authoring option in Wordpress that would hide HTML tags, section headings, and the like. Given this intimidating environment (especially for academics who were not technically savvy but very knowledgeable in the content area), lab staff, acting as encoders of the advisory board's editorial suggestions, became more important to the production of the edition than originally envisioned. Given this, we have realized in retrospect that this ad-hoc program of self-directed study produced a new community, and one different from the broad one originally postulated: young scholars, mostly masters level and younger doctoral students, who have shown interest in digital scholarly production. In other

words, those usually construed as "assisting" in large projects here took on increasingly centralized roles in coordinating community input, coding the social edition in Wikibooks, discussing the project with various communities, and writing and disseminating critical research on the project as a whole. Whereas we originally saw the social edition as a way to harness a broad group of practitioners and draw them into the ambit of scholarly editing (which we succeeded in doing in particular ways, especially through the focused involvement of an advisory board and content area experts), we ended up creating a small pool of deeply knowledgeable younger scholars who became full partners in scholarly production.

Towards the Open Source Edition?

The basic structures of our social edition are completely open for manipulation and repurposing. The formation, maintenance, and oversight of multiple communities, however, is central the success of any such open edition. Community investment provides a foundation for a technologically facilitated, process-driven approach. Developing and maintaining such communities is often difficult, with success depending on intensive and regular engagement. It is difficult for disparate communities, even when facilitated by social media technologies, to effectively come together for intellectual production. As even the well-regarded *Transcribe Bentham* project has noted, crowdsourcing textual transcription—much less scholarly editing and production—is fraught with difficulties we are only beginning to navigate.[159] In their article "Transcription maximized; expense minimized? Crowdsourcing and editing *The Collected Works of Jeremy Bentham*," Tim Causer, Justin Tonra, and Valerie Wallace conclude their retrospective on the much-lauded *Transcribe Bentham* by suggesting that the project's "success . . . should not be measured solely according to the number of transcripts it has produced. In terms of sustainability and public engagement, *Transcribe Bentham* has made a significant impact . . . . The project has resulted in significant publicity for Bentham studies, history, and philosophy more generally, and for crowdsourcing."[160] Similar conclusions could be drawn from this

[159] Causer and Wallace, "Building a Volunteer Community," http://www.digitalhumanities.org/dhq/vol/6/2/000125/000125.html; Causer, Tonra, and Wallace, "Transcription maximized; expense minimized?," http://dx.doi.org/10.1093/llc/fqs004.
[160] Causer, Tonra, and Wallace, "Transcription maximized; expense minimized?," 132.

project. Graduate students and postdocs in the ETCL, rather than the general public, advising academics, or content area specialists did much of the actual coding for the project; interactions in the Iter Community space faced several technical and social difficulties, resulting in a shallower engagement with the materials within the edition itself than originally outlined; Wikibooks members took on a role similar to support staff rather than investing in producing content, and so on. The project has also, however, increased attention within the scholarly community on the Devonshire Manuscript; produced an open access, open source edition of a text that was, until very recently, unavailable in any edited form (although it was available in PDF from Adam Mathews Digital); moved from peer *review* to semi-open peer *consultation* in the creation of scholarly resources; inspired the use of such a resource in the classroom both in contexts of early modern studies and scholarly editing; and begun to articulate what a social, scholarly edition might look like in both process and implementation. We would suggest, in fact, that most of our challenges stemmed from social and cultural factors, rather than anything purely technical; changing the boundaries of what editing is to what social editing can be is a long road, and our project is a first step.

In such a reconfigured landscape of scholarly production, where we are likely "witnessing the nascent stages of a new 'social' edition existing at the intersection of social media and digital editing," as Ray Siemens et al argue in their article "Towards Modelling the Social Edition," I would suggest that we are not without models: the open source community, especially those groups devoted to general tool building and knowledge construction—OpenOffice, Wikimedia, GNU/Linux, Mozilla, Stack Overflow—is a powerful articulation of possible ways the technologically facilitated social production of intellectual content may fruitfully develop—given a robust and vibrant community of interest. Such a community of interest must at once be deeply invested, active for significant periods of time, and, most importantly, open; similarly, content must be available for copying, alteration, and redistribution. When entire scholarly editions can be copied with the click of a button (as we did, in fact, with the Wikibooks edition of the Devonshire Manuscript when exporting it to printed form), the true currency of intellectual activity is community and individual rather than product oriented. Opening scholarly editing to include the numerous societies it is meant to serve is a step in that direction.

Ways Forward

The past two years of work suggests that some blend of intensive oversight and engagement with defined communities, along with a receptivity to spontaneously formed communities of affinity—as supported by both the *Transcribe Bentham* project[161] and our own observations—is necessary to effectively implement social scholarly production. Only by becoming effective promoters, facilitators, and instigators can digital humanists provide an effective locus around which multiple communities can cohere. Although we encountered certain difficulties in facilitating knowledge exchange among various communities, on the whole we learned how to effectively facilitate community interaction across and between mediums and communities to produce scholarly knowledge in new ways.

[161] Ibid.

Chapter Three: Prototype of A Social Edition of the Devonshire MS (BL Add 17,492)

A Social Edition of the Devonshire MS (BL Add 17,492) can be found here:

https://en.wikibooks.org/wiki/The_Devonshire_Manuscript.

Overview

A Social Edition of the Devonshire MS (BL Add 17,492) is an attempt to model a social scholarly edition, a work that brings together multiple communities, stakeholders, and individuals to produce a work that is radically open, unfixed, and iterative digital scholarly edition. *A Social Edition of the* Devonshire MS is mounted on Wikibooks, and is completely open for any individual to edit, revise, extend, or delete. As part of the Devonshire Manuscript Editorial Group, I worked in the Electronic Textual Cultures Laboratory for over two years to build the Wikibooks edition, reflect on community practice, and publish academic work related to the project. Throughout this project I worked closely with Constance Crompton, Alyssa Arbuckle, and Ray Siemens on a daily basis in the ETCL.

Contributions to Project

In terms of production I undertook and was involved with a variety of tasks, including:

- Overall design of the volume, arrangement of components, and construction of the table of contents
- Conversion, working closely with Constance Crompton, of existing TEI XML files into Wikicode
- Insertion and formatting of facsimile page images corresponding to individual poems
- Construction of supplementary palaeographic information including detailed hand lists, galleries of individual hand samples, and palaeographic features
- Design and implementation of navigational apparatuses throughout the edition
- Drafting and layout of introductory information to the volume

The remainder of this chapter contains a number of screenshots chosen to demonstrate the project's design, functionality, and affordances.

Images drawn from A Social Edition of the Devonshire MS (BL Add 17,492)

Figure 3 - 1: The homepage and table of contents in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

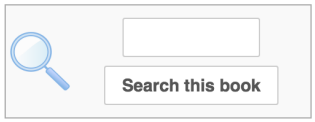


Figure 3 - 2: The table of contents in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript, BL ADD MS 17492

ascending

Incipit	Folio
Front Matter	01r-01v
Take hede be tyme leste ye be spyede	02r
O cruell causer of vndeserrved chaynge	02v
My harte I gave the not to do it paine	03r
My pen take payn a lytyll space	03v
At last withdrawe yowre cruellte	04r-04v
To wette yowr Iye withouten teare	05r
I lowe lovyd and so doithe she	06r
Suffryng in sorow in hope to attayn	06v-07r
My ferefull hope from me ys fledd	07v
Yowre ferefull hope cannot prevayle	08r
Bownd am I now & shall be styll	08v-09r
Farewell all my wellfare	09v-10r
May not thys hate from the estarte	10v
Yff I had sufferd thys to yow vnware	11r
The hart & servys to yow profferd	11v
At most myscheffe	12r

Figure 3 - 3: Detail of the table of contents for included poems in Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

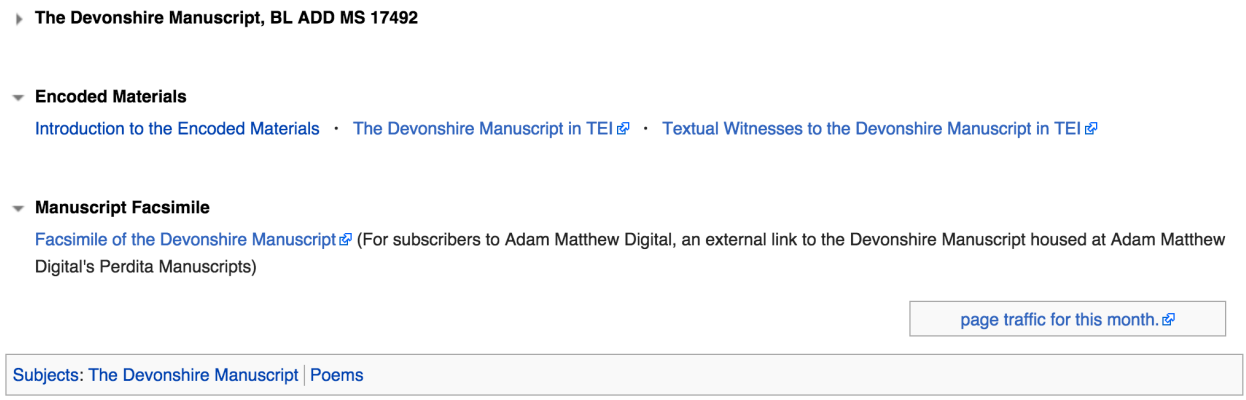


Figure 3 - 4: Detail of the table of contents for materials encoded in XML - TEI and outward-facing link to the Perdita Manuscripts Project. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/General Introduction

< The Devonshire Manuscript

Contents [hide]

Introduction: The First Sustained Example of Men and Women Writing Together in the English Tradition

[edit]

Overview [edit]

Despite growing scholarly interest in the Devonshire Manuscript (BL MS Add. 17492), a verse miscellany belonging to the 1530s and early 1540s,[1] there have been no authoritative critical editions published to date.[2] Earlier scholarship privileged the Devonshire Manuscript (conventionally referred to as sigil D in most scholarly apparatus) in relation to the canon of Sir Thomas Wyatt, since 129 of the 185 items of verse (complete poems and fragments) contained in the miscellany have been attributed to him. These verses, in turn, have been transcribed and published by Agnes K. Foxwell, Kenneth Muir, and Patricia Thomson in their respective editions of Wyatt's poetry.[3] However, as Arthur F. Marotti has argued, the "author-centered focus" of these editions "distorts [the] character" of the Devonshire Manuscript in two ways: "First, it unjustifiably draws the work of other writers into the Wyatt canon, and, second, it prevents an appreciation of the collection as a document illustrating some of the uses of lyric verse within an actual social environment."[4]

The Devonshire Manuscript is much more than an important witness in the Wyatt canon; in the estimation of Colin Burrow, it is "the richest surviving record of early [illegible]ivities of 16th-century women."[5] The present edition seeks to publish the contents of the manuscript in their entirety, to move

Figure 3 - 5: General Introduction. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/Sigla of Manuscripts & Early Printed Books Associated with the Devonshire Manuscript

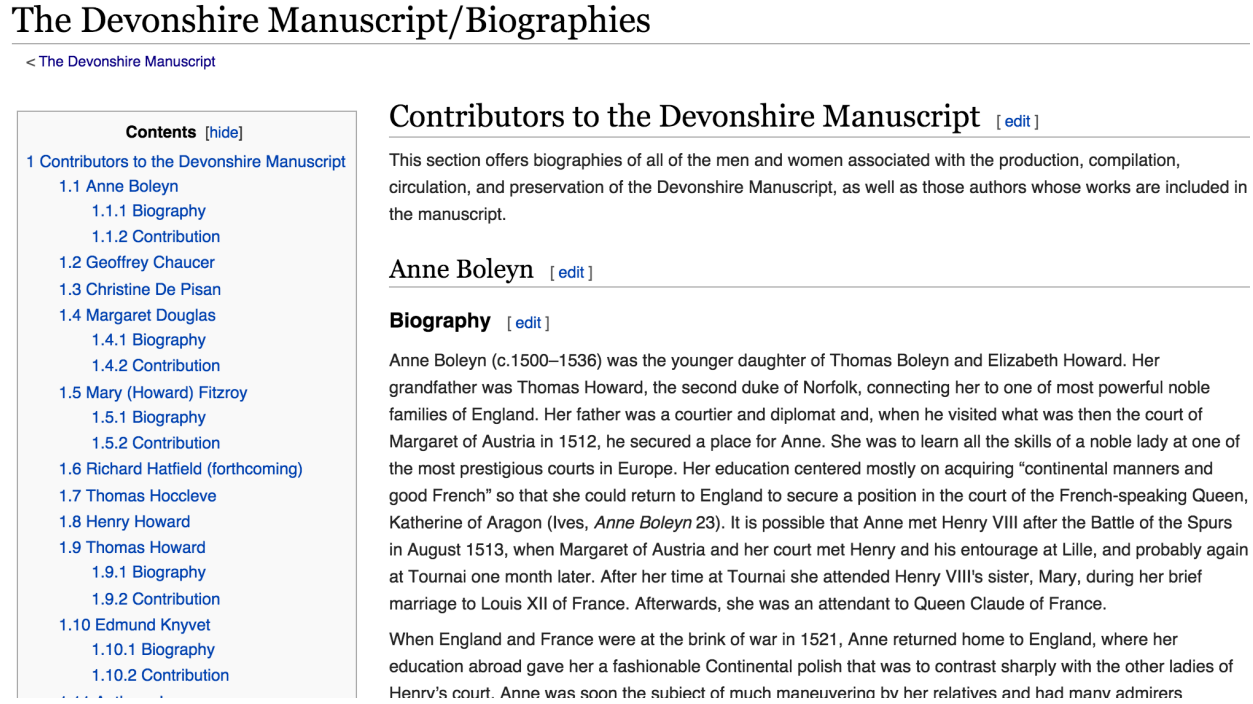
< The Devonshire Manuscript

Contents [hide]

Manuscripts [edit]

Sigla	Bibliographic Information
AAH	Arundel Castle, Duke of Norfolk Arundel-Harington MS.
CCor	Cambridge, Corpus Christi College MS 61.
CCor168	Cambridge, Corpus Christi College, 168.
CFf.5.14	Cambridge University Library, Ff.5.14.
CFin	Cambridge, Cambridge University Library MS Ff.1.6.
CGg4.12	Cambridge, Cambridge University Library MS Gg.4.12.
CGg4.27	Cambridge, Cambridge University Library MS Gg.4.27.
CPep2006	Cambridge, Magdalene College Pepys MS 2006.

Figure 3 - 6: Sigla of Manuscripts and Early Printed Books Associated with the Devonshire Manuscript. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).



The Devonshire Manuscript/Biographies

< The Devonshire Manuscript

Contents [hide]

Contributors to the Devonshire Manuscript [edit]

This section offers biographies of all of the men and women associated with the production, compilation, circulation, and preservation of the Devonshire Manuscript, as well as those authors whose works are included in the manuscript.

Anne Boleyn [edit]

Biography [edit]

Anne Boleyn (c.1500–1536) was the younger daughter of Thomas Boleyn and Elizabeth Howard. Her grandfather was Thomas Howard, the second duke of Norfolk, connecting her to one of most powerful noble families of England. Her father was a courtier and diplomat and, when he visited what was then the court of Margaret of Austria in 1512, he secured a place for Anne. She was to learn all the skills of a noble lady at one of the most prestigious courts in Europe. Her education centered mostly on acquiring "continental manners and good French" so that she could return to England to secure a position in the court of the French-speaking Queen, Katherine of Aragon (Ives, *Anne Boleyn* 23). It is possible that Anne met Henry VIII after the Battle of the Spurs in August 1513, when Margaret of Austria and her court met Henry and his entourage at Lille, and probably again at Tournai one month later. After her time at Tournai she attended Henry VIII's sister, Mary, during her brief marriage to Louis XII of France. Afterwards, she was an attendant to Queen Claude of France.

When England and France were at the brink of war in 1521, Anne returned home to England, where her education abroad gave her a fashionable Continental polish that was to contrast sharply with the other ladies of Henry's court. Anne was soon the subject of much maneuvering by her relatives and had many admirers

Figure 3 - 7: Biographies of contributors to the original Devonshire Manuscript. Siemens et al., *A Social Edition of the Devonshire MS (BL Add 17,492).*

The Devonshire Manuscript/Textual Introduction

< The Devonshire Manuscript

The Devonshire Manuscript was maintained as an "informal volume"[1] or "courtly anthology,"[2] most likely circulated amongst a coterie of friends for private use. This small paper volume, bound in quarto, retains its original London binding—an embossed leather capstan design—which dates its production between 1525 and 1559. Internal evidence narrows the dates of composition slightly: the contents of the manuscript suggest that the most intense period of writing and circulation was during the 1530s. The front and back covers are stamped "M.F." and "S.E." respectively. In its current state the manuscript contains 114 of its original leaves, nearly half of which are blank, with fragments of what may have served as flyleaves mounted on endpapers (ff. [1] and [94]) added after its acquisition by the British Museum in the mid-nineteenth century. The only visible foliation (ff. 1–96), entered in pencil, was presumably added by the British Museum. There is evidence of a rough repair and rebinding at this time. Although many editors and commentators have relied upon this modern foliation, it was only entered on pages containing text and is therefore an unreliable and inaccurate representation of the manuscript's physical state.

Contents [hide]

Bibliographic Analysis [edit]

Paper and Watermarks [edit]

The manuscript is written on what appears to be a single stock of paper, in which two "twin" versions of a watermark design appear. These are similar to item 1457 in Briquet's catalogue: a coat of arms consisting of the shield of Emperor Maximilian I (1459-1519; the blazon reads "per pale, dexter gules a fess argent; sinister bendy of six Or and azure, a bordure gules") mounted on the chest of the imperial two-headed eagle. Briquet's example comes from an Utrecht source dating between

Figure 3 - 8: Detail of Textual Introduction. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/Appendix II: Paleography/Attribution by Order of Appearance

< The Devonshire Manuscript

Hand Attribution by Order of Appearance [edit]

Identified Hands

Name	Abbreviation
Margaret Douglas	MD
Mary Shelton	MS
Thomas Howard (1)	TH1
Thomas Howard (2)	TH2
Mary (Howard) Fitzroy	MF
Henry Stuart	HS

Paleographic Samples

Hand 1	Hand 7	Hand 13
Hand 1.1	Hand 7.1	Hand MS
Hand 2	Hand 8	Hand MD
Hand 3	Hand 9	Hand MF
Hand 4	Hand 10	Hand TH1
Hand 5	Hand 11	Hand TH2
Hand 6	Hand 12	Hand HS

Foliation	Incipit	Hand Attribution
02r	Take hede be tyme leste ye be spyede	Hand 1
02v	O cruell causer of vndeserrved chaynge	Hand 1, insertion by MD
03r	My harte I gave the not to do it paine	Hand 1, additional material by MD, annotation/mark possibly by MD

Figure 3 - 9: Detail of Paleography and Hand Information. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

Poems [edit]

Foliation	Incipit	Hand Attribution
22v	A wel I hawe at other lost	Hand 3, annotation above and below the text in Hand 10.
23r-v	The knot which fyrst my hart did strayn	Hand 3, annotation by MD, annotations/marks by an unknown hand
24r-v	Hey Robyn Ioly Robyn tell me	Hand 3, annotation by MD, addition by an unknown hand
24v-25r	It was my choyse It Was my chaunce	Hand 3

Hand Tables [edit]

Majiscules [edit]

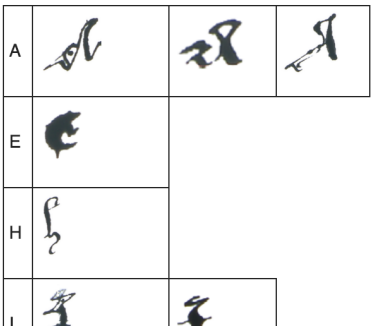


Figure 3 - 10: Detail of Hand Information for Hand 3. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/What menythe thys when I lye alone

< The Devonshire Manuscript

Introduction | Contributors | Textual Introduction

The Devonshire Manuscript

Bibliography A-M | Bibliography N-Z | Encoded Materials

←At most mischeffe Pacyence tho I have not→

f. [12v]

1 What menythe thys when I lye alone
2 I tosse I turne I syghe I g [] e grone
3 My bedd me semys as hard as stone
4 What menys thys

5 I syghe I pleyne contynually
6 the clothes *that* on my bedd do ly
7 always methynk they lye awry
8 What menys thys

9 In slumbers oft for fere I quake
10 ffor hete & cold I burne & shake
11 ffor lake of slepe my hede dothe ake
12 What menys thys

13 A mornyngs then when I do rysse
14 I t [] rn torne vnto my wontyd gysse
15 all day after muse & devysse

{{th}+t+}

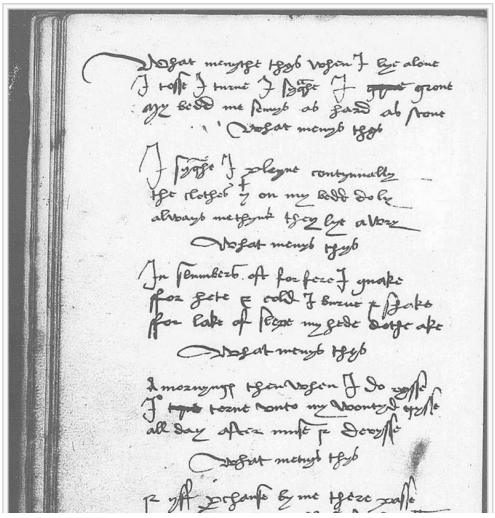


Figure 3 - 11: Detail of "What menyth thys when I lye alone," including edited text, textual expansions, facsimile page image, and navigational box. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

21 But yff I sytte nere her by
22 *with* lowd voyce my hart dothe cry {w+t+}
23 & yet my mowthe ys dome & dry
24 What menys thys

25 to aske ffor helpe no hart I have
26 my tong dothe fayle What I shuld crave
27 yet inwardly I Rage & Rave
28 What menys thys

29 Thus have I passyd many A yere
30 & many A day tho nowght Apere
31 but most of *that* that most I fere {{th}+t+}
32 What menys thys

fynys *quod* Wyatt s {q+d+}

Commentary [edit]

Attributed to Sir Thomas Wyatt,[1] this poem was entered by H2. The poem depicts a lover suffering from unrequited love. Rebholz notes that the first two stanzas may be a deliberate imitation of Ovid's Amores I, ii, 1-4 and the refrain may translate the first words of "*Esse quid hoc dicam*."[2]

Contrary to H2's attention to visual presentation, (see "Farewell all my wellfare" (9v) and "May not thys hate from the estarte" (10v)), the two parts of the poem are on facing pages, 12v and 13r, but there are five stanzas on one page and three on the other, thereby creating an imbalance in the poem's presentation.

Works Cited [edit]

1. ↑ R.A. Rebholz, ed., *Sir Thomas Wyatt: The Complete Poems* (London: Penguin, 1978),

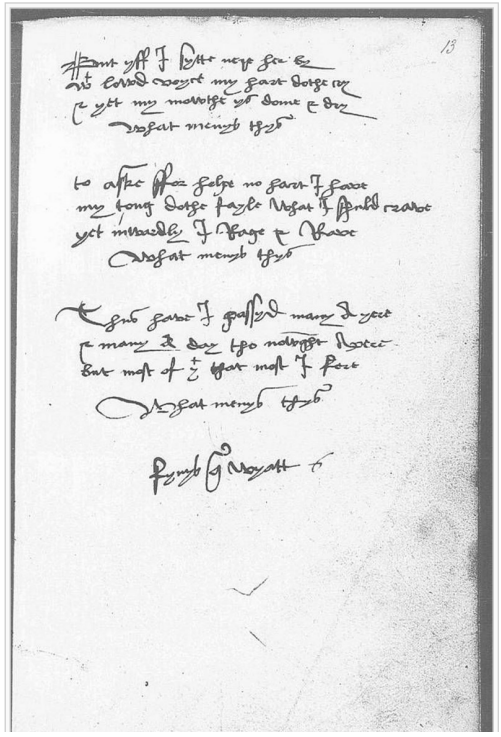


Figure 3 - 12: Further detail of "What menyth thys when I lye alone," including edited text, textual expansions, facsimile page image, textual commentary, and works cited. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/It was my choyse It Was my chaunce

< The Devonshire Manuscript

Introduction | Contributors | Textual Introduction
The Devonshire Manuscript
Bibliography A-M | Bibliography N-Z | Encoded Materials

←Hey Robyn loly Robyn tell me Now may I morne as one off late→

f. [24v]

1 *I*t was my choyse It *W*as my chaunce
2 that brovgght my hert N others hold
3 wher by it hath had sufferaunce
4 lengar *per*de then resan wuld {p1}
5 sens I yt bovnd whe*re* it was fre {r'}
6 methynks I wys of ryght it shuld
7 Acc^{e}pted yt be

f. [25r]

8 Accepted yt *be* ^{with} owyt Refuse {w+t+}
9 Wnles that fortun haith the pow*re* {r'}
10 all ryght of Low for to a buse
11 for as thei say on happy ow*re* {r'}
12 may mo*re* prevayll *yen*ryght o*re* myght {r'} then {r'}
13 yf fortu*ne* then lyst for to low*re* {n'} {r'}

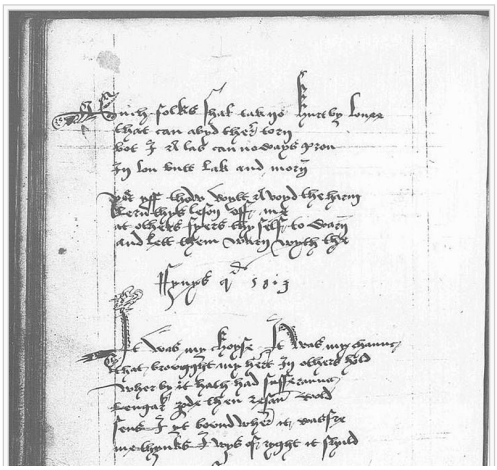


Figure 3 - 13: Detail of "It was my choyse It Was my chaunce," including edited text, textual expansions, facsimile page image, and navigation box. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

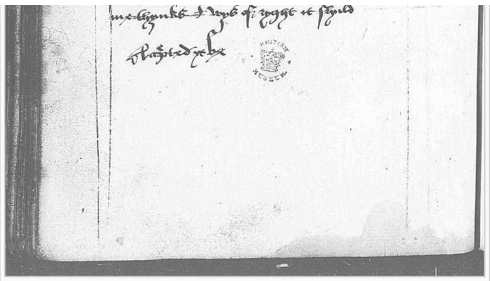
13 yf fortune then lyst for to lowre {n'} {r'}

Commentary [edit]

Attributed to Sir Thomas Wyatt,[1] this poem was entered by H3 and discusses the right of Fortune to abuse lovers. "It was my choyse It Was my chaunce" is an excerpt of the thirty-five line poem "It was my choyse yt was no chaunce" (35v).

Works Cited [edit]

1. ↑ R.A. Rebholz, ed., *Sir Thomas Wyatt: The Complete Poems* (London: Penguin, 1978), 128-29.



The Devonshire Manuscript facsimile 24v

Textual Notes [edit]

Texts Collated [edit]

LDev048

Collation [edit]

1 It Was my chaunce] yt was no chaunce / LDev048
2 brovgght] browght LDev048 hert] hart LDev048 N] in LDev048 hold] holde / LDev048
3 wher by] Wherby LDev048 it] ytt LDev048 sufferaunce] Sufferaunce / LDev048
4 lengar] lenger LDev048 resan] Reason LDev048 wuld] wold / LDev048
5 sens] syns LDev048 yt bovnd where it was fre] ytt Bownde where ytt was ffree

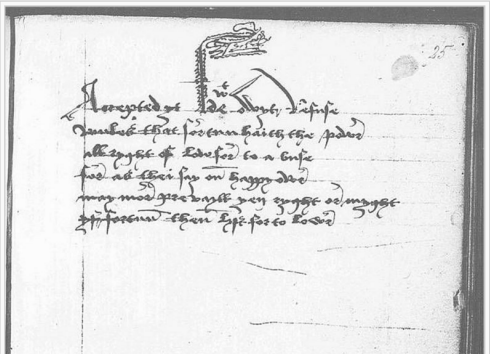


Figure 3 - 14: Further detail of "It was my choyse It Was my chaunce," including edited text, textual expansions, facsimile page image, textual commentary, textual notes, and works cited. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

The Devonshire Manuscript/Introduction to the Encoded Materials

< The Devonshire Manuscript

Contents [hide]

A Note on the Markup [edit]

The entire Devonshire Manuscript, its witnesses, notes, and critical apparatus have been marked up in TEI P5, the standard XML markup language for text archiving and exchange in the humanities, and augmented with Renaissance Electronic Texts markup. As far as is possible, a diplomatic edition is intended, so there is a strong orientation towards the physical appearance of each page, including recording such aspects as indentations, centring, brackets, and spaces. All omissions, truncations, and deletions in the original are retained. Text that is indecipherable is marked by the use of the <gap> element. The choice element, containing <orig> or <sic> paired with<expan> or <corr> marks text that is in some way possibly erroneous, idiosyncratic, or easily misunderstood with a clarification. Not marked are ligatures, dropped ‘r’, long ‘s’, situations in which lines are placed over words or letter combinations.

Scribal Marks and Abbreviations [edit]

Abbreviations (eg. elided letters) and expansions (brevigraphs and contractions) are marked as such in both their contracted and expanded forms. Words, wordforms, or compounded words in which letters are elided by the scribe are designated as abbreviations and encoded with the element<abbr> and the attribute expan= recording both the construction of the original and the expanded format. Words or characters that indicate that letters have been omitted by the use of scribal marks or superscripted characters, or that are understood to be standard abbreviations for the time, are encoded with the element <expan> and the attribute abbr=giving both the expanded form and a description of the contracted form. Editorial and contextual notes further describe especially unusual scribal

Figure 3 - 15: Detail of the Introduction to the Encoded Materials. Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

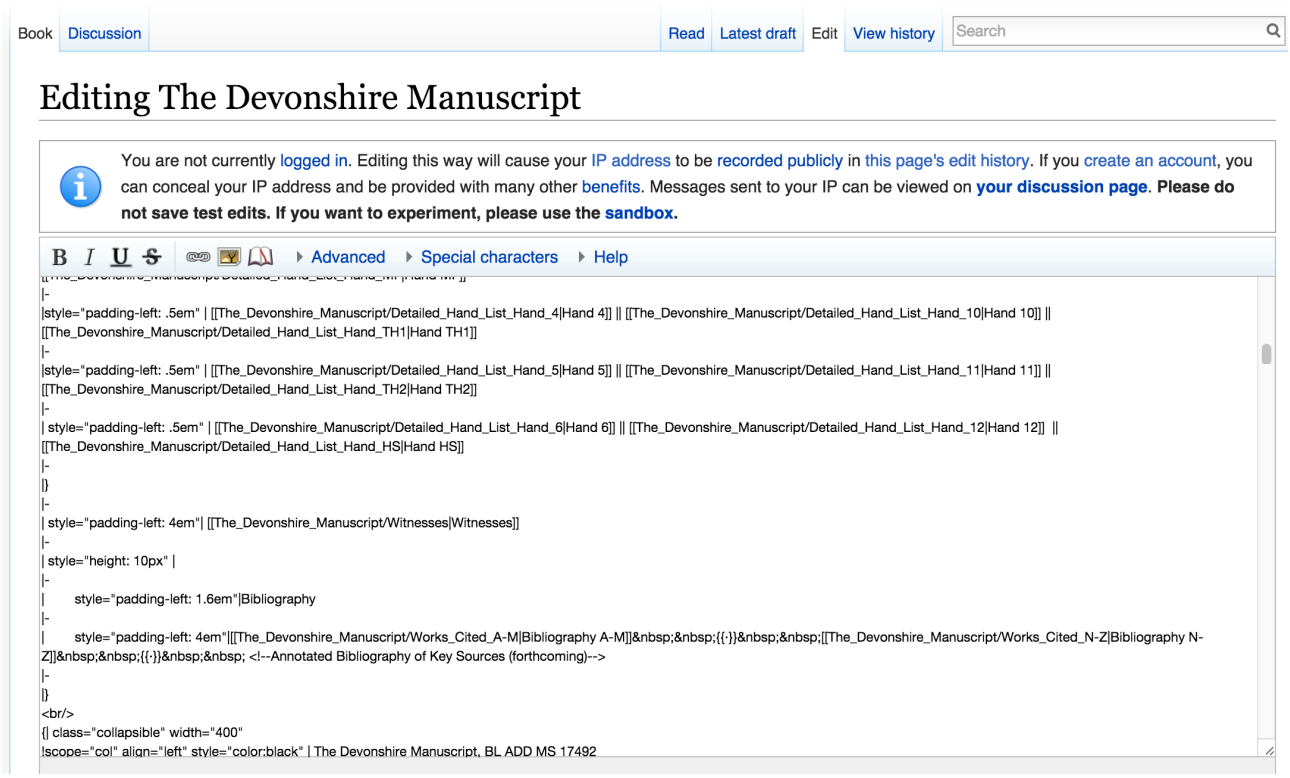


Figure 3 -16: The Wikibooks editing interface for the homepage and table of contents (Figure 3 -1). Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

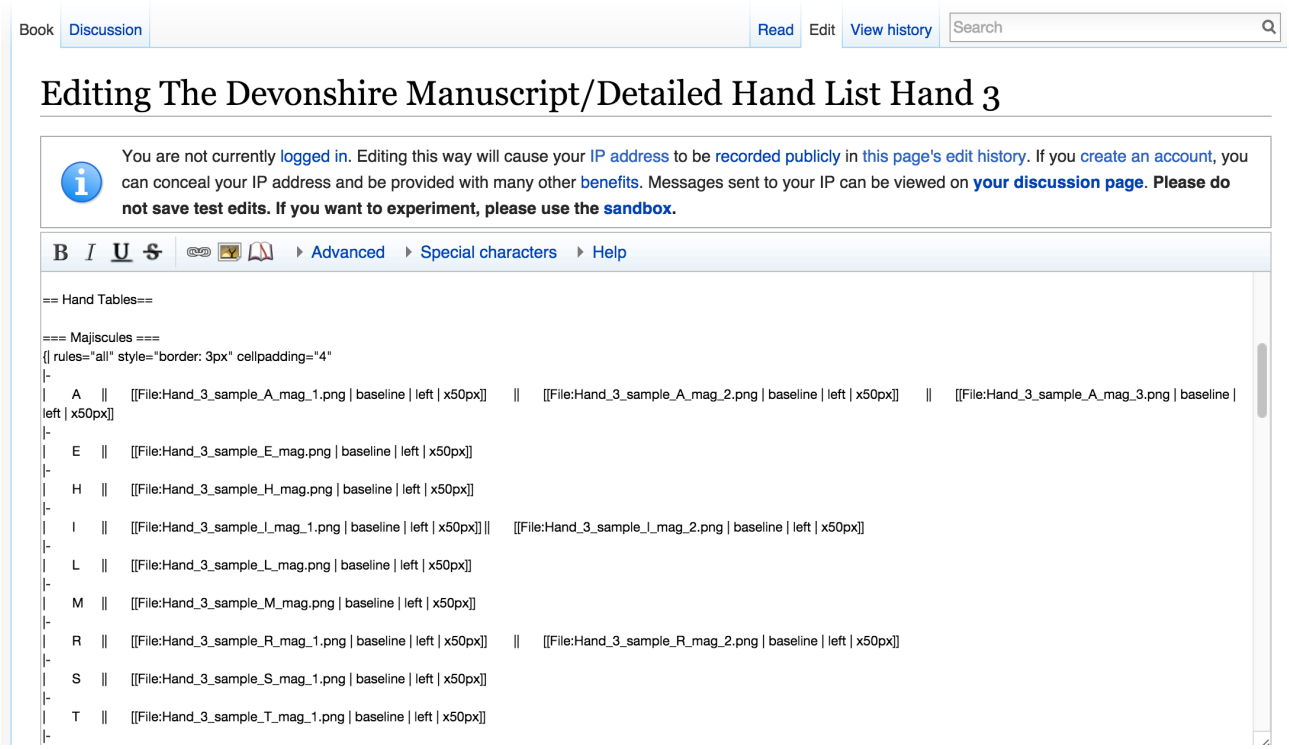


Figure 3 -17: The Wikibooks editing interface for Information for Hand 3 (Figure 3 - 10). Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

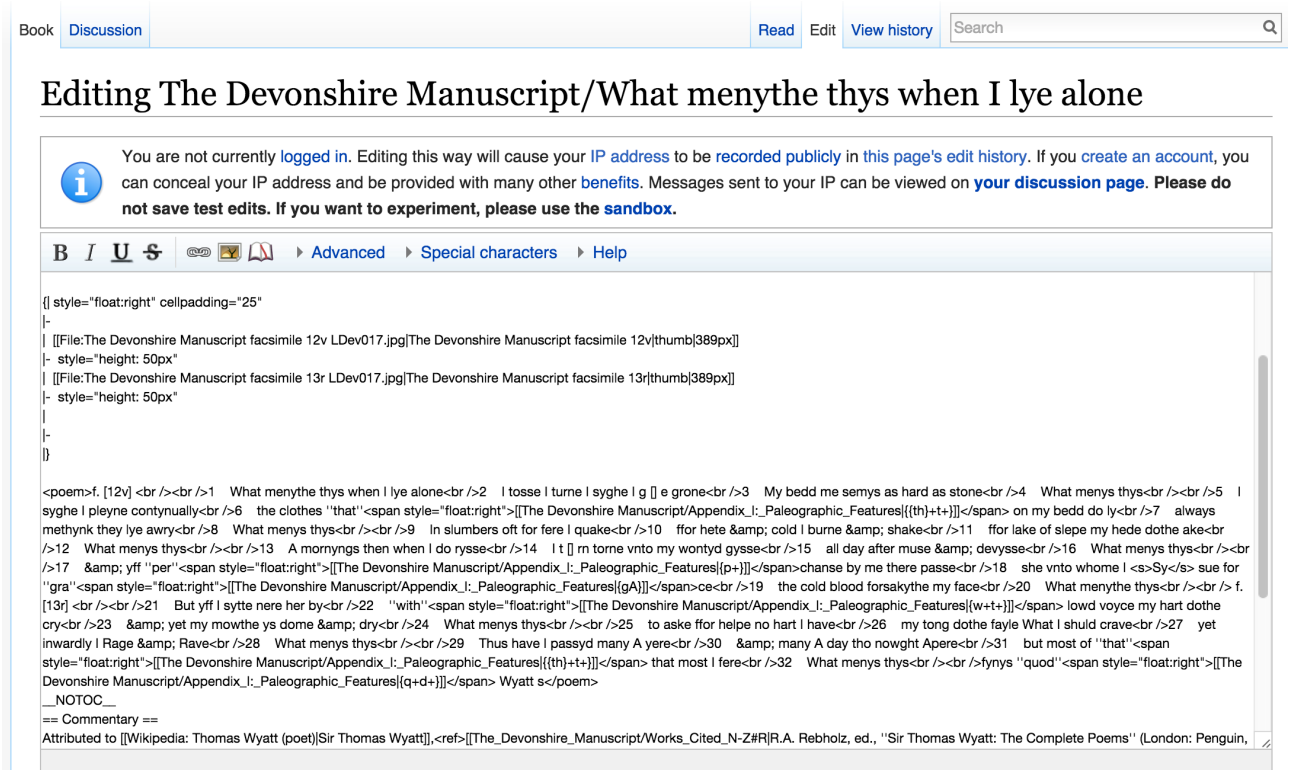


Figure 3 -18: The Wikibooks editing interface for "What menyth thys when I lye alone," including edited text, textual expansions, facsimile page image, and navigational box (Figure 3 - 11). Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

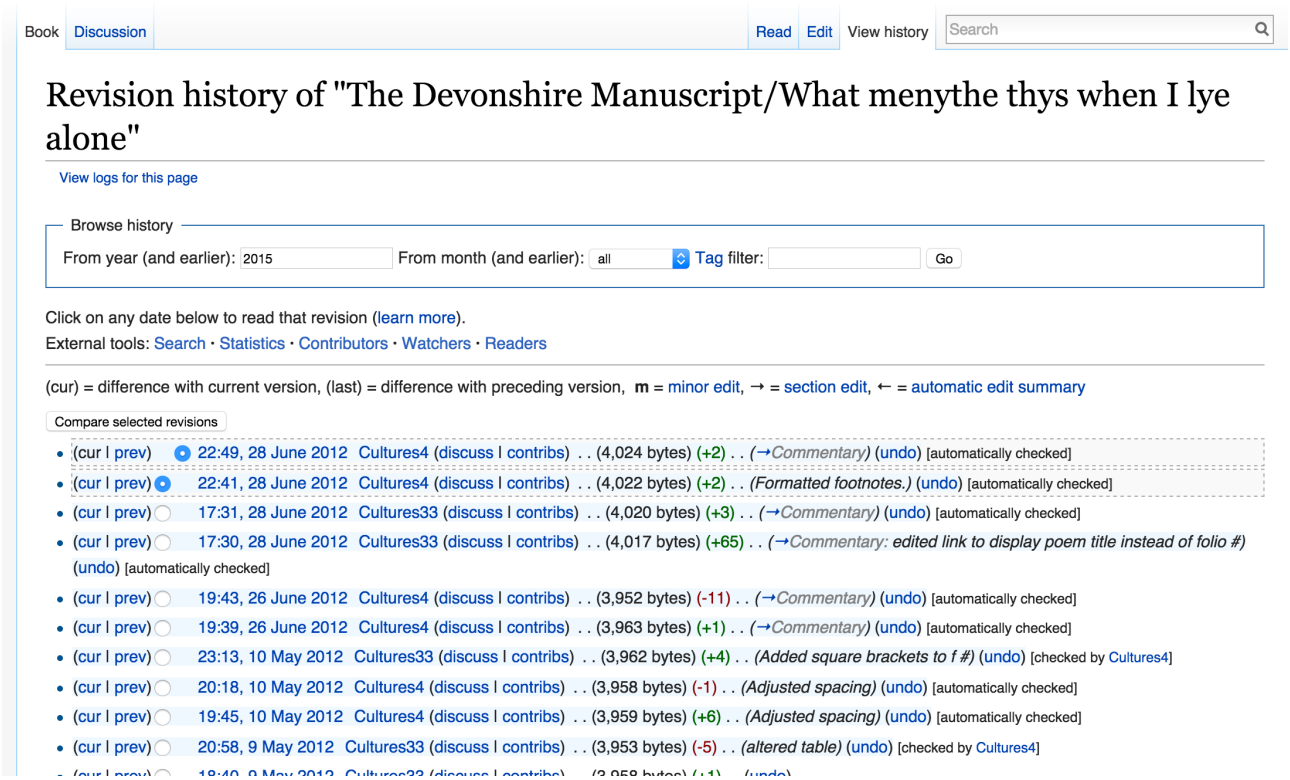


Figure 3 -19: Wikibooks Revision History for "What menyth thys when I lye alone" (Figures 3 - 11 and 3 - 18). Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

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</teiHeader>
    <text>
        <body>

            <div type="poem" xml:id="LDev017-TM1824" rhyme="32:8x4 aaa8B4"> <pb n="12v"/>
                <head>
                    <bibl>
                        <title type="incipit">What menythe thys when I lye alone</title>, attributed
                        to <name key="WYATT"> Sir Thomas Wyatt </name>, in the text, and by <title
                            type="book">Thomas Wyatt: Complete Poems</title>, on page
                        <num>139</num>.</bibl>
                    <note type="editorial" resp="per Baron">This is in Hand 2.</note>
                    <note type="editorial">There is an annotation by <name key="DOUGLAS"> Lady
                        Margaret Douglas </name>.</note>
                    <note type="editorial">The two parts of the poem are on facing pages, 12v and
                        13r, but there are five stanzas on one page and three on the other, so there is
                        an imbalance.</note>
                    <note type="editorial">It is possible to consider the majuscule forms as lgcaps,
                        considering their size and prominence.</note>
                    <note type="editorial">It is possible that the writer uses capital forms as
                    emphasis, as on "Rage' and 'Rave,' for example.</note>
                    <note type="context">This poem is attributed to Sir Thomas Wyatt in the DMS and can be found in Thomas Wyatt:
                </head>
                <lg n="1">
                    <l n="1"><handShift new="h2"/>What menythe thys when I lye alone</l>
                    <l n="2">I tosse I turne I syghe I <unclear reason="deletion">
                        <supplied resp="RGS">g<gap extent="1" unit="chars"/>e</supplied>
                    </unclear> grone</l>
                    <l n="3">My bedd me semys as hard as stone</l>
                    <l n="4" rend="indent">What menys thys</l>
                </lg>
                <space quantity="1" unit="lines"/>
                <lg n="2">
```

Figure 3 -20: TEI - XML encoding of "What menyth thys when I lye alone" (Figures 3 - 11 and 3 - 18). Siemens et al., *A Social Edition of the* Devonshire MS (BL Add 17,492).

Section Two: Social Knowledge Environments for Early Modern Studies

Chapter Four: The Renaissance English Knowledgebase (REKn): Networking Early Modern Scholarly Resources, v2.0[162]

Overview of the Renaissance English Knowledgebase

The Renaissance English Knowledgebase / Renaissance English Knowledge Network (REKN) is a proposed initiative centred on the development of digital resource capacity within early modern studies. Currently under consideration by the Andrew W. Mellon Foundation, REKN hopes to soon begin the organization of a federation of digital projects in the field of early modern studies, to develop recommendations for the social and technical infrastructure to support such an organization, and to implement a prototype of such a web-based resource. Early modern studies is ripe for this initiative, having a long engagement with digital technologies. Interest in digital issues as they relate to early modern studies is one with wide appeal, as evidenced by the increasing number of papers, project showcases, and sessions that center on digital work in the early modern period at conferences such as the Modern Language Association, the Renaissance Society of America, and Digital Humanities. The recent Early Modern Digital Agendas Institute for Advanced Topics in the Digital Humanities, hosted by the Folger Shakespeare Library and funded by the National Endowment for the Humanities, underscores an emerging consensus that digital technologies have a vital role to play in the future of early modern studies. Although there is some structured support for scholars developing new projects (e.g., the Iter Community and the MLA Commons-based Early Modern Digital Collaboratory), there is no social or technological infrastructure that can be shared and adopted by the broad community of early modern scholars and students. Based on the established success of the Networked Infrastructure for Nineteenth-Century Scholarship (NINES), 18th Connect, and the recently funded Medieval Electronic Scholarly Alliance (MESA), REKn hopes to create such infrastructure by taking advantage of existing communities and initiatives within early modern studies and adjacent disciplines that have already made strides in digital interoperability, infrastructure development, and community formation.

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[162] This section reprints and adapts Daniel Powell, "The Renaissance English Knowledge Network (REKN): Networking Early Modern Scholarly Resources, v2.0," Paper presented at Research Foundations for Understanding Books and Reading in the Digital Age: E/Merging Reading, Writing, and Research Practices (INKE Gathering), 26-27 September 2013, New York University Humanities Initiative.

Working closely with the Mellon funded Early Modern OCR Project at Texas A&M, REKN is poised to change the way early modern scholarship is undertaken within the academy in the digital age.

Our Mellon grant proposes a series of working groups, a planning and feedback workshop, and a barebones implementation that will lay the groundwork for REKN's development over the next several years. Similar federations, including the Networked Infrastructure for Nineteenth-Century Scholarship (NINES), 18th Connect, the Mellon funded Medieval Electronic Scholarly Alliance (MESA), and the NEH Digital Humanities Startup grant funded Modernist Networks (ModNets), have made significant advances for their research communities by creating standards and infrastructure for peer review of digital projects, facilitating searches across aggregated collections of digital information, and implementing software and tools that are shared by users of the federation and wider digital research communities. Working with these groups, heeding their advice, and leveraging their expertise will allow us to advance REKN's development timeline considerably. Because of this, our current grant proposes a dual focus, drawing on the years of labour that have gone into this type of digital project. REKn will from its beginning benefit from the extensive intellectual and technical efforts of these large scale federated projects; with our access to these communities of learning, project personnel and records, and technical experience, this grant is therefore situated between a large scale planning and a full implementation grant.

The early modern studies community currently benefits from a variety of digital resources and projects, and it is our desire to provide a framework for these projects similar to that which NINES provides for nineteenth-century, 18th Connect provides for the long eighteenth century, and MESA is beginning to provide for the medieval era. We have identified a select group of projects that have demonstrated a commitment to digital leadership within the field of early modern digital studies and invited them to participate in the planning process and to consider becoming early constituents of this group. All have responded favorably and agreed in principle to send representatives to a planning and consensus building meeting as outlined here. We have also consulted extensively with Laura Mandell, head of the Advanced Research Consortium (ARC) at the Texas A&M University. Given REKn's proposed relationship to ARC, project staff, along with the other "nodes" mentioned above, have been

integral to the development of this project and will play a robust role in implementing a prototype. We will continue consulting with the directors of NINES, 18th Connect, MESA, ARC, and the foundational early Modern Optical Character Recognition Project (eMOP) as REKn is developed.

Aggregating Digital Scholarly Content with REKn and ARC

REKn is a node in the ARC, a major initiative in digital research infrastructure. Directed by Dr. Laura Mandell at Texas A&M and housed in their Initiative for Digital Humanities, Media and Culture, ARC, in part, hopes to dramatically expand and coordinate digital research capabilities for humanities scholars around the globe. When fully implemented, ARC will help to provide federated database access to digitized content from the medieval period to the 20th century. ARC serves as a central guiding organization for the multiple nodes engaged in period-specific peer review and online aggregation. ARC is the physical home for the multiple nodes within the organization, as well as housing the central metadata index that provides search capability to each node. Each node in ARC focuses on a particular chronological period in English and European literary and cultural history, as modeled by the trailblazing NINES. These nodes, along with their status, are as follows:

MESA. The medieval period, from roughly 500 – 1500 AD. Currently implementing the project, with a live prototype site and ingested materials. Recipient of a three-year Mellon Implementation grant, now fully online.

REKn. The early modern period, from roughly 1450-1700 AD. Currently in the planning stages, based on an earlier iteration of a similar project at the University of Victoria.

18th Connect. The long 18th century. Currently fully implemented and growing within a defined framework.

NINES. The 19th century. Currently fully implemented and the most well-developed node in the ARC framework.

MODNETS. The modernist period, roughly 1900-1950. Currently in early planning stages, and recently funded by an NEH Digital Humanities Startup Grant.

These nodes are unified under ARC, facilitating cross-nodal searching, shared tool and infrastructure development, and the community development of scholarly standards.

Project Goals

REKN is oriented towards achieving four interrelated goals.

•Resource Aggregation and Interoperability

• Peer Review of Digital Projects

• Tool Development and Standards

• Digital Pedagogy

Resource Aggregation and Interoperability. The data contained in the majority of digital archives, editions, databases, and reference works cannot be searched or otherwise accessed outside of the search mechanisms embedded within the projects themselves. The technologies to achieve resource aggregation and interoperability exist and have been implemented by NINES, 18th Connect, and others, but the institutional and social practices necessary to achieve this goal have yet to be articulated and settled on within early modern studies. Despite the potential for digital tools and resources to escape traditional institutional and geographic limitations, many digital resources have perpetuated the boundaries of physical libraries and archives if only through their non-discoverability. REKn will eventually allow for multiple digital resources to be searched using a single interface.

Built on the Collex architecture, REKN will realize a set of tools designed to aid students and scholars working in networked archives and federated repositories of humanities materials: a sophisticated COLLections and EXhibits mechanism for the semantic web. Collex builds on semantic web technologies and brings folksonomic tagging to trusted, peer-reviewed scholarly archives. It is free, generalizable, and open source, and has been implemented by three interconnected scholarly sites: MESA, 18th Connect, and NINES. REKN will be the fourth to implement Collex and begin ingesting RDF metadata in XML from a diverse group of digital projects. Building on Early Modern OCR Project, REKN will eventually provide access to information from (initially) EEBO-TCP, Iter: Gateway to the Middle Ages & Renaissance, the University of Oxford Text Archive, the Textbase of Early Tudor English, Women Writers Online, and Digital Donne.

Peer Review for Promotion and Tenure. Despite significant recent movement on this issue by large scholarly organizations such as the Modern Language Association and the American Historical

Association, as well as developments on local scales at numerous institutions, there remains a clear need for widely shared and acknowledged standards to assess digital scholarly contributions. A federation of early modern resources has the potential—already demonstrated by NINES and 18th Connect—to bring together a group possessing both traditional subject expertise and a deep knowledge of the use of digital tools in scholarship. This group will provide peer review of digital resources, as well as develop and refine standards and recommendations for others reviewing digital resources and publications. Such expertise is especially crucial in view of many digital project's iterative implementations and highly collaborative production processes. Moreover, scholarly associations based on the study of the early modern period—such as the Renaissance Society of America and Shakespeare Society of America—lag behind others in developing guidelines for such work. Each of the nodes discussed thus far has evolved different systems to evaluate the scholarly merit and technical achievements of digital projects within their ambit; formulating those practices in an inclusive way is one of the primary goals of REKN.

Tools and Standards. Early modernists engaged in digital scholarship and tool building have created a number tools and standards specific to the needs of individual projects. The Database of Early English Playbooks (DEEP), for instance, is a database providing access to bibliographic information drawn from Renaissance English playbooks; it is a valuable tool, but one that does not get the attention or use it deserves. A federation of these projects will allow users to find and leverage existing tools and standards for wider use across multiple projects. Those creating new projects will benefit from guidance on what has been successful in the past. Those using REKN will be able to access multiple sets of documents, articles, and primary sources across previously segregated digital content. Open channels of communication, acknowledged standards, and shared resources uniquely position REKn as able to shape future development of a wide array of tools and resources. Integration with ARC also allows for the "porting" of tools developed for individual nodes into other nodes; thus 18th Connect's TypeWright tool, built to allow for the correction of rather bad OCR of 18th century texts, will likely be baked into REKN from its inception. Concordances, text analysis, and visualization tools will be directly accessible within the same research environment as the resources themselves.

Pedagogy. Part of the aim of REKN is to help ease the use of digital projects, online facsimiles, and otherwise inaccessible content in the classroom. Faculty using NINES have, for example, created assignments that entail going into the NINES environment, building a research collection, and develop a multimodal research proposal out of those materials incorporating an exhibit of primary sources within NINES. These exhibits often include critical introductions, analysis of individual works, and the like. More than exhibit building, REKN has the potential to multiply the ways in which students and researchers locate and access early modern resources and texts; the Collex architecture also allows a certain degree of browsing around and within particular documents that may seem unrelated to any individual project.

Initial Partners to ReKN

As a preliminary step to achieving a full implementation of REKn, we have carried out informal correspondence with the directors and staff of a number of early modern digital resources. Building on the success of a former iteration of the REKn project and the success of similar ventures, directors have thus far responded enthusiastically to the idea of developing REKn into a robust and networked digital resource. Such a core group, comprised of some of the most important and influential digital projects and scholarly organizations focused on the early modern period, represent the variety of approaches scholars and organizations have taken in developing, deploying, and maintaining digital projects:

- Early Modern OCR Project (eMOP)
- EEBO-TCP
- Iter: Gateway to the Middle Ages and Renaissance
- University of Oxford Text Archive
- Textbase of Early Tudor English
- Women Writers Online
- Folger Shakespeare Library
- Renaissance Texts Society

- Renaissance Society of America
- Shakespeare Association of American
- Sixteenth Century Society and Conference
- Implementing New Knowledge Environments

Other organizations, projects, and initiatives will hopefully be added over time.

Within the context of INKE, REKN can be though of as an emerging example of digital research infrastructure, a project wholly invested in the creation of a research environment—of an environment devoted to producing knowledge in new ways. As we progress, we will extensively discuss this project with scholars highly conversant in the content area—early modern studies. This Birds of a Feather gathering is of a different style, featuring individuals devoted to teasing out the implications of these new forms of digital infrastructure. Put another way: the type of feedback we receive from a scholar of the Renaissance will be different than what we hear from a tool-building digital humanists. Both are vital to realizing REKN, but the INKE community is uniquely suited to intervene at a foundational level as this project's infrastructure is built.

Chapter Five: Transformation Through Integration: The Renaissance Knowledge Network (ReKN) as Digital Production Hub for Discovery and Publication[163]

Overview of the ReKN Project

As presented at the INKE gatherings in New York (September 2013),[164] Whistler, BC (February 2014),[165] and Sydney, NSW (December 2014),[166] the Renaissance Knowledge Network (ReKN) is a major scholarly initiative designed to augment digital scholarship in early modern studies by developing an integrated research, analysis, and publication environment. Based at the University of Victoria's Electronic Textual Cultures Lab and in partnership with the Toronto-based Iter, ReKN was mid-2014 funded in the form of a one-year planning grant by the Andrew W. Mellon Foundation. In its broadest strokes, we hope for ReKN to be a reading, writing, production, and *thinking* environment that effectively harnesses multiple content-area projects and already developed tools to facilitate the production of rigorous scholarly research devoted to the early modern period. Such a mission is highly relevant to investigating emerging practices of reading, writing and research in a digital age.

This section will reflect on the first six months of funded ReKN research (from 1 September onwards), focusing especially on the possibilities for interoperability and metadata aggregation of diverse digital humanities projects including but not limited to: Early English Books Online - Text Creation Partnership; the Iter Bibliography; the Canadian Writing Research Collaboratory; the Advanced Research Consortium (with constituent nodes); Editing Modernism in Canada; the INKE working groups; and several other, smaller projects. This paper also considers how internetworked resources and a holistic scholarly environment should make integrate already-developed publication and markup tools into. Key to this process of facilitating new forms of scholarly production is the inclusion

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[163] This section reprints and adapts two publications: Daniel Powell, Raymond G. Siemens, and William R. Bowen, with Matthew Heibert and Lindsey Seatter, "Transformation through Integration: The Renaissance Knowledge Network (ReKN) and a Next Wave of Scholarly Publication," *Scholarly and Research Communication* 6, no. 2 (2015), http://www.src-online.ca/index.php/src/article/view/199; and Daniel Powell and Raymond G. Siemens, with the INKE Research Group, "Building Alternative Scholarly Publishing Capacity: The Renaissance Knowledge Network (ReKN) as Digital Production Hub," *Scholarly and Research Communication* 5, no. 4 (2014), http://src-online.ca/index.php/src/article/view/183.

[164] Daniel Powell, "The Renaissance English Knowledge Network (REKN): Networking Early Modern Scholarly Resources, v2.0."

[165] Powell and Siemens, "Building Alternative Scholarly Publishing Capacity," http://src-online.ca/index.php/src/article/view/183.

[166] Powell et al., "Designing Holistic Environments for Humanistic Research."

of possibilities for middle-state publication; exporting of both primary (in the form of editorial work like transcriptions or markup) and critical (in the form of articles, notes, reviews, etc.) content; and the formation of new types of technologically facilitated scholarly communities.

From Scholarly Primitives to Complex Disciplines

More than decade ago, John Unsworth attempted to synthesise and discuss a number of "scholarly primitives," a "finite list of of self-understood terms" out of which a logic of scholarly research might be discussed. Writing that such a list should consist of "some basic functions common to scholarly activity across disciplines, over time, and independent of theoretical orientation," Unsworth lists a number of primitives: discovering, annotating, comparing, referring, sampling, illustrating, and representing.[167] Expressed as a set of guiding principles for digital humanities tool design, this list of functions has since percolated through the discipline and been taken as a starting point for a number of projects and initiatives.[168] They have also prompted internal, epistemic discussion of what exactly constitutes a primitive in the sense of a fundamental building block of knowledge activity, with Willard McCarty taking the view that primitives should "be discovered pragmatically, gradually, by experimentation" rather than "an overarching theory or satisfactory formalization."[169] It is with these issues, and many others, in mind that the Renaissance Knowledge Network has taken shape. In particular, we hope to address how, in practice, tools for humanities research might take shape while at the same time refining how the idea of common methodological practices might be applied in practice for particular content area research.

At INKE Whistler 2014, the Renaissance Knowledge Network (ReKN) was presented as a major scholarly initiative designed to develop digital capacity within early modern studies. ReKN is based at the Electronic Textual Cultures Lab at the University of Victoria and is being developed in partnership with Iter: Gateway to the Middle Ages and Renaissance (University of Toronto-

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[167] See Unsworth, "Scholarly Primitives," http://people.brandeis.edu/~unsworth/Kings.5-00/primitives.html.
[168] See, for example: Schreibman et al, *Beyond Infrastructure*," http://dh2013.unl.edu/abstracts/ab-276.html; Palmer, Teffeau, and Pirmann, "Scholarly information practices in the online environment," http://www.oclc.org/programs/publications/reports/2009-02.pdf; Benardou et al., *A conceptual model for scholarly research activity*, https://www.ideals.illinois.edu/bitstream/handle/2142/14945/benardou.pdf; and Bradley and Vetch, "Supporting annotation as a scholarly tool," 225-241.
[169] McCarty, "Humanities computing," 103-125.

Scarborough), the Implementing New Knowledge Environments Project (Social Sciences and Humanities Research Council Major Collaborative Research Initiative), and the Advanced Research Consortium (Texas A&M University). In the broadest strokes, REKN hopes to centralize and integrate research, analysis, and production in a single, online scholarly environment. ReKN directly addresses the growing challenge of diverse, isolated, and siloed digital resources by building a scholarly environment explicitly tailored to the needs of humanities scholars studying the Renaissance. This environment seeks to integrate three usually discrete activities integral to scholarly work:

- Research: Working with Iter, this environment will make centrally accessible critical materials like peer- reviewed journals and monographs, primary materials in open source and proprietary archives, and standalone digital projects that fit into neither category.
- Analysis: There are a number of existing tools for digital analysis of textual materials, among them Voyant Tools, the TAPoR project, Juxta, and SEASR; this environment will facilitate the use of tools like these while encouraging the development of new tools designed specifically for the study of the Renaissance.
- Publication/Dissemination: Finally, through the use of publication and production platforms like CommentPress, PressBooks, and TEI Boilerplate, ReKN will promote the use of targeted digital tools in scholarly production and publication.

Crucially, ReKN will not be oriented towards the humanities as a whole, but will specifically target Renaissance digital projects, analytical tools, and scholars who would most benefit from such a focused professional research and production environment– aligning with, and co-contributing to the work of, others in the ARC network and beyond.

ReKN has thus from the beginning been imagined as a working space specifically designed for researchers of the Renaissance, a specific historical period with a large body of existing scholarship, robust scholarly attention, internal debates and resources, and an established set of individuals who actively make, use, and cite relevant informational resources. Our goal in building ReKN first had to be mapping this existing field and gaining an understanding of existing resources in both digital and print forms. In other words, it is difficult to know what ReKN should be if we don't know what early

modern studies already is. ReKN must harness the complexity of an existing field rather than reduce that field's activities to a set of underlying principles.

Initial Steps in Integration Digital Scholarly Resources

ReKN began life several years ago as the Renaissance English Knowledgebase (REKn), an ETCL-based prototyping effort to aggregate English language materials related to the study of the early modern period. Our initial efforts in mapping the field of early modern studies more broadly, in the interests of planning a full implementation of ReKN, in many ways resemble those early efforts. These activities have largely centred on canvassing the field of early modern studies as a whole. Given the backgrounds of those involved, these initial efforts are focused more on the English Renaissance than we would prefer, but we are also cognisant that all work must begin somewhere. As our grant is for a one-year period and primarily designed to allow the formation of community around ReKN and foundational research towards a full project, our initial research outputs are designed as an annotated bibliography of the field and a longer white paper designed to provide an overview of digital early modern studies and suggest ways ReKN could intervene effectively. This white paper has been completed, and the annotated bibliography is fully populated with items; approximately the majority of these have been annotated.

To perhaps understate matters, the field of early modern studies, even if confined to literary and historical studies, is vast. As an initial way forward, we have created the following ontology of early modern studies an digital humanities, more or less radiating outwards from respective centres in digital early modern studies and the traditional contours recognisable by, for example, a graduate student in the field:[170]

Appendix 1: Directory of Content Area Resources

1.1 Archives

1.2 Editions

1.3 Databases

[170] The full, public-facing site containing these annotations can be found here: Renaissance Knowledge Network, http://rekn.itercommunity.org. It is actively in development and continually being populated with new annotations.

1. Digital Resource Aggregation
2. Digital Scholarly Communication
3. Digital Scholarly Editions and Archives
4. Existing Early Modern Studies Projects
5. Humanities Visualisation
6. Text Analysis

Appendices 1-5 should be considered a high-level understanding of the field of early modern studies not in its academic arguments, but in the shape of its resources, publications, conferences, and projects. In other words, this is where we describe *Renaissance Quarterly* and *Early Modern Literary Studies* (both journals in the field) rather than articles addressing specific topics within those publications. ReKN is invested in building a real and lasting community around digital early modern studies; knowing the shape of a field is vital for cross-talk between stockholders who may approach from very different perspectives. Content area resources include projects like the Lost Plays Database http://www.lostplays.org/index.php/Main_Page, a wiki that compiled information on lost plays in England from 1570-1642; The Old Bailey Proceedings Online http://www.oldbaileyonline.org/index.jsp, a database that contains all surviving editions of the Old Bailey Proceedings from 1674-1913 (the Old Bailey is London's largest law court); and Early Modern Letters Online http://emlo.bodleian.ox.ac.uk/, a project that creates and makes accessible metadata for letters from eight large contributing collections.

These projects are one vital part of ReKN's mission, as boutique digital resources are often not indexed, cited by scholars, or used effectively in scholarship. They range from scholarly editions to database content to GIS projects. Some are open access, some are paywalled. Some are the effort of single scholars, while others have institutional support. Some are published under the imprint of scholarly presses, while others have never been exposed to any level of peer review. The digital landscape of early modern studies is chaotic. Currently, the bibliography contains over hundreds of individual items spread throughout the various categories; this will continue to increase as new items are added and annotations are created for existing entries. Many of the individual projects under

consideration themselves have large numbers of individual items. The Iter Bibliography, for instance, contains by itself over 1.1 million individual items.

Appendix 6 of our expanding bibliography concerns academic publications on the areas listed above. Most obviously, this includes journal articles and book chapters published about the content area projects compiled in Appendices 1-5. These tend to fall into three major categories of publication: digital humanities journals, content area journals, and library and information science journals. A minority take the form of white papers, reviewed but non-traditional online scholarship, or conference proceedings. Much as with Appendices 1-5, Appendix 6 begins at the centre (publications on digital projects of the early modern period) and radiates outwards to investigate more general trends in digital scholarship.

Working Towards Community-based Project Standards

Although our final goal is to build an integrated research environment for those working with and on early modern materials, effectively facilitating discoverability is of the utmost importance. ReKN is associated with the Advanced Research Consortium, a large-scale infrastructure effort to federate metadata for a wide variety of digital projects, archives, databases, and editions. This is a complex problem, as early modern studies has a large and well established tradition of reference infrastructure. Thus discoverability means that newly produced electronic projects must integrate with existing large scale standards, or that both print and electronic materials must be updated to a third type of standardisation.

More than many areas of literary and historical studies, early modern England has faced intense academic scrutiny, beginning, arguably, in the early 18th century with antiquarian efforts to recover and catalogue medieval manuscripts that had since spread throughout the British Isles. The founding of the British Museum Department of Printed Books in the 1750s can be taken as indicative of such trends. Despite this early start, such classification got well underway with the 19th century production of a complete catalogue of printed books in the British Museum, though that was not completed until well

after mid century.[171] These later years also saw sustained efforts to organise information on a wide variety of printed content, with A. W. Pollard and G. R. Redgrave beginning the Short Title Catalogue (STC) in 1918 and publishing first in 1926. This volume, alternatively referred to as STC or Pollard and Redgrave, recorded all book sprinted in England, Scotland, Ireland, as well as English books printed abroad, from 1475-1640. The first edition contained over 26,000 entries; the second, published in 1976, contained over 35,000. Each publication was assigned an STC number, a number with changed with edition and printing. In many ways the STC became the standards for referencing early modern materials directly (i.e., those not in a prepared scholarly edition). Augmented by the Wing Short Title Catalogue (1641-1700) and the Eighteenth Century Short Title Catalogue, this system represented a large portion of all printed books in the United Kingdom by the 1980s. Around that time, they were all superseded by the digital English Short Title Catalogue, now a resource run by the British Library and maintained in the MARC format. Alongside this monumental effort are smaller resources like W. W. Greg's *Bibliography of English Printed Drama*, there exists a substantial print tradition of providing for information aggregation in early modern studies.

Alongside these field-specific print resources (some of which have now moved online), ReKN is faced with a vibrant number of electronic projects invested in precisely this type of work. Ideally, ReKN will be interoperable with other large data aggregation projects, as well s learning the lessons of such efforts moving forward. Foremost amongst these are the Iter project. Iter was founded in 1994 as a non-profit partnership dedicated to advancing the study and teaching of the medieval and early modern periods via digital means. Associated with, amongst others, the Renaissance Society of American and the Sixteenth Century Society and Conference, Iter provides online access to a number of journals, full-text e-books, scholarly editions, and the Iter Bibliography. The Iter Bibliography is an Open URL and Zotero enabled bibliography composed of secondary source materials, citations for books and journal articles (articles, reviews, review articles, bibliographies, catalogues, abstracts, discographies), citations for dissertation abstracts, citations for essays in books (including conference

[171] The compilation of the Oxford English Dictionary in the 19th century is another chapter in the story of classification in Britain during the Victorian age.

proceedings, exhibitions, encyclopaedias, etc.). At last count the Bibliography contains over 1.2 million individual items and is continuously updated. Records are kept in MARC format. This dataset is foundational to ReKN whatever its final shape.

Although Iter has made remarkable progress towards centralising information access in early modern studies, projects in adjacent fields have also been making great strides. The Advanced Research Consortium (ARC) federates MESA, NINES, 18th Connect, and ModNets. Each node in the network itself aggregates metadata from digital rescues for particular time periods (MESA is the Medieval Electronic Scholarly Alliance; NINES is the Nineteenth Century Network for Electronic Scholarship; 18th Connect focuses on the long 18th century; and ModNets is in the initial stages of federating resources related to Modernism). These nodes run on Collex, a software platform custom designed at the University of Virginia a number of years ago.[172] Collex runs on what Bethany Nowviskie calls "a Dublin Core flavor of RDF" that both allows users to create their own tags and facilitates faceted searching of materials. Given ReKN's close relationship to ARC, we are actively working towards a metadata solution (in both content and architecture) that allows integration or portability.

ARC runs on Collex. Other major projects like the Canadian Writing Research Collaboratory is an "infrastructure project designed to enable unprecedented avenues for studying the words that most move people in and about Canada."[173] More concretely, they are building a database of Canadian digital content (Online Research Canada, ORCA), to "house born-digital scholarly materials, digitized texts, and metadata (indices, annotations, cross-references)." The seminal Orlando Project is a foundational rescue for ORCA, with around a dozen projects currently being federated. Beyond even aggregation, though, CWRC hopes to build "a toolkit for empowering new collaborative modes of scholarly writing online; editing, annotating, and analyzing materials in and beyond ORCA; discovering and collaborating with researchers with intersecting interests; mining knowledge about relations, events and trends, through automated methods and interactive visualizations; and analyzing the system's usage patterns to discover areas for further investigation." They deploy a controlled vocabulary drawn from the Getty

[172] Nowviskie, "Collex," http://www.nines.org/about/wp-content/uploads/2011/12/Nowviskie-Collex.pdf.
[173] "About CWRC / CSÉC," http://www.cwrc.ca/about.

Art and Architecture Thesaurus to populate their RDF.[174] In many ways, CWRC is doing for Canadian content and studies what ReKN hopes to do with early modern content and studies.

For ReKN, standards and metadata means two things: first, it must draw on large-scale, centuries old research infrastructure in printed related to the early modern period, ranging from cataloguing systems to bibliographies of primary materials. Second, it must take shape within widely used and translatable standards for digital assets management in both content specific areas (e.g., Iter, the ESTC, and EEBO-TCP) and adjacent chronological and subject periods (e.g., the ARC consortium, CWRC, and the Editing Modernism in Canada corpus). Threading this needle requires a great deal of research into shared standards, conversations with other projects, awareness of disciplinary and field-specific histories of formation, and a subtle understanding of possibilities for an metadata architecture. To balance these at times competing needs, we are actively discussing whether or not to house or master metadata in Dublin Core or MARC 21 XML. Of course, this is a somewhat arbitrary choice as cross walking is certainly possible between standards (via MARC 21), although with possible loss and conversion issues. It is not an inconsiderate concern that the Iter Bibliography is natively in the MARC format. Similarly, should ReKN deploy a controlled or semi-controlled vocabulary within a chosen metadata scheme, similar to CWRC? NINES and other ARC nodes use open vocabularies, with the only exception being genre (which is chosen at ingest for items). CWRC uses the Getty Art and Architecture Thesaurus. Iter has partially deployed controlled vocabularies internally. Many of the individual resources we are federating use their own bespoke vocabularies and idiosyncratic systems of organisation. What level of standardisation is desirable, and what is feasible if desired?

Moving ReKN Beyond Aggregation of Digital Scholarly Resources

Aggregation by itself, though, is only part of ReKN's mission. As stated above, we hope to build a holistic environment for discoverability, analysis, and research. Again, faced with a complex and deep field, we have chosen to begin by thinking only about text analysis tools. Within ReKN, therefore, a user might run a search or browse the collections, finding particular texts with which to work. If those resources are available in full text, ReKN will allow for those texts to be called in to integrated

[174] See J. Paul Getty Trust, "About the AAT," http://www.getty.edu/research/tools/vocabularies/aat/about.html.

analytical tools such as the ones listed in the Text Analysis Portal for Research (TAPoR) or deployed within Voyant.[175] Once ported in, full text materials—whether an individual play or the entirety of English drama or the Shakespeare corpus—can be explored and researched using a variety of tools. An EEBO-TCP text could be called into WordFreak or WordWanderer, for instance, to run a concordance on them or explore Keywords in Context (KWIC).[176]

While these efforts to discover and analyse cultural textual information for literary and cultural criticism were underway, the third major area of concern to ReKN—scholarly production—was undergoing lasting shifts. One need only witness the explosion of scholarly blogs, increasingly active Twitter discussions amongst academics, open access publication, and the publication of digital scholarly editions to envisage the manifold new models of scholarly production currently evolving in the world of academia. The sheer fact of near-universal online availability for journal- based research content is itself an argument for a qualitative shift in how research tasks are undertaken. Publication platforms such as the Institute for the Future of the Book's MediaCommons and experiments in open peer review like that of the journal *Nature* in 2006 or *Shakespeare Quarterly* in 2010 suggest that the ways scholarship has been produced, vetted, and disseminated are undergoing rapid and meaningful changes.

Within ReKN, those interested in building editions might, for example, export textual content might directly to platforms like the Versioning Machine or Juxta Commons.[177] Some tools are not web based, of course, but ReKN hopes to provide access to entries about them or facilitate their download, possibly via TAPoR and similar projects. Eventually, insights form or texts build within these tools will be able to move fluidly themselves to a production environment for scholarship and editions.
Digital publication of research materials related to the early modern period can roughly be classified as proceeding in three ways:

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[175] See TAPoR, http://www.tapor.ca and Sinclair, Rockwell and the Voyant Tools Team, "About Voyant Tools," http://docs.voyant-tools.org/about.
[176] See WordFreak, http://www.tapor.ca/?id=300 and WordWanderer, http://www.tapor.ca/?id=476.
[177] See Versioning Machine, http://v-machine.org and Juxta Commons, http://juxtacommons.org.

1. It is created by publishers in-house and distributed in PDF format via a variety of aggregators and publication libraries like JSTOR or Project Muse. This is especially true of journal articles that constitute the bulk of secondary literature in the humanities.
2. It is created as an XML document encoded to either the Text Encoding Initiative Guidelines or a project-specific set of standards. This is increasingly common practice for digital scholarly editions and digital archives representing primary source textual content.
3. It is in a standalone or boutique format that is difficult to aggregate, catalogue, and otherwise work with within existing scholarly ecosystems of content management. These include innovative, non-traditional publication platforms like CommentPress, Wordpress, Scalar, TEI Boilerplate, and Roma, but also legacy sites using frames and tables, odd Unicode fonts, and so on.

Each of these cases pose difficulties. The Iter Bibliography, for instance, aggregates bibliographic records in the MARC format; each of these records contains a button to "check for full text." Doing so produces an OpenURL query that is directed to an institutional link resolver. When this works, it is flawless; when there are issues with local link resolution (such as a library having switched from the SFX system to the 360 system), it necessitates logging in separately to a library systems and finding individual articles in the traditional way. Oftentimes, these articles are in PDF format. Finding the article itself usually ends the trail of links, but it may contain no OCR content and no metadata. It is useful for reference reading, but any content meant for integration to an article is often typed by hand or grabbed in roundabout fashion via an application like Zotero. This is important to keep in mind when we consider building a production environment for research: for many users, the end goal of this environment will be the production of secondary criticism on early modern texts, criticism that will need to be exported either into Microsoft Word or plain text for submission to a journal for peer review. Eventually those documents will be typeset into PDF and placed online. Publication can thus mean quite different things depending on user community.

The second major category for published digital content is that of the digital scholarly edition. The TEI has found enduring success as the arbiter of an international standard for the archival

preservation and digital publication of historical texts. The list of projects using TEI is extensive, and includes illustrious and foundational content such as the Women Writers Project, the British National Corpus, the Orlando Project, The *Acts and Monuments* Online, The Shelley-Godwin Archive, and many more.[178] The TEI Guidelines are actively encouraged by the US National Endowment for the Humanities, the Canadian Social Sciences and Humanities Research Council, and the UK Arts and Humanities Research Council. Training opportunities are routinely planned and funded by these organisations. Examples include the Digital Humanities Summer Institute, the Taking TEI Further series (offered in conjunction with the Women Writers Project), the Digital Humanities at Oxford Summer School, and the Culture and Technology Digital Humanities at Leipzig training programmes.

For those not needing or wanting to work with the Oxygen software to produce XML documents from scratch, a number of projects have explored how to simplify TEI encoding for non-specialist users. The Canadian Writing Research Collaborator (CWRC) is developing CRWRC Writer, an in-browser TEI markup environment with the following features:

> Close-to-WYSIWYG editing and enrichment of scholarly texts with meaningful visual representations of markup;
>
> Ability to add named entity annotations to texts;
>
> Ability to combine TEI markup for the text and stand-off RDF for named entities;
>
> Ability to export using 'weavers' that recombine the plain text, the TEI, and the RDF into different forms (including an embedded TEI-compliant XML);
>
> Documented code to allow editorial projects to incorporate CWRC-Writer into their environments.[179]

Similarly, the Folger Shakespeare Library has recently received funding from the Institute of Museum and Library Services to produce a searchable database of encoded semi-diplomatic

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[178] See the full list: "Projects Using the TEI," http://www.tei-c.org/Activities/Projects.
[179] See the CWRC team's abstract from Digital Humanities 2012 for a further discussion of CWRC Writer: Rockwell et al., "CWRC-Writer," http://www.dh2012.uni-hamburg.de/conference/programme/abstracts/cwrc-writer-an-in-browser-xml-editor.1.html. The CWRC site also contains additional information on the tool. See Brown, "CWRC Writer," http://www.cwrc.ca/projects/infrastructure- projects/technical-projects/cwrc-writer.

transcriptions from the Folger's collection of manuscript holdings. Central to the success of Early Modern Manuscripts Online (EMMO) is the use of Dromio, and in-house palaeographic transcription platform that integrates highlight and click functionality that, in the back end of the application, results in TEI encoded XML.[180] It is meant to be used in conjunction with manuscript image facsimiles provided by the Folger's digital image repository Luna. Dromio is quite similar in its capabilities to CWRC Writer, although Dromio is far more stripped down and in active development. It is based on Folger servers and available only to those participating in activities like Folger courses in paleography or sponsored transcription events. The XML documents produced are held internally.

T-Pen stands for "Transcription for Paleographical and Editorial Notation" and is based at the Center for Digital Theology at St Louis University. It is, much like Dromio, designed to enable text transcription and encoding in conjunction with viewing a selected set of manuscript image facsimiles. Interestingly, T-Pen openly eschews TEI standardisation; instead, it is designed to allow for anything ranging from plain text transcription to transcription with unique characters (such as the eth [ð] or thorn [Þ]) to XML tags to paratextual annotations. The tool automatically detects lines, columns, and other layout features, as well as allowing for project collaboration on transcriptions and annotations. Projects can be exported to a number of formats, including XML/plaintext; PDF; RTF; and HTML. It does not validate XML and provides only basic formatting for PDF, RTF, and HTML exports (most users import into a separate program for editing and/or further work).[181]

Amongst the many diverse options for digital dissemination, two should be included here: CommentPress and TEI Boilerplate. CommentPress is designed as a Wordpress-compatible plugin that allows for collaborative annotation. First developed by the Institute for the Future of the Book in 2004, it is currently on version 3.5, it is described thusly: "Annotate, gloss, workshop, debate: with CommentPress you can do all of these things on a finer-grained level, turning a document into a

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[180] For an overview of EMMO see this post on *The Collation*, the Folger's in house research blog: Wolfe, "EMMO," http://collation.folger.edu/2013/11/emmo-early-modern-manuscripts-online. For a recap of the first Transcribathon that EMMO has sponsored, as well as screenshots of the Dromio tool in action, see this post: Dingman, "A Transcriba . . . what?," http://collation.folger.edu/2014/12/a-transcriba-what.

[181] T-Pen is discussed at length here: Ginther, "T-PEN: A New Tool for Transcription of Digitized Manuscripts," https://earlymodernonlinebib.wordpress.com/2012/10/22/t-pen-a-new-tool-for-transcription-of-digitized-manuscripts.

conversation. It can be applied to a fixed document (paper/essay/book etc.) or to a running blog."[182] CommentPress is designed explicitly to leverage digital platforms to enact critical arguments about the nature of text and of the book. Several notable works have been published using CommentPress, including Kathleen Fitzpatrick's *Planned Obsolescence*,[183] an experimental issue of the journal *Shakespeare Quarterly* on Shakespeare and New Media,[184] and the currently in progress book *:(SURVEILLER ET SOURIRE :).*[185]

TEI Boilerplate, on the other hand, is designed as "a lightweight, HTML5 compliant framework for publishing TEI documents. TEI Boilerplate (TEIBP) is designed to bridge the gap between the browser-friendly features of HTML and the semantic richness of native TEI documents."[186] Developed at Indiana University, TEI Boilerplate is designed to allow for the easy publication of complex TEI documents online. Using XSLT, JavaScript, and CSS, XML documents can be easily transformed on the fly into custom rendered HTML. Changes in presentation can be undertaken by simply edition CSS rather than engaging with XSLT. TEI Boilerplate is also compatible with Omeka, the exhibit building platform developed by the Center for History and New Media. Simply put, TEI Boilerplate allows for non-expert users to immediately publish XML content while immediately being able to edit formatting via CSS. It is highly useful in teaching contexts as it allows for immediate feedback for thinking through how XML documents may be displayed in multiple ways for different contexts.

Part of ReKN's mission could best be described as one open to the various possible ways publication may function in the 21st century academy. We thus see publication as a protean term, a concept that would perhaps better be served by the term scholarly production. First, such capability would encompass what Kathleen Fitzpatrick terms "middle-state publication" (2011). Referring particularly to the Mediacommons publication of *The New Everyday*, middle state publication is exactly

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[182] See *Commentpress: A WordPress plugin for social texts in social contexts*, http://futureofthebook.org/commentpress.
[183] Available here: Fitzpatrick, *Planned Obsolescence,* http://mcpress.media-commons.org/plannedobsolescence.
[184] See: Rowe, "Welcome," http://mcpress.media-commons.org/ShakespeareQuarterly_NewMedia.
[185] See: Vitali-Rosati et Sinatra, *:(SURVEILLER ET SOURIRE :),* http://mcpress.media-commons.org/regardnumerique.
[186] Walsh, TEI Boilerplate, http://dcl.ils.indiana.edu/teibp.

that: a middle state, "between a blog and a journal. Rather than adhere to a more traditional structure of publishing selection of a larger pool of submissions, The New Everyday publishes first, and then filters: anyone with a MediaCommons account can publish a work to the site."[187] ("How It Works", n.d.) In current scholarly environments, this can be a radical suggestion; furthermore, *The New Everyday* explicitly encourages "embedded multimedia works (YouTube and Vimeo videos, Slideshare and Scribd presentations, etc.)."[188] The ReKN publication production environment is thus envisioned as one that would allow members and users to author and post scholarly, but not necessarily peer reviewed, content in a protected space. Community affordances such as commenting, integrated social media export to Twitter, Facebook, etc., and following/friending will be available, helping to build online community around middle-state scholarly work.

Second, the ReKN production environment will allow scholars to create textual content that is able to be exported either to existing publication platforms or to be ported into the analytical tools integrated into ReKN. At its most basic, this will include transcribing page images from databases such as Early English Books Online, the Perdita Manuscripts Collection, British Library Digitised Manuscript, Broadside Ballads Online, or similar projects.[189] For many of these collections, especially those focused on manuscripts or non-traditional print materials, there is no existing full text record of individual items. At times, even such basic cataloguing information is inadequate or incorrect. In many cases, then, transcription is itself a major act of critical intervention, one that facilitates discovery and usage in scholarship. Such transcriptions might be shared with other scholars directly or archived in the ReKN workspace. They may also be ported directly to the analytical tools embedded within ReKN for algorithmic manipulation. Functionality for this type of transcription would resemble a barebones text editor such as TextEdit or Notepad. Full text content, produced by interested scholars, can be input to Voyant Tool or the TAPoR suite to provoke analysis.

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[187] "How It Works," http://mediacommons.futureofthebook.org/tne/how-it-works.
[188] Ibid.
[189] See the following examples: *Early English Books Online*, http://eebo.chadwyck.com; Perdita Manuscripts, http://www.perditamanuscripts.amdigital.co.uk/Default.aspx; *Broadside Ballads Online,* Bodleian Library. http://ballads.bodleian.ox.ac.uk. Further examples of digital archives can be found at *Early Modern Hub*: Howard, "Category: Primary Sources," http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html.

For more advanced users, the same environment will enable basic semantic markup of textual content. Such capability would be valuable for scholars hoping to build standalone editions of early modern texts, compile and preserve archives of multiple documents, render such texts computationally tractable for advanced applications, or for modular applications in separate digital projects. Again, a number of standalone or boutique applications designed to allow this have already been developed. T-Pen (Transcription for Paleographical and Editorial Notation), funded by the Mellon Foundation and developed by the Center for Digital Theology at St. Louis University, is designed to allow for the markup of manuscript collections in protected repositories.[190] The Canadian Writing Research Collaboratory / Le Collaboratoire scientifique des écrits du Canada (CWRC/CSÉC) has built CWRC Writer, an open- source, browser-based, "close-to-WYSIWYG" text markup editor (Brown, 2010).[191] The Editing Modernism in Canada Project (EMiC), has itself integrated CWRC Writer with Shared Canvas to build what it calls the Modernist Commons; this environment ingests page images, processes those images with OCR software, allows near-WYSIWYG semantic markup, and is capable of displaying "packaged" scholarly editions. The Folger Shakespeare Library, in additional to developing a robust manuscript transcription environment as part of the Early Modern Manuscripts Online (EMMO) Project, currently uses a pilot program to teach English palaeography (Wolfe, 2013); designed to allow collaborative transcription of manuscript images drawn from the Folger's collection of digitised texts (LUNA), this program allows real-time collective collation of early modern texts (Wolfe, 2012). TypeWright, an OCR correction environment integrated into *18th Connect*, has effectively partnered with ProQuest to allow scholarly to access otherwise paywalled page images and (quite poor) OCR output.[192] Corrected OCR is then exportable, by the transcribers, as basic XML content—hopefully to be used in constructing scholarly editions of that same content.

Finally, this production environment should, in our estimation, encourage community formation and the productive exchange of critical viewpoints, research findings and questions, and

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[190] See Transcription for Paleographical and Editorial Notation (T-PEN), http://t-pen.org/TPEN.
[191] For further information, see Rockwell et al., "CWRC-Writer," http://www.dh2012.uni-hamburg.de/conference/programme/abstracts/cwrc-writer-an-in-browser-xml-editor.1.html.
[192] See "Welcome to Typewright," http://www.18thconnect.org/typewright/documents.

scholarly information in both its fully formed and nascent stages. These types of scholarly environments are very much in the early stages. This is not to say, however, that academics do not leverage existing social networks for their own purposes. Twitter, the microblogging service, has become an established venue for academic discussion, conference live tweeting, project promotion, and so on. It was entrenched by 2012 for the *Chronicle of Higher Education*, for example, to publish "10 Commandments of Twitter for Academics" (Gulliver, 2012). As a regular attendee of the Modern Language Association Convention and the Digital Humanities Summer Institute, I can personally attest to the vibrancy of the medium. Similarly, Facebook has allowed the rise of academic networks and project pages, and Academica.edu and LinkedIn help academics to post published (or unpublished work), follow other scholar's as they post work, and prompt social networking. In a more conscientious manner, Iter: Gateway to the Middle Ages and Renaissance is currently redesigning its Drupal-based Iter Community. Designed as a space for "collaboration, discussion and social networking" IC (as it is known) is intended to provide an environment for sharing CFPs, promoting scholarly work, and so on.[193] The ongoing redesign will allow the space to better achieve its goals (in both the technical and community based senses of the word). MLA Commons, sponsored by the MLA and approximately one year old, is planned as a space for the "development of new forms of scholarly communication and [to] support scholars in creating, aggregating, editing, and evaluating academic writing online" (Fitzpatrick, 2012). MLA Commons can currently claim approximately 3,400 active members, 250 groups, 133 blogs, and a respectable level of user engagement. As these example illustrate, scholarly associations, period-specific groups, and self-starting academics are becoming well practiced at using existing tools for community formation, as well as building new ones from scratch. Despite this level of activity, however, no group has attempted to integrate community space, publication venues, and scholarly editing environments into a single space—a space which is then itself integrated with electronic archives, textual analysis platforms, and existing bibliographies.

Six Month Update on the ReKN Project

[193] See Iter Community, http://community.itergateway.org.

ReKN has been active as a funded project for approximately six months. In that time, we have undertaken wide-ranging research on existing early modern studies work in both print and digital forms, examined scholarly critique of such efforts, begun conversations with other federation and aggregation efforts, and outlined an initial information architecture and near-term project goals. Our initial planning grant is centred on the production of, (1) a comprehensive white paper on the state of existing scholarly research, analysis, and production environments devoted to Renaissance studies, textual editing, and scholarly communication; (2) a meeting of the research community best placed to contribute to such a document designed to critique, discuss, and refine a full implementation of ReKN; (3) a publicly accessible online resource for individuals to research the affordances of digital tools as related to scholarship of the Renaissance; leading to the best understanding of (4) the implementation of ReKN as a partner in ARC. We are well on our way to meeting these goals, but doing so requires a continual reappraisal of the challenges faced by integrated resources in a disparate and historically established field.

Chapter Six: Towards A Digital Environment for Early Modern Studies: A White Paper for the Establishment of the Renaissance Knowledge Network (ReKN)[194]

Preface

This white paper focuses on the ways that scholarship of the Renaissance might benefit from the integration of digital resources and methodologies into scholarly work. In exploring this topic it builds upon the substantial work undertaken in this area by a number of individuals, projects, initiatives, and organisations. It is meant to help readers understand two academic areas—early modern studies and the digital humanities—and how those fields of study might productively come together to produce new insights and innovative research. In a very real sense, this document is designed to, as concisely and informatively as possible, provide a roadmap for thinking through and discussing how digital resources, analytical techniques, and dissemination platforms and tools might be brought to bear within content-area scholarship.

Executive Summary of ReKN

The Renaissance Knowledge Network (ReKN) is a major scholarly initiative designed to augment digital scholarship in early modern studies by developing an integrated research, analysis, and production environment. It is based at the Electronic Textual Cultures Lab (University of Victoria) and has been developed in partnership with Iter (University of Toronto Scarborough); ReKN also works closely with the Implementing New Knowledge Environments Project (Social Sciences and Humanities Research Council Major Collaborative Research Initiative) and the Advanced Research Consortium (Texas A&M University).

Since 2013, the ReKN team has been researching how best to implement ReKN as technical environment and network of research practice. This research involved a number of complementary efforts, including:

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[194] This chapter reprints, adapts, and abridges Daniel Powell, Raymond G. Siemens, William R. Bowen, Matthew Hiebert, and Lindsey Seatter, with Kate Siemens, Sarah Milligan, and Alyssa Arbuckle, *Towards A Digital Environment for Early Modern Studies: A White Paper for the Establishment of the Renaissance Knowledge Network (ReKN)*, including Appendices 1-6 (Directory of Content Area Resources; Directory of Methodological Area Resources; Directory of Publishing & Markup Resources; Directory of Academic Publications in Early Modern Studies and Digital Humanities; Directory of Relevant Scholarly Organisations, Conferences, and Publications; and Bibliography of Relevant Academic Work), January 2015.

The production of an extensive annotated bibliography that maps relevant areas within the fields of early modern studies, digital humanities, and digital early modern studies. This includes primary source resources, analytical tools, publication platforms, and academic publications related to our areas of concern;

The mounting of an online resource aggregating and making these annotations openly available to various research communities and the general public;

The production of an agenda and robust research materials for a community-based consultation in February 2015;

The drafting of this white paper.

As we state below, this white paper is both a summation of current work and a way to map where to go from here; it is a snapshot of multiple research communities and the ReKN team's thinking that should prove responsive to input from academics, scholarly organisations, research projects, technical developers, and so on. It is iterative and will evolve as our discussions advance.

Through a comprehensive review of existing resources in discovery, analysis, and dissemination, the ReKN team has formulated a set of "signposts" that are designed to guide future discussion, prototyping efforts, and community usage. This information gathering largely took the form of a large-scale bibliography that maps the fields of early modern studies and digital humanities broadly, as well as how they intersect to form a digital early modern studies. The insights gleaned from forming that body of work, as well as the ReKN team's deep knowledge of both digital humanities and early modern studies, informs this white paper's insights and recommendations.

Our conclusions are therefore syncretic and situational, an attempt to bridge multiple research communities and continue conversations that we have had amongst ourselves and with others. We believe that ReKN must be mounted online as a web-based resource, that it should be responsive to varied devices, and that it should be well-designed for long-term usage and user experience and user interface design (UX/UI). It should aggregate diverse primary and secondary sources related to the Renaissance in easily accessible ways, whether via facilitating access to diverse records or aggregating on-site. These resources should be integrated with analytical tools for textual analysis, and easily

distributed to platforms for dissemination and publication. ReKN should be a technical environment that facilitates what might be thought of as an extension of John Unsworth's scholarly primitives: advanced scholarly functions of discovery, analysis, and publication.

Achieving such a goal necessitates the creation and maintenance of a dedicated scholarly community of users and contributors, of individuals who will both use and promote ReKN. This will require an array of approaches, including: presentation at major conferences and workshops; pedagogical outreach and training at various levels; peer review of ReKN in leading journals; of critical publications (likely journal articles or book chapters) that directly address important questions within early modern studies using ReKN as a research tool, citing it as such; Publication of scholarly editions created using the ReKN environment; Active and sustained presence on social media such as the blogosphere, twitter, and listservs.

Too often, digital resources and research environments are full of bugs, inefficient, require too much technical proficiency to use, or are tangential to the research task at hand. To avoid these pitfalls, ReKN must be imagined as the "killer app" for a new generation of scholars researching the early modern period. In this context, we think ReKN can be a singular platform-community whose benefits are so strong and clear to wider communities of researchers that it becomes de rigour for Renaissance scholarship and a model for other disciplinary areas of inquiry. Thinking through how to develop such a platform cannot help but make reference to the basic tasks of scholarship, although a killer application must bring multiple functionalities together to create a resource that is more than the sum of its parts, or indeed its component capabilities.

What is REKN?

The Renaissance Knowledge Network (ReKN) is a major scholarly initiative designed to augment digital scholarship in early modern studies by developing an integrated research, analysis, and production environment. It is based at the Electronic Textual Cultures Lab (University of Victoria) and has been developed in partnership with Iter (University of Toronto Scarborough); ReKN also works closely with the Implementing New Knowledge Environments Project (Social Sciences and Humanities Research Council Major Collaborative Research Initiative) and the Advanced Research

Consortium (Texas A&M University). ReKN is led jointly by Dr Raymond G. Siemens (Canada Research Chair in Humanities Computing and Distinguished Professor of English and Computer Science at the University of Victoria) and Dr William R. Bowen (Director of Iter: Gateway to the Middle Ages and Renaissance and Chair of the Department of Arts, Culture and Media at the University of Toronto Scarborough).

What does ReKN do?

ReKN, as both scholarly platform and intellectual community, is devoted to understanding, critiquing, and building digital projects for the study of the Renaissance. These dual foci will provide the opportunity to ensure that the scope and significance of these contributions is maximised across the scholarly community of interest. ReKN directly addresses the growing challenge of diverse, isolated, and siloed digital resources by building a scholarly environment explicitly tailored to the needs of humanities scholars studying the Renaissance. ReKN seeks to bring existing scholarly resources and methods into conversation by integrating three primary domains of scholarly activity:

Research: Working with Iter, this environment will make centrally accessible critical materials like peer-reviewed journals and monographs, primary materials in open source and proprietary archives, and standalone digital projects that can often fall through the digital cracks. Accessible resources might include Early English Books Online, The Down Survey of Ireland, the English Broadside Ballads Archive, the Iter Bibliography, the journal *Early Theatre*, or any number of online primary and secondary resources.

Analysis: There are a number of existing tools for digital analysis of textual materials, among them Voyant Tools, the TAPoR project, Juxta, and SEASR; this environment will facilitate the use of tools like these while encouraging the development of new tools designed specifically for the study of the Renaissance.

Production: Through the use of publication and production platforms like CommentPress, PressBooks, and TEI Boilerplate, ReKN will promote the use of targeted digital tools in scholarly production and publication. This may include collaborative authorship platforms, citation

mechanisms, TEI/XML edition-creation capability, or the production of argumentative visualisations.

Crucially, ReKN will not be oriented towards the humanities as a whole, but will specifically target Renaissance digital projects, relevant analytical tools, and the scholarly communities who would most benefit from such a focused professional research and production environment– aligning with, and co-contributing to the work of, others in the ARC network and beyond.

How does ReKN help us carry out early modern scholarship?

ReKN is at once a scholarly working environment and a community of users, researchers, developers, and the public. ReKN will be a single point of entry into an entire world of scholarly activity, but one specialised for and oriented to scholars of the Renaissance. It is a rescue for searching and discovering, for analysing and exploring, and for publishing and writing. And in all of these diverse activities we are cognisant of the many ways the community is formed, collaboration occurs, and research is shared and debated. ReKN integrates this from its inception in the ways that not only researchers interact with each other, but the many ways in which digital resources and tools benefit from interoperability and cross communication. ReKN is at once a unique technological resource, a focal point for diverse digital resources, and a community—of individuals, of practice, and of scholarly work.

The benefits of ReKN as integrated research environment will be of direct and immediate use to scholars of the Renaissance not accustomed to employing digital methods and tools in their work. At its core, ReKN will be a scholarly environment that integrates and facilitates the regular work Renaissance scholars—information discovery, analysis, and repurposing for publication. These are complex tasks that have prompted the evolution of numerous standards, practices, resources, methods, and platforms. From the aggregated catalogues of the 19th century to peer-reviewed journals in the 20th, from the rise of theory as critical method to the advent of digital editions of primary resources, early modern studies is a wide-ranging and dense set of interconnected practices, resources, and methods. ReKN will both augment what the scholar of the Renaissance already does

by allowing for quicker, more efficient interaction with a wide variety of materials and methods and also facilitate the search for new research questions and post answers.

The rise of online archives and editions of primary source content has already transformed how scholars of the early modern period access and use the historical record. Although certainly not without its faults, Early English Books Online, for example, allows, via the internet and based on subscriptions, global access to facsimile images of a wide range of early modern texts—texts that were previously completely inaccessible except to small minority of scholars.[195] *The Acts and Monuments Online*, on the other hand, makes multiple versions of John Foxe's crucial work accessible in high-quality editions.[196] *The Lost Plays Database* is a wiki that records mentions of plays and playwrights drawn from a variety of early modern English texts.[197] Appendix I, the Directory of Content Area Resources, lists a number of these resources. Early modern studies suffers because these multiple resources are not widely accessed by traditional scholars, partially because they each must be searched individually, have wildly different types of interfaces, and are largely unknown to most scholars. In aggregating the many existing digital resources under a single search interface, ReKN will improve access to individual resources by content area specialists. Easy access to diverse digital resources is an integral part of helping non-digitally conversant early modern scholars to access digital content. These scholars—those conversant with early modern studies but not regular users of higher-level digital tools—are the target audience for ReKN.

Similarly, integrating analytical tools like the Voyant toolset with these search capabilities will bring what can seem to be specialised tools and publication avenues to the immediate attention of early modernists. In many cases, tools like such as those listed in TAPoR and actively developed and released by Voyant are designed to be downloaded and integrated into research platforms designed for specific constituencies. In large measure, such integration has not occurred, and this has contributed to the most cutting edge tools in textual analysis and exploration—in terms of keyword in context analysis, word frequency, vocabulary richness, and other complex visualisations—not

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[195] *Early English Books Online,* http://eebo.chadwyck.com.
[196] John Foxe's *The* Acts and Monuments *Online,* http://www.johnfoxe.org.
[197] The Lost Plays Database, http://www.lostplays.org/index.php/Main_Page.

being used by non-digital humanities scholars. ReKN is therefore both a way to innovate scholarly practices and to prompt new research possibilities and questions. The use of large-scale linguistic data has allowed Michael Witmore and Jonathan Hope, for example, to explore Shakespeare's generic language;[198] GIS allows Janelle Jenstad and the Map of Early Modern London team to bridge annotation, research, pedagogy, and visualisation in producing a multimodal model of the spaces of early modern London;[199] the Verse Miscellanies Online project brings open-source critical editions of seven printed verse miscellanies from the 15th and 16th centuries online for reading and research;[200] many more examples of projects can be found in the appendices. These projects have also prompted, as we record in Appendix VI, a plethora of critical work on early modern culture. This type of innovative work is simply impossible without high-quality metadata for discovery; online corpora, editions, textbases, secondary criticism and historical data for research and pedagogy; easily used text analysis tools for large-scale exploration; visualisation tools to more efficiently impart research results in multimodal form; and innovative publication platforms to impart research results to diverse communities, facilitate collaborative research production, and academic publication. Advanced infrastructure is vital to the production of high quality research using new tools. ReKN is such infrastructure.

How is ReKN an improvement over what we already have available to us?

ReKN builds upon previous work in a number of areas undertaken by diverse individuals, organisations, and funding bodies. It also follows more general trends within academia, a drift towards a computational humanities that is gradually being recognised as the interdisciplinary field of Digital Humanities. Federations of aggregated content like the Networked Infrastructure for Nineteenth- Century Scholarship (NINES), 18th Connect, the Mellon funded Medieval Electronic Scholarly Alliance (MESA), and the NEH Digital Humanities Startup grant funded Modernist Networks (ModNets), have made significant advances for their research communities by creating

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198 See Hope and Witmore, "The Hundredth Psalm to the Tune of 'Green Sleeves,'" http://dx.doi.org/10.1353/shq.2010.0002.
199 Jenstad, *The Map of Early Modern London,* http://mapoflondon.uvic.ca.
200 Verse Miscellanies Online, http://versemiscellaniesonline.bodleian.ox.ac.uk.

standards and infrastructure for peer review of digital projects, facilitating searches across aggregated collections of digital information, and implementing software and tools that are shared by users of the federation and wider digital research communities. Groups like Iter have dramatically expanded access to aggregated content and published scholarly work related to early modern studies. At the same time, efforts such as the Text Analysis Portal for Research (TAPoR) and Voyant have brought algorithmic textual analysis within the domain of everyday research activities for scholars. Although these analytical tools are powerful, they are widely separated from the content whose exploration they are designed to facilitate. For some, this is no barrier; for others, such separation effectively removes cutting edge research methods from scholarly practice. While these efforts to discover and analyse cultural textual information for literary and cultural criticism were underway, the third major area of concern to ReKN—scholarly production—was undergoing lasting shifts. One need only witness the explosion of scholarly blogs, increasingly active Twitter discussions amongst academics, open access publication, and the publication of digital scholarly editions to envisage the manifold new models of scholarly production currently evolving in the world of academia. The sheer fact of near-universal online availability for journal-based research content is itself an argument for a qualitative shift in how research tasks are undertaken. Publication platforms such as the Institute for the Future of the Book's MediaCommons and experiments in open peer review like that of the journal *Nature* in 2006 or *Shakespeare Quarterly* in 2010 suggest that the ways scholarship has been produced, vetted, and disseminated are undergoing rapid and meaningful changes.

How can I help in this consultation?

This document is designed to serve as a foundation for community consultation about how best to proceed with all aspects of ReKN's development. These aspects include:

Technical architecture;

User interface and design;

What resources to aggregate, and how best to do so;

What text analysis tools to build in, and how best to do so;

How best to support publication of both primary and secondary;

How best build a user community and present ReKN as a viable research platform.

We have ideas about how best to proceed with each of these broad sets of questions, and these are detailed later in this white paper; nevertheless, we expect our community of consultants to bring individual areas of expertise to bear on any and all aspects of the project. Our gathering in Arizona is designed to facilitate such exchanges. This core group also represents a valuable talent pool who are uniquely suited to understanding how to think through use scenarios, consider what diverse stakeholders might want to gain from involvement with ReKN, and how best to leverage diverse resources and institutions to build a successful ReKN. Open communication of this sort is integral to the development of ReKN as a both research community and as a technical resource that interconnects manifold digital affordances in an easily accessible way. Knowledge production, and early modern studies, is now a social enterprise that conjoins multiple literacies of deep knowledge with innovative methodological toolkits; it is social in both construction and in communication. ReKN will instantiate this in design and practice—as well as in the literal creation of scholarly communication networks in terms of peer review, technical standardisation, consultation gatherings, conference discussions, and so on.

Introduction: ReKN and the Digital Future of Early Modern Studies

Summary

The Renaissance Knowledge Network (ReKN) is a major scholarly initiative designed to augment digital scholarship in early modern studies by developing an integrated research, analysis, and production environment. It is based at the Electronic Textual Cultures Lab (University of Victoria) and has been developed in partnership with Iter (University of Toronto Scarborough); ReKN also works closely with the Implementing New Knowledge Environments Project (Social Sciences and Humanities Research Council Major Collaborative Research Initiative) and the Advanced Research Consortium (Texas A&M University).

In early summer 2014, ReKN was awarded an initial planning grant in the amount of $50,000 USD ($53,630.80 CDN) by the Andrew W. Mellon Foundation. Directed by Raymond G. Siemens and William R. Bowen, this planning grant is designed to explore the possibility of creating ReKN, an integrated scholarly environment dedicated to augmenting high-level scholarly activity focused on the Renaissance. The final goal of ReKN was, and remains, to build an integrated scholarly environment explicitly tailored to the needs of humanities scholars studying the Renaissance. Integrating three usually discrete activities vital to scholarly work—discoverability, analysis, and publication of innovative scholarship—will allow ReKN to addresses the growing challenge of diverse, isolated, and siloed digital resources, a bewildering variety of tools and platforms devoted to textual analysis, and the increasing number of ways scholarship is produced and disseminated in particular research communities. In its broadest strokes, we hope for ReKN to be a *thinking* environment that effectively draws together multiple existing content-area projects and already developed tools to facilitate the production of rigorous scholarly research devoted to the early modern period. ReKN is therefore partly a locus for community-driven application and research co-creation, a space where knowledge can be produced asynchronously as diverse communities bring expertise to bear. Inasmuch as it will spur innovative scholarship in early modern studies, it will also deeply affect future efforts in integrating and using digital tools for humanities research. It is a place for methodology and deep area knowledge to commingle and expand. Such an understanding is

highly relevant to investigating emerging practices of reading, writing and research in a digital age, as well as serving a valuable function in the production of cutting-edge scholarship in well-defined research areas.

Our objectives during the 13-month tenure of the initial planning grant are to lay the groundwork for future development efforts; map convergences between general standards, specific platforms and tools, and content area datasets, textbases, and communities; provide a 'roundup' of the field of Renaissance digital scholarship, that assesses the usability, interoperability, quality, and applicability of various existing tools, platforms, and standards to the scholarship of the Renaissance; and build awareness of and support for ReKN via community outreach and formation activities.

This white paper is part of that process and serves four purposes:

- a research output specified in the original Mellon funding agreement
- a representation of the current 'state of play' in early modern studies and digital humanities, especially as those fields intersect
- a road-map for in-person community consultations later in the initial grant period
- the foundation for moving forward with a full implementation of ReKN

As such, it is a complex and emergent document, one that ranges over several fields and a number of years. It will, and should change in the future as discussions and technologies evolve. We anticipate, for instance, extensive revision based on our February 2015 consultation gathering, community feedback at conferences, and ongoing discussion with a variety of funding agencies. We envision the pre-consultation of this white paper as version 1.x; our post-meeting revisions will constitute version 2.x. Future versions will iterate accordingly as we hold consultations and as we actively solicit feedback from a variety of communities.

Principal Investigators

ReKN is led jointly by Dr Raymond G. Siemens (Canada Research Chair in Humanities Computing and Distinguished Professor of English and Computer Science at the University of Victoria) and Dr William R. Bowen (Director of Iter: Gateway to the Middle Ages and Renaissance and Chair of the Department of Arts, Culture and Media at the University of Toronto Scarborough). Drs Siemens

and Bowen provide overall research guidance for the project, as well as exercising broad oversight of ReKN's operations

Team Composition

Throughout the 2014-2015 funding year, the ReKN team has consisted of five members, assisted on an as-needed basis by ETCL and Iter staff. Core team members, alongside the co-principal investigators, have been the following:

Project Manager: The Project Manager has responsibility for overseeing and coordinating daily operations of the project in terms of research, technical development, publication, and community development. The Project Manager has been and continues to be a fully engaged participant in setting the project research agenda and growth. Working closely with the principal investigators, the Project Manager represents the project to partners, universities, and external communities. This individual's primary responsibility is managing the project related activities of the Postdoctoral Fellow and Research Assistant effectively. Daniel Powell has fulfilled this role since Spring 2014.

Postdoctoral Fellow: A Postdoctoral Fellow is based at the Electronic Textual Cultures Lab at the University of Victoria. This individual works in concert with Iter at the University of Toronto Scarborough. Since Summer 2014, Dr Matthew Hiebert has fulfilled the following responsibilities:

Primary responsibility for assessing tools, platforms, and projects under consideration for eventual inclusion in ReKN;

Determine the possibilities for interoperability and integration of existing digital resources;

Envision the final shape and form ReKN as an integrated scholarly platform;

Design and build a public-facing web resource devoted to Renaissance scholarship and projects in this context;

Act as lead author on the project documentation and publications;

Other duties as determined by project leadership.

Research Assistant: A Research Assistant is currently based at the Electronic Textual Cultures Lab at the University of Victoria. The Research Assistant works closely with the Project Manager and Postdoctoral Fellow to support basic research activities. From July 2014 - September 2014 this role was held by Sarah Milligan (currently Publishing Manager at British History Online at the Institute for Historical Research); from September to November 2014 Kate Siemens contributed annotations as a Research Assistant; since late November 2014 Lindsey Seatter (a doctoral candidate at the University of Victoria) has been responsible for the following:

Assisting in compiling project bibliographies;

Researching existing projects and platforms for working with and/or producing digital texts; D

Bring editorial theories and workflows established by existing projects into dialogue with ReKN best practices;

Drafting project documentation and publications;

Other duties as determined by project leadership.

As mentioned above, ad hoc support has been provided to ReKN by two individuals: Daniel Sondheim, in his capacity as Assistant Director of the ETCL, has provided logistical support for planning activities related to funds held by the University of Victoria Office of Research. Alyssa Arbuckle, as Assistant Director for Research and Partnership Development at the ETCL, has assisted in planning the community consultation gathering in February 2015.

ReKN as Proposed

The ReKN team submitted our original grant proposal to the Mellon Foundation in Spring of 2014. In that grant proposal, we initially identified five explicit research outputs:

1. a comprehensive white paper on the state of existing scholarly research, analysis, and production environments devoted to Renaissance studies, textual editing and analysis, and scholarly communication;

2. a publicly accessible online resource for individuals to research the affordances of digital tools as related to scholarship of the Renaissance;
3. a meeting of the research community best placed to contribute to such a document designed to critique, discuss, and refine a full implementation of ReKN;
4. the realisation of ReKN as a partner in ARC;
5. and a full implementation grant application for subsequent phases of the project.

At a subsequent planning and organisational meeting in July 2014, the ReKN team met in Leipzig, Germany, to discuss detailed planning, research outputs, team composition, individual responsibilities, and the overall shape of the planning grant year. The core team consisted of the following: Drs Raymond G Siemens and William R. Bowen (co-principal investigators); Dr Matthew Hiebert (Postdoctoral Fellow); Daniel Powell (Project Manager); Lindsey Seatter (Research Assistant, formerly held by Sarah Milligan and Kate Siemens); with ad hoc support in the form of administrative logistics (Daniel Sondheim) and event planning (Alyssa Arbuckle). Central to this discussion was a reconsideration of how best to effectively integrate overall grant objectives—in terms of both mapping various academic fields and using such information to move forward into a full implementation of ReKN as live resource—with the structure of our defined research outputs.

It was agreed at this meeting that a robust and well-researched annotated bibliography was an effective framework in which to achieve our goals. This bibliography was designed to supersede language in the original grant concerning environmental scanning while fulfilling similar functions of surveying existing work and providing a public-facing resource for multiple research communities. The earlier survey and environmental scans were always meant to serve multiple purposes, amongst them providing a foundation for the comprehensive white paper; serving as or leading to an internal resource for the ReKN planning gathering; and as the initial kernel for a publicly accessible online resource for the wider research community. A comprehensive annotated bibliography was decided to fulfil all these criteria, as well as enabling ReKN team members to become fully versed in the landscape of digital early modern studies. In fall, the ReKN postdoctoral fellow, in consultation with the project manager, decided that the most efficacious way to achieve these outcomes was through

the implementation of an online site accessible to internal team members. This would allow the easy creation of annotations in a digital space, with a defined schema of included information, that can easily be exported to print and integrated with any content published in print.

The Leipzig meeting also lead to two management documents:

1. a full working timeline for the duration of the grant, from September 2014 to August 2015;
2. and a breakdown of responsibilities, each of which was related to particular roles and project outcomes.

These documents were developed by the ReKN project manager in consultation with the principal investigators, project management consultants, and team members. An overall work plan for the upcoming year was in place by mid-September 2014. From the outset, the team knew that the work plan, as outlined, was ambitious. Compounding issues with an already high pace of activity was the resignation of the team's research assistant; after several months, a second research assistant, based at the ETCL, was hired. The project manager was also forced to re-allocate time originally earmarked for research compilation and writing to planning and coordinating the meeting scheduled for February 2015 in Arizona.

As of December 2014, grant materials are in still in development, with substantial progress having been made in November and December towards the goals outlined above. These are discussed in more detail below and provided as appendices and online resources. Primarily they include:

- An extensive annotated bibliography that maps the fields of early modern studies and digital humanities, especially as they intersect;
- An online resource aggregating and making these annotations openly available to various research communities and the general public;
- Agenda and research materials for a community-based consultation in February 2015;
- This white paper.

Narrative and Rationale[201]

Background

Humanities scholars addressing the Renaissance find themselves on the verge of information overload. Consider the following:

- On 1 January 2015, the 25,363 texts generated by the Early English Books Online – Text Creation Partnership Phase I enter the public domain. The 45,000 texts in Phase II will likely enter the public domain by 2020.
- By December 2014, the Mellon-funded Early Modern OCR Project (PI: Dr Laura Mandell) will have produced machine-readable text of 162,730 documents via mechanical OCR, many of which will be available to scholars in full after they participate in crowd-sourced corrections.
- The Bibliography of Iter: Gateway to the Middle Ages and Renaissance (Dir: Dr William Bowen; http://www.itergateway.org/) contains over 1.26 million discrete records of secondary source material and is growing in excess of 60,000 records per year.

These three projects will require Renaissance scholars to grapple with a massive influx of digital scholarly resources. When large-scale projects like EEBO-TCP, eMOP, and Iter are considered alongside smaller digital projects like the Database of Early English Playbooks (DEEP, http://deep.sas.upenn.edu/), the English Broadside Ballad Archive (EBBA, http://ebba.english.ucsb.edu/), and the Virtual Paul's Cross Project (http://vpcp.chass.ncsu.edu/), the increasingly populated landscape of Renaissance digital resources is apparent. This landscape, however rich, is also atomized, difficult to navigate, and burdensome to leverage in scholarly work. Scholars working with Renaissance materials face a paradox of abundance: the more digital resources become available to scholars working in Renaissance studies, the more difficult it is to locate and effectively use those resources to produce and share scholarship.

[201] Materials in this section are largely drawn from the initial grant submitted to the Mellon Foundation.

Federations of aggregated content like the Networked Infrastructure for Nineteenth- Century Scholarship (NINES), 18th Connect, the Mellon funded Medieval Electronic Scholarly Alliance (MESA), and the NEH Digital Humanities Startup grant funded Modernist Networks (ModNets), have made significant advances for their research communities by creating standards and infrastructure for peer review of digital projects, facilitating searches across aggregated collections of digital information, and implementing software and tools that are shared by users of the federation and wider digital research communities. Groups like Iter have dramatically expanded access to aggregated content and published scholarly work related to early modern studies.

At the same time, efforts such as the Text Analysis Portal for Research (TAPoR) and Voyant have brought algorithmic textual analysis within the domain of everyday research activities for scholars. Voyant, for example, provides a simple text box interface into which text can be pasted and subjected to a variety of analytical techniques; based on Unix command line tools, the Oxford Concordance Program, WordCruncher, Text Analysis Computing Tools (TACT) and a variety of successor tools, Voyant positions itself as a user-friendly, flexible, web-based text analysis environment. Inspired by the same goals as Voyant, the TAPoR centralises access to and information on a variety of text analysis tools, providing a "one-stop shop" for scholars looking to apply particular methods to specific texts. Although these analytical tools are powerful, they are widely separated from the content whose exploration they are designed to facilitate. For some, this is no barrier; for others, such separation effectively removes cutting edge research methods from scholarly practice.

While these efforts to discover and analyse cultural textual information for literary and cultural criticism were underway, the third major area of concern to ReKN—scholarly production—was undergoing lasting shifts. One need only witness the explosion of scholarly blogs, increasingly active Twitter discussions amongst academics, open access publication, and the publication of digital scholarly editions to envisage the manifold new models of scholarly production currently evolving in the world of academia. The sheer fact of near-universal online availability for journal-

based research content is itself an argument for a qualitative shift in how research tasks are undertaken. Publication platforms such as the Institute for the Future of the Book's MediaCommons and experiments in open peer review like that of the journal *Nature* in 2006 or *Shakespeare Quarterly* in 2010 suggest that the ways scholarship has been produced, vetted, and disseminated are undergoing rapid and meaningful changes.

This increasingly varied and quickly changing landscape necessitates deliberate intervention, or Renaissance studies risks being left behind by the development of proprietary and for-profit infrastructure that does not address the needs of this research community. Beyond this, there is a striking need for an integrated working environment to fully realise the potential of new resources, techniques, and modes of dissemination. ReKN attempts to address this need by thinking through previous decades of technological change in Renaissance studies as a prelude to building the systems that will ensure vibrant, high quality research over the next. By combining research, analysis, and dissemination in a single scholarly environment, ReKN can address content overload, fold in new analytical methods and tools, and ensure timely publication of new discoveries.

Rationale

Scholars of the early modern period were early adopters of technologically based tools and methods: in 1938, Orson Welles and Roger Hill proposed the use of (then cutting edge) technologies of sound recording and playback to teach Shakespeare in speech classrooms, thereby avoiding the "murdered pentameter" of classroom renditions. As Alan Galey and Ray Siemens note, "[n]ew media frequently stage encounters with old media, and with surprising frequency Shakespeare supplies the script."[202] Since these early speculations of how technology might impact the preservation, presentation, and experience of encountering Shakespeare, scholars of the early modern period have vigorously pursued digital technologies in numerous

[202] Galey and Siemens, "Introduction: Reinventing Shakespeare in the Digital Humanities," http://dx.doi.org/10.1080/17450910802295062.

ways. At least since the founding of the MIT Shakespeare Project in 1992[203] and the originally HyperCard-based Internet Shakespeare Editions in 1991,[204] early modernists have leveraged digital tools to undertake research, build accessible archives, and perform computational analysis of various kinds.

Despite these developments, digital projects centred on the early modern period lack any centralised clearinghouse, technical template, or scholarly group to ensure their visibility and quality within the wider community. It is our desire to create an organisation and a digital product that will help the Renaissance studies community to realise those same projects' full potential, as well as to address challenges that are not currently being addressed in a systemic manner by any national or international scholarly group.

ReKN directly addresses the growing challenge of diverse, isolated, and siloed digital resources by building a scholarly environment explicitly tailored to the needs of humanities scholars studying the Renaissance. As outlined above, ReKN seeks to bring existing scholarly resources and methods into conversation:

> **Research**: Working with Iter, this environment will make centrally accessible critical materials like peer-reviewed journals and monographs, primary materials in open source and proprietary archives, and standalone digital projects that can often fall through the digital cracks.
>
> **Analysis**: There are a number of existing tools for digital analysis of textual materials, among them Voyant Tools, the TAPoR project, Juxta, and SEASR; this environment will facilitate the use of tools like these while encouraging the development of new tools designed specifically for the study of the Renaissance.
>
> **Production**: Through the use of publication and production platforms like CommentPress, PressBooks, and TEI Boilerplate, ReKN will promote the use of targeted digital tools in scholarly production and publication.

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[203] The MIT Global Shakespeare Project, http://shakespeares.mit.edu/.
[204] Best, *Internet Shakespeare Editions*, http://internetshakespeare.uvic.ca.

Crucially, ReKN will not be oriented towards the humanities as a whole, but will specifically target Renaissance digital projects, relevant analytical tools, and the scholarly communities who would most benefit from such a focused professional research and production environment– aligning with, and co-contributing to the work of, others in the ARC network and beyond.

ReKN, as both scholarly platform and intellectual community, is devoted to understanding, critiquing, and building digital projects for the study of the Renaissance. These dual foci will provide the opportunity to ensure that the scope and significance of these contributions is maximised across the scholarly community of interest.

Specific areas of opportunity and challenge include the following:

Resource Aggregation and Interoperability: The data contained in the majority of digital archives, editions, databases, and reference works cannot be searched or otherwise accessed outside of the search mechanisms embedded within the projects themselves. Technologies to achieve resource aggregation and interoperability exist and have been implemented by, amongst others, NINES, 18th Connect, Iter, and others. The institutional and social practices necessary to work towards resource discovery are only now being articulated and settled on in general, although within early modern studies Iter has made strides in doing so. Despite the potential for digital tools and resources to escape traditional institutional and geographic limitations, it has proven challenging to expose digital resources outside of institutional frameworks; the potential of digital methods is to help break down the boundaries of physical libraries and archives. ReKN will eventually facilitate the discovery of diverse digital resources to be searched via in integrated work environment.

Peer Review for Promotion and Tenure: Despite significant recent movement on this issue by large scholarly organisations such as the Modern Language Association and the American Historical Association, as well as developments on local scales at numerous institutions, there remains a clear need for widely shared and acknowledged standards to assess digital scholarly

contributions in specific research areas.[205] ReKN has the potential—already demonstrated to some extent by NINES and 18th Connect—to bring together a group possessing both traditional subject expertise and a deep knowledge of the use of digital tools in scholarship. This group will might peer review of digital resources, as well as develop and refine standards and recommendations for others reviewing digital resources and publications. Such expertise is especially crucial in view of many digital project's iterative implementations and highly collaborative production processes. Moreover, scholarly associations based on the study of the early modern period—such as the Renaissance Society of America and Shakespeare Society of America—lag behind others in developing guidelines for such work.

Citation, Analytics, and Credit for Usage: Usage statistics and anecdotal evidence suggest that scholars use digital resources during research but fail to cite such sources in final publication. When using digital facsimiles or other digitised print resources, scholars are likely to cite the digital version as print in academic work. Early English Books Online, and the full text transcriptions embedded within EEBO produced by EEBO-TCP, are especially visible in this regard. Editions are often cited as print volumes rather than the (laboriously produced) digital facsimile. Additionally, publicly available syllabi and conference discussions suggest that students and instructors often introduce and discuss digital resources during classes, but that such exposure is very difficult to widely measure. This may be due to the perceived lack of scholarly rigour in many digital resources in peer review and promotion, but also in part to a lack of clarity in standards and formats for citing digital objects and resources gleaned from them.

Sustainability: The sustainability of digital projects is a complex set of issues involving data formatting and preservation, the ability to update legacy formats, long-term viability of physical media, the willingness of libraries to collect, curate, and maintain digital objects, the planned

[205] See the MLA's "Guidelines for Evaluating Work in Digital Humanities and Digital Media," https://www.mla.org/About-Us/Governance/Committees/Committee-Listings/Professional-Issues/Committee-on-Information-Technology/Guidelines-for-Evaluating-Work-in-Digital-Humanities-and-Digital-Media. See also Laura Mandell's open letter to the Promotion and Tenure Committee in the Department of English at Texas A&M University, "Promotion and Tenure for Digital Scholarship," http://journalofdigitalhumanities.org/1-4/promotion-and-tenure-for-digital-scholarship-by-laura-mandell.

obsolescence of media and software, the level of institutional commitment to funding and maintaining digital scholarly resources, and dedicated personnel. An organisation and environment like ReKN can contribute to sustainability by clearly articulating best practices for archiving digital texts and resources, by advocating for the vigorous involvement of local institutions, and by increasing the survivability of projects by increasing use of and access to them. Well formatted, clearly programmed, frequently used and cited, and valued digital resources are less likely to face obsolescence than resources that are irregularly used, poorly programmed, devalued, and unmonitored.

Intellectual Property and Open Access: Digital resources allowing access to early modern materials are often sites of overlapping copyright, permissions, and intellectual content laws and regulations. Primary source archives may feature digitised, pre- copyright content that is nevertheless subject to that organisation's usage permission or digital facsimiles that are locked behind paywalls. Crucially, however, these permissions and paywalls often disallow the finding of such resources if those searching do not subscribe to a particular resource. Thus, scholars and students remain unaware of what resources exist and which ones they should recommend for uptake at their institution. These siloed resources create challenges for seamless access across collections and resources. ReKN can facilitate the searching of these resources, based on aggregated metadata, while keeping the content itself in the control of its owners. ReKN's partnership with eMOP will be particularly valuable in this regard, providing a search and discovery mechanism for both EEBO-TCP texts and full-text documents produced using the Early Modern OCR Project's (eMOP) Typewright tool.

Tools and Standards: Early modernists engaged in digital scholarship and tool building have created a number of tools and standards specific to the needs of individual projects. The Database of Early English Playbooks (DEEP), for instance, is a database providing access to bibliographic information drawn from Renaissance English playbooks; it is a valuable tool, but one that does not get the attention or use it deserves. A federation of these projects will allow users to find and leverage existing tools and standards for wider use across multiple projects.

Open channels of communication, acknowledged standards, and shared resources uniquely position ReKN in the shaping and future development of a wide array of tools and resources.

Migrating and Updating of Legacy Formats: Early modern resources in digital formats already have a pronounced presence and historical existence in multiple formats and media; as these formats and media age, these projects face obsolescence and an ever- growing difficulty of access. A federation can help solve this problem in two ways: First, it might curate and continually allow access to older projects by making available tools to migrate resources; second, it can advise and recommend best practices to recent and in- progress projects to ensure their future viability.

Recent and Contemporary Work in Digital Humanities and Early Modern Studies

ReKN builds upon previous work in a number of areas undertaken by diverse individuals, organisations, and funding bodies. It also follows more general trends within academia, a drift towards a computational humanities that is gradually being recognised as the interdisciplinary field of Digital Humanities.

This section provides historical and intellectual background to ReKN in a number of ways. First, it summarises general trends related to digital research in the early modern studies. This includes the increasing normalisation of digital scholarship and digital research methodologies as legitimate forms of academic discourse, as well as systemic movements towards institutionalisation for faculty, research centres, peer reviewed publications, and funding opportunities.

Second, it summarises existing research undertaken by the ETCL towards the creation of a ReKN-like organisation and research platform. Spanning the years 2003-2009, the ETCL's efforts to prototype a "Renaissance English Knowledgebase" (REKn) and a "Professional Reading Environment" (PReE) at once prefigure our efforts with ReKN and illustrate the difficulties of aggregating and effectively using diverse digital content.

Third, this section discusses the development of Iter. Iter is a tripartite organisation composed of Iter Gateway, Iter Academic Press, and Iter Community. Iter Gateway is oriented towards enabling discoverability and access of early modern materials. Iter Academic Press is dedicated to research dissemination print/digital born publications, open access/subscription based publications, and publication services/distribution. Iter Community facilitates research and teaching amongst and across individuals and groups through a broad range of networking and collaboration mechanisms. As an organisation and set of digital efforts designed to provide access to and distribute online materials related to the study of the medieval and early modern periods augmented by robust social development thinking, Iter is a natural partner for ReKN. Furthermore, the ETCL and Iter have in the past collaborated to prototype the efficacy of resource aggregation. This effort will be examined below.

Fourth, it discusses the Advanced Research Consortium (ARC), a group of academic aggregators dedicated to opening access to born-digital and digitised scholarly resources. Based at Texas

A&M University, ARC is a key partner in the development of ReKN. It currently incorporates a number of content nodes that provide centralised access to digital content from the medieval period to the mid-twentieth century. One goal of ReKN is to achieve interoperability with the ARC data catalogue.

These sections all address the first component of a successful research environment: the aggregation of digital materials for discoverability. ReKN, however, hopes to be more than a content aggregator. In line with our mission to create a holistic platform for academic work, we must also consider current and past efforts in the field of text analysis and visualisation. Both textual analysis and humanities visualisation have seen large-scale projects in recent years. Section five will examine the Text Analysis Portal for Research (TAPoR) and Voyant, two successful Canadian projects that compile both information about various tools and allow for their use.

Section six will address the final component of ReKN. Avenues for digital publication of academic content—whether in terms of preparation or of disseminating final work—have seen rapid growth in recent years. It is difficult to pinpoint any one platform or directory of tools that typify the field of emerging digital publication, but this section will discuss a number of prominent examples including: MediaCommons; Wordpress; the TEI; and Scalar. Understanding how academic publishing is and can work in the age of digital research is vital to building integrated systems that allow easy use.

ReKN believes strongly that the primary context for the development of any technically innovative scholarly environment is the development of and support for communities of intellectual practice, from the student-researcher to large scale digital projects to nationally supported consortia. So while we foreground Iter, the ETCL, ARC, and other large efforts, we take these as foundational starting points for our work, not as end-state results.

Digital Research in Early Modern Studies: Trends and Approaches

Awareness of digital resources and methodologies has increasingly begun to make its way into the pages of academic journals, collections, and monographs related to early modern studies, led in part by the efforts of the Renaissance Society for American-sponsored *New Technologies in Renaissance Studies* series from Iter and the Arizona Center for Medieval and Renaissance Studies in 2008. Rather

more success has been had in presenting digital work at academic conferences, although such work can often seem a sideshow to the core of more traditional research.

Reviews of content-area digital projects and resources are only now beginning to appear in mainstream early modern studies journals.[206] As Katherine Rowe writes in *Shakespeare Quarterly* 61.3, "With a few exceptions, traditional humanities journals seldom review online resources."[207] In particular, three examples are worth noting: Michael Ullyot's Review Essay on "Digital Humanities Projects" that appeared in *Renaissance Quarterly* 66.3 (2013) and Brett D. Hirsch's Review Essay on "Bringing Richard Brome Online" that appeared in *Early Theatre* 13.1 (2010). The two are different in scope but alike in that they point to possible ways forward for digital humanists working in early modern studies to effect mainstream early modern studies.[208] Finally, Whitney Trettien and Andrew Murphy review a number of projects related to Shakespeare in an experimental issue of *Shakespeare Quarterly*.

Ullyot, instead, surveys a small number of flagship projects, among them: Mapping the Republic of Letters, The Map of Early Modern London, The 1641 Depositions Project, The Medici Archive Project, and Early English Books Online - Text Creation Partnership.[209] Ullyot frames his intervention, and the wider necessity for similar review activity, with the following:

With digital resources we enter a realm unlike other publications. When any scholar can publish material on computer servers, it's more important than ever for users to confirm the trustworthiness of the data that digital resources gather. Our trust of digital resources therefore begins with transparency. Their editors must offer not just an inviting user interface, but also a description of how they chose and applied their metadata. They must lift the veil, not only to reveal what their data is — for example, by providing images of the documents to which a database refers — but also to

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[206] Although arguably unfair, by mainstream journals I mean *Renaissance Quarterly*, *Shakespeare Quarterly*, *Explorations in Renaissance Culture*, *Cahiers Élisabéthans*, *English Literary Renaissance*, *The Sixteenth Century Journal*, and so on. These journals would be widely considered to be flagship journals in early modern studies.
[207] See her editorial introducing this experimental issue: Katherine Rowe, "From the Editor: Gentle Numbers," iii - viii.
[208] See Ullyot,"Digital Humanities Projects," 937-947; Hirsch, "Bringing Richard Brome Online," 137-153.
[209] Links to each of these projects: *1641 Depositions*, http://1641.tcd.ie; *Early English Books Online*, http://eebo.chadwyck.com; Jenstad, *The Map of Early Modern London*, http://mapoflondon.uvic.ca; Mapping the Republic of Letters, https://republicofletters.stanford.edu; *The Medici Archive Project*, http://www.medici.org; Text Creation Partnership, http://www.textcreationpartnership.org.

describe the processes they used to gather, verify, transcribe, and regularize the information. This transparency allows us to use the resources with greater confidence.

He goes on to assess each of the projects named above, noting that they are all projects that seek to make available geographical and/or textual resources to researchers and the general public. In his view, "The best future research will combine the openness and provisionality of Wikipedia with the substantive domain-expertise of peer-reviewed publications." This is a persuasive line of reasoning, and one that ReKN hopes to keep in mind as discussions evolve.

In slightly different fashion, Brett D. Hirsch has reviewed the *Richard Brome Online* project, a completed initiative that aimed to bring sixteen plays by this English dramatist online. Hirsch moves through a summary of scholarship on Brome, the editorial neglect his work has been subject to, the encoding standard adopted by the project, the user interface, and multimedia integration, as well as assessing the individual editorial attention given to individual editions of single plays. This review is important not because Richard Brome is important, but rather because, like Ullyot's broader survey, it indicates how digital resources might be brought more fully into conversation with researchers operating firmly within early modern studies who have little or no contact with digital humanities.

Whitney Trettien reviews a number of web resources dedicated to Shakespeare in 61.3 of *Shakespeare Quarterly*. These are Shakespeare's Staging, XMAS, Shakespeare Performance in Asia, Shakespeare Quartos Archive, and BardBox. Each "presents a different vision of how new media can facilitate Shakespeare research and pedagogy. Those that succeed best at negotiating disciplinary boundaries move beyond the rhetoric of access . . . to exploit the literacies, practices, and readily adaptive methods of social media." Shakespeare Staging is a multimedia archive of videos set illustrations, costuming visuals, and so on; XMAS is a tool for collecting, annotating, and sharing multimedia clips in academic work; Shakespeare Performance in Asia is a crowdsourced archive of Shakespeare performances in Asia; the Shakespeare Quartos Archive brings facsimile images of the earlier quartos to a publicly accessible web site; BardBox is a curated collected of video performances of Shakespeare. In the same issue, Andrew Murphy profiles three online editions of Shakespeare: Open Source Shakespeare, Shakespeare's Words, and the Internet Shakespeare

Editions. All three projects seek to bring Shakespeare to the web in different ways and formats, and each succeeds or fails unique ways.[210] Integrating digital resources into routine scholarly workflows necessitates a point of entry that articulates why such resources might be useful, that clarifies their scholarly credentials, and argues for their normalisation as a part of the scholarly landscape. Reviewing digital resources in a fashion similar to how academic books are assessed by journals is a key step in this process.

Alongside reviews of resources, we are beginning to see articles and chapters that make arguments about the early modern period using digital methods and resources. These are often based on techniques imported from computational linguistics or stylistics, as in the work of Hugh Craig, Jonathan Hope, and Michael Witmore. Craig, for example, has published extensively on authorship, vocabulary statistics, and linguistic variation in journals like *Shakespeare Quarterly*, *English Studies*, *English Literary Renaissance*, and *English Studies*. At the same time, Craig has published a number of article in *Literary and Linguistic Computing*, the premier journal in digital humanities.[211] These articles, simply put, make digital methods relevant for ongoing discussions within early modern studies. Authorship studies may seem dated to some digital humanists, but they are the types of arguments that have traction within diverse communities of interest focused on specific authors and chronological periods. Similarly, Jonathan Hope and Michael Witmore have collaboratively and individually published a number of articles and chapters on the "linguistic texture" of Shakespeare's works. These have appeared in *Shakespeare Quarterly*, *Early Modern Literary Studies*, *Notes and Queries*, and *Early Modern Tragicomedy*.[212] It is interesting that this body of work is so highly influenced by established methods of authorial attribution and stylistic analysis. They are also topics that seem to lend themselves to objectively right answers gleaned from certain methods rather than problematized or explored using digital means. Outside of authorship attribution and stylistics,

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[210] For Trettien's review, see Trettien, "Disciplining Digital Humanities, 2010," 391 - 400. For Murphy's, see Murphy, "Shakespeare Goes Digital," 401 - 414.

[211] For a full list of publications see "Professor Hugh Craig: Publications," http://www.newcastle.edu.au/profile/hugh-craig#publications.

[212] For a list of Hope's publications, see "Jonathan Hope," https://pure.strath.ac.uk/portal/en/persons/jonathan-hope(2a657c4e-9cc6-4481-9bc0-54f78d494529)/publications.html.

it is remarkable how little digital resources and tools have seemed to impact scholarship in early modern studies. If such resources or tools are discussed at all, they are usually limited to reviews of digital content or glancing references to digital humanities publications—and these are rare indeed.

The third major area where digital resources and methods have begun to impact early modern studies is at major conferences and meetings of scholarly organisations. Under the oversight of Dr William R. Bowen, the Renaissance Society of American has, since 2001, sponsored a series of panels at their annual conference titled "New Technologies and Renaissance Studies." These presentations have usually been organised into a mixture of roundtable discussions, panels focused on individual issues (such as digitising texts), or theoretical and/or critical arguments on the role of digital humanities (or humanities computing, previously) within a larger early modern studies. Participants have been drawn primarily from US, Canadian, and UK universities, including graduate students and those who consider themselves #alt-ac staff on digital projects. A number of large-scale projects have been presented at NTRS over the years, including: Iter, the Records of Early English Drama (REED) prototype, The Henslowe-Alleyn Papers, the Catalogue of English Literary Manuscripts 1450-1700, the Devonshire Manuscript Project, and a variety of digital editions, archives, and new media projects designed to make early modern materials accessible in digital form. Of late, more attention is being paid to digital pedagogy of the early modern period, as well as big and linked data.[213] In terms of the intersection of early modern studies and digital humanities, this panel series is the pinnacle of such crossover. It can be difficult, however, to draw in those scholars who do not specialise in digital scholarship; in other words, these panels draw in digital humanists who happen to be early modernists (a valuable function in itself), but not early modernists who happen to use digital tools.

The Sixteenth Century Society Conference usually hosts several panels related to digital analyses and resources, although they are standalone panels rather than a series of cohesive content. At the

[213] For a full list of all NTRS panels 2001-2014, please see Iter, "A History of New Technologies and Renaissance Studies (NTRS) Sessions at Annual Meetings of the Renaissance Society of America 2001-2014," http://www.itergateway.org/pdfs/NTRS_RSA_panels.pdf.

2014 conference, these included presentations on data visualisation, cataloguing the book trade, various digital editions, digital pedagogy using early modern materials, and a digital humanities poster session.[214] Many of these sessions were sponsored by Iter. It is noticeable that there is not a great deal of crossover, at least in the 2014 conference season, between RSA and SCSC. Whether this indicates distinct scholarly communities or is contingent on scheduling, funding, or location is worth investigation.

These types of panels have also begun to appear, albeit sporadically, at large disciplinarily conferences. Both the Modern Languages Association (MLA) and the American Historical Association (AHA) have seen small numbers of panels on early modern digital humanities. The AHA, for instance, devoted an entire panel to discussing the Medici Digital Archive at its 2014 session.[215] This year's MLA convention will also witness a number of digital panels, including one on "Hacking the Renaissance" sponsored by the Division on Literature of the English Renaissance Excluding Shakespeare.[216] This panel is notable because it encourages presentations that make active research contributions to early modern studies using digital methods and tools, rather than emphasising the development of digital tools or platforms in content-agnostic ways. Past MLA panels have focused on "Digital Humanities and French Renaissance Culture"[217] and "Digital Approaches to Renaissance Texts."[218] These panels, appearing as they do at large, disciplinary gatherings of scholars from all stages of their careers, represent an emergent discussion around the role of digital technologies in content area specialisations like the early modern period. That they appear at all is somewhat remarkable given the sometimes tendentious debates about the role of digital humanities in wider humanities practices.

As a final category for academic research, there are a number of articles and chapters that use early modern content to prototype digital methods or platforms and appear in digital humanities

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[214] See the full 2014 conference program, *Sixteenth Century Society Conference: New Orleans, Louisiana*, http://www.scscdocuments.org/files/Programs/SCSC2014ProgramFinal.pdf.
[215] Mancuso et al., "Medici Reborn: Modernizing the Renaissance Archive in a Digital Age," https://aha.confex.com/aha/2015/webprogram/Session11926.html.
[216] "Hacking the Renaissance," https://apps.mla.org/conv_listings_detail?prog_id=420&year=2015.
[217] "Digital Humanities and French Renaissance Culture," http://www.mla.org/conv_listings_detail?prog_id=284&year=2014.
[218] "Digital Approaches to Renaissance Texts," https://apps.mla.org/conv_listings_detail?prog_id=326&year=2013.

journals. These are somewhat difficult to classify, but a search of *Literary and Linguistic Computing* might be instructive. Entering "renaissance" into the *LLC* search field returns 110 results. Limited that search to titles and abstracts returns three results. One is a representative report from the Australia and New Zealand Association for Medieval and Renaissance Studies conference from 1992; one is an article on "Analysing Italian Renaissance Poetry: The Oxford Text Searching System;" and one is titled "Digitizing Shakespeare: Perspectives of Digital Optical Recording of Renaissance Editions in University Libraries." Looking again at the full list of returns (with no search limitations) reveals that many instances for the term "renaissance" are found in bibliographic citation lists. Others are mentioned in passing in the full text of articles, but it is difficult to tell how relevant any given article might be to a content area specialist. A number are concerned with stylistics, author attribution, or the building of digital editions. Regardless, it is doubtful that the typical humanist would encounter articles from *LLC* while researching; they naturally turn to more specialist databases and resources.

Taken together, these publications and panels can be taken as indicators of emergent and, in some cases, established communities of discourse at the nexus of digital technologies and Renaissance studies. These overlapping specialisations seem most concentrated and active at the conference level, with isolated examples of reviews of digital resources and peer-reviewed publications of content area interest using digital methods. This overview also suggests that there is a provocative split between the use of digital resources to create content destined for early modern studies journals and the use of those resources to create content for other digital humanists.

Early Efforts: The Renaissance English Knowledgebase (REKn) and the Professional Reading Environment (PReE)[219]

In many ways, this iteration of ReKN represents a continuation of the work begun by REKn and PReE in previous years. As we note below, however, scholarship has not remained static since work halted on the REKn/PReE project; new contexts for scholarly aggregation, new understandings of

[219] This section largely summarises Siemens et al., "Underpinnings of the Social Edition?," in *Online Humanities Scholarship*, http://cnx.org/content/m34335. All quotations, unless otherwise indicated, are derived from this article and can be found at the preceding web page.

how academics work and connect online, new tools for textual research, and new possibilities for digital publication in a variety of forms make this a valuable starting point and data set but require sustained discussion and development moving forward.

As far back as 1990, scholars engaged in studying the Renaissance realised that aggregated content could be a valuable addition to the landscape of early modern studies. As outlined by David A. Richardson and Michael Neuman in 1990, this proposed knowledgebase was imagined to included "major texts and reference materials . . . recognized as critical to Renaissance scholarship," as well as primary texts of major authors (such as Sidney, Marlowe, Spenser, Shakespeare Jonson, Donne, Milton, etc.), the *Short Title Catalogue*, the *Dictionary of National Biography*, the *Oxford English Dictionary*, and so on. In Richardson and Neuman's application, cited by Ray Siemens et al in their article "Underpinnings of the Social Edition? A Narrative, 2004-9, for the Renaissance English Knowledgebase (REKn) and Professional Reading Environment (PReE) Projects," such a single resource would be useful to

> Lexicographers [need the RKB] in order to revise historical dictionaries (the Oxford English Dictionary, for example, is based on citation slips, not on the original texts). Literary critics need it, because the RKB will reveal connections among Renaissance works, new characteristics, and nuances of meaning that only a lifetime of directed reading could hope to provide. Historians need the RKB, because it will let them move easily, for example, from biography to textual information. The same may be said of scholars in linguistics, Reformation theology, humanistic philosophy, rhetoric, and socio-cultural studies, among others.

This goal was widely seen as worth pursuing, and one outcome of further meetings was the REKn prototype. Built on PostgreSQL, PHP, and Perl, the project soon began gathering what eventually amounted to nearly 80 gigabytes of content in the form nearly 13,000 primary source texts in TEI compliant XML and over. These materials were gathered from standalone content area projects, provided by private content providers like Chadwyck-Healey, and harvested from open source

repositories like Project Gutenberg. Together with facsimile images, the project held 2-3 terabytes of information in the knowledgebase.[220]

Given such a sizeable database of content, the ETCL began developing a standalone, desktop mounted user environment: the Professional Reading Environment (PReE). Built in .NET, PReE allowed users to "log in, opening as many separate document-centred instances of the GUI as they desired simultaneously, and perform search, reading, analytical, and composition and communication functions." The environment could display text in a variety of formats (plain-text, HTML, PDF), display images that were zoomable, and display both text and image in a side-by-side viewing format. Users could create workflows of transcription and create notes. Administrators could also enable tracking of what was called up within library systems.

The project encountered a number of difficulties as the proof-of-concept was developed and user tested. Most pressingly, these were:

Scalability: all data was stored in a PostgreSQL database. Full-text content was thus placed in a relational database, a tactic which lead to unacceptable lag in operational processes. The large size of the dataset also complicated backup and searching. The team eventually recommended Lucene as an open source full-text indexing platform.

Document Harvesting: Harvesting data for the knowledgebase faced issues of technical and legal access. Some content suppliers had to supply legal permission to capture and copy documents; many of these in turn structured access to document differently. Some provided an API, others used HTTP, while some distributed content via CD or high density magnetic tapes. These documents then had to be transformed into a single TEI DTD, complicating even the simple import of TEI compliant documents.

Web-based or Standalone: In the prototyping stage, PReE was designed as a standalone desktop application, as the trade-offs to mounting the application online were judged to high. These included degradation in performance and functionality, restraints that were much easier to

[220] For a complete list of all items eventually present in REKn, see Siemens et al., "Subsidium: Master List of REKn Primary Sources," http://www.digitalstudies.org/ojs/index.php/digital_studies/article/view/223.

work around on local machines with access to hardware and resources. This necessitated user installation and extensive training in effective use. At the end of the process, the team recommends transitioning to a web-based application rather than a desktop platform.

The team's 2011 recommendations for further re-development of both REKn and PReE are as follows:

- We are rebuilding the PReE user interface. A web-based environment allows us to be agile in our development practices and to incorporate emerging ideas and visions quickly.
- The Ruby programming language has been selected as the new development platform. While it can be considered the "new kid on the block" of web-scripting languages, the benefits it offers (such as the Ruby on Rails application framework) make it an enticing choice to say the least. The use of Ruby on Rails offers a rapid prototyping environment, which cuts huge chunks of development time out of our overhead. Ruby on Rails also provides us with the ability to add "Web 2.0" user interface features to our project simply and easily.
- We are working on developing a "one-stop" administrative interface for harvesting and processing new documents. Rather than having bits and pieces scattered around, we propose to use an extensible model for adding processing abilities to our application. Once the model has been built, the processing of a new type of document will simply require the addition of a new plug-in to bring the document into the application.
- We decided to keep the relational database for application-specific data needs (such as user info and user created content) in addition to implementing a dedicated full-text indexing engine to search both the text and the associated metadata. An application that offers time-efficient full-text searchability of documents is greatly valued by its users. To this end we decided to enlist the use of Lucene, the "granddaddy" of open-source full-text indexing engines. Lucene gives us fast, robust and scalable full-text searching. The Solr layer on top of Lucene allows us to "talk" to Lucene from any programming language we choose and give it powerful additions such as basic text analysis and the ability to identify a document uniquely.

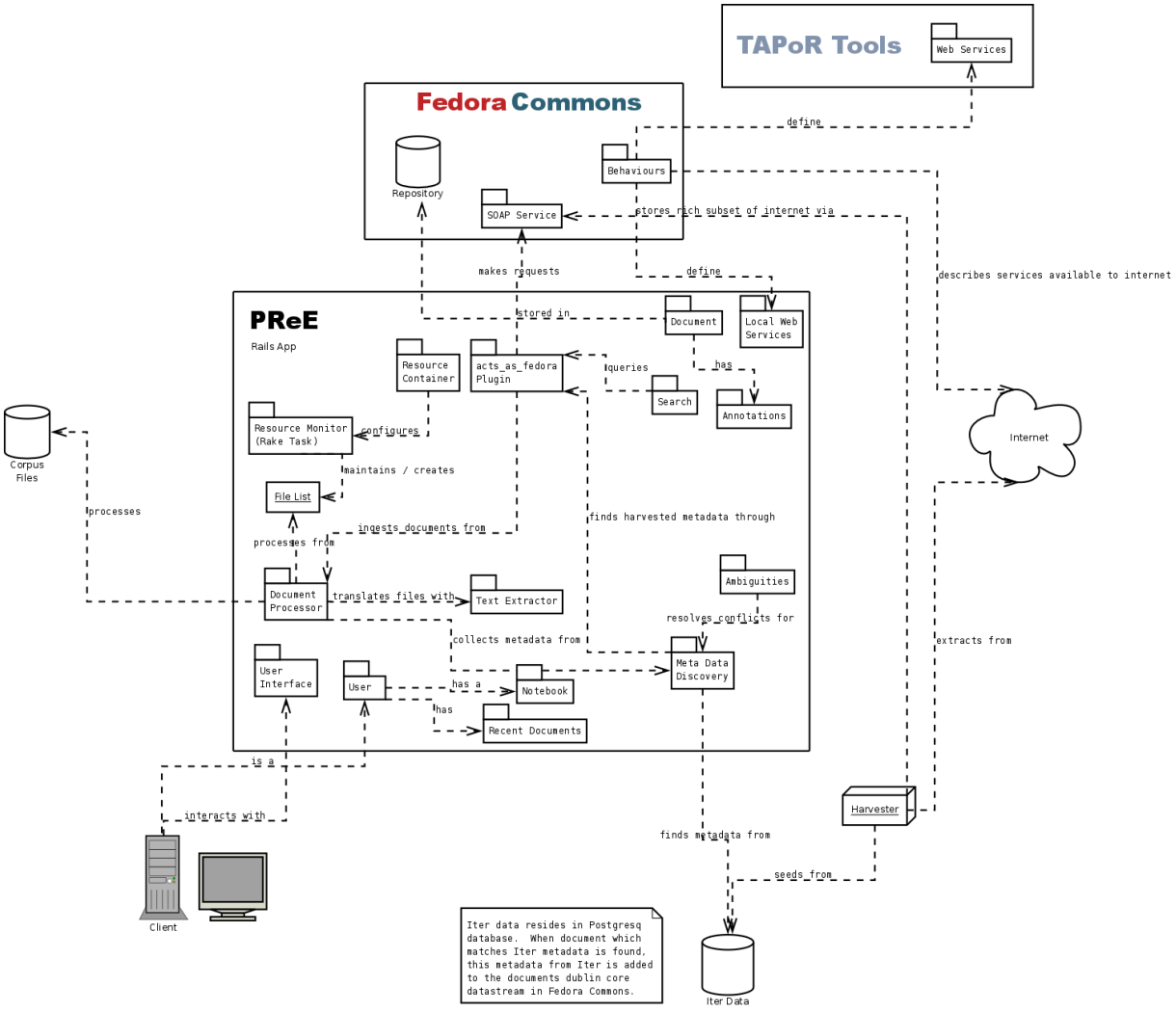

Figure 6 - 1: Imagined architecture for REKn development; copied from Siemens et al., "Underpinnings of the Social Edition?," http://cnx.org/content/m34335.

While Fedora Commons might prove to be a better alternative to Solr, the switch will have to wait until such time as the Fedora GSearch tool has been built into the RubyFedora library.

- We are working toward centralizing document processing. Until now, a different stand-alone tool processed each style of document. We are planning to pull all of these tools together in one place and to allow new tools to be added easily, with the facility for administrators to go through the process of adding new documents into the knowledgebase attached to PReE.
- We are rebuilding the interconnections between PReE and other related community tools. From metadata lookup tools to applications providing data analysis, the next development of PReE will be designed with flexibility and long-term scalability in mind.

The team also identified two new directions for development: social networking; identity and evaluation (in terms of login credentials and online profiles); and improved UX design for the reading and research environment.

ReKN as we have reconciled it in this white paper is intimately connected with, but not bound by, the recommendations outlined above. Instead, these points have inspired general directions of how to think through the various issues facing a new and improved proof-of-concept. The issues outlined in the 2011 recommendations have served as a series of signposts rather than as a rigid map of how development should proceed.

Information Discovery and Community Development: Iter Gateway and Iter Community

Iter was founded in 1995 as a not-for-profit partnership to support Medieval and Renaissance research and teaching after discussions between the Renaissance Society of America, the Centre for Reformation and Renaissance Studies at the University of Toronto. Iter initially tackled the need for a comprehensive bibliography of the field, taking on with the University of Toronto Libraries the challenges of developing an online database and associated finding tools and infrastructure. Iter would continue to add partners in these efforts, including the Arizona Center for Medieval and Renaissance Studies; the Faculty of Information Studies at the University of Toronto; and the John P. Robarts Library at the University of Toronto. Subsequent to partnership building and a broader sense of purpose, Iter would be awarded two Andrew W. Mellon grants (in 1996 and 1998) that allowed substantial expansion of the bibliography and new avenues through which to fulfil the organisation's original mandate. Building on successes in the creation of its bibliography, Iter would look to support "other forms of scholarly communication in both print and electronic media, and . . . building digital collections, all within a much larger historical period." Today, the operations of Iter are self-sustaining; the organisation offers a wealth of content in both open and subscription based formats, including bibliographic information, journal publications, and scholarly editions. The original bibliography project continues to grow and now houses over 1.3 million records.

Iter Gateway

In 2014, in response to emerging needs of teachers and researchers in the field, a growing end-user base, and the possibilities afforded by new technologies, Iter reconstituted itself in as a tripartite project. Iter Gateway, the longstanding home of the Iter bibliography and its other resources and services, would retain its "meta" focus on collecting and classifying sources for the field.

In a 2006 research investigation funded by Iter, the ETCL explored the possibility of searching for and gathering digital scholarly resources. This project resulted in an internal report— "Iter Database: Research Report on the Inclusion of Electronic Resources." The report breaks the process of electronic resource inclusion down into three automatable tasks: locating resources; harvesting resources online; and creating sample MARC records from these discovered resources. These sample records were distributed to a small group of potential users who provided interview responses as to their suitability for inclusion, cataloguing details, and scholarly quality. In addition to outlining technical and procedural processes for adding electronic resources to a database, the report prescribes how MARC record fields can be expanded to permit existing print-focused systems, such as the Iter bibliography, to incorporate born-digital content.

This report points to a number of issues that have not seen final resolution, including by existing scholarly research aggregators like the various nodes of ARC, discussed further below. These can be distilled to a core set of concerns:

Metadata standards: The ETCL report provides an interoperability solution that allows retention of well-established MARC-based database systems suddenly faced with the inclusion of born digital content. This research may prove important as ReKN looks ahead towards ensuring its own aggregation efforts can be subsumed within the more traditional datasets maintained by libraries and other institutions.

Cataloguing processes: The ETCL report recommends that cataloguing be undertaken by trained librarians. Academic libraries often employ specialists in cataloguing, whereas the academic professionals who prepare digital resources—as content area researchers and

technologists—may not be suited to catalogue their own creations. Ensuring ReKN's metadata standards are interoperable with those used and supported by libraries will be key.

Assessing web resources: The report argues that clear standards for assessment need to be articulated before projects are considered for ingestion into the Iter bibliography. This is a crucial concern for existing digital projects. Peer review as it normally functions is largely absent from digital resources. Although they may be vetted at the funding stage, it is unusual for a digital archive or online database to be subject to double blind peer review.

Iter Academic Press

By 2014, the steady growth of Iter's activities to support other forms of scholarly communication had come to warrant a dedicated division of its own. Since the early years, Iter has expanded its offerings to Renaissance scholars through a range of distribution, publication, and co-publication agreements. Electronic content includes specialised databases (*Bibliography of English Women Writers*; *Milton: A Bibliography*); a digital edition of Paul Oskar Kristeller's *Iter Italicum*; full-text e-journals (*Confraternitas*; *Early Modern Women*; *Early Theatre*; *Quaderni d'italianistica*; *Renaissance and Reformation/Renaissance et Réforme*); and, more recently, full e-books of scholarly publications. Iter's e-book collections include The Other Voice in Early Modern Europe: The Toronto Series, co-published by Iter and the Centre for Reformation and Renaissance Studies (CRRS) (Victoria College at the University of Toronto) (to 2014) and by Iter and Arizona Centre for Medieval and Renaissance Studies (2015-), and New Technologies in Medieval and Renaissance Studies, co-published by Iter and ACMRS. In effect, Iter has developed a rich platform for online publication and dissemination of materials for research and teaching. "Iter Academic Press" will continue to rely on the deep expertise of Iter's body of reviewers to further expand its publication initiatives. Immediate future plans include e-editions of CRRS publications (including their Essays and Studies series), as well as digital editions of F. Edward Cranz's *A Microfilm Corpus of the Indexes to Printed Catalogues of Latin Manuscripts before 1600 A.D.*, and *A Microfilm Corpus of Unpublished Inventories of Latin Manuscripts through 1600 A.D.*

Iter Community

A third division of Iter, integrally connected to both "Iter Gateway" and "Iter Academic Press," is "Iter Community." In 2008, Iter Associate Director Ray Siemens drafted a vision document for a ten-year plan that would clarify Iter's original mandate in the light of ways in which Iter's community of users would continue to participate in trends towards ubiquitous computing, and the increasing acceptance of the computational facilitation of professional activities through Web 2.0 models as already evidenced by then new social media.

A pilot project, it was suggested, might allow for Iter's core-data to be enriched, in part, through feature-oriented processes associated with social networking and interaction. Iter might seek to offer services, then, for instance, to facilitate community at the group level, including, as one example suggested, through project archiving functionality. Additionally, providing means for individuals to amalgamate their own content for sharing within an integrated central environment could allow Iter to better understand and reflect the particularities of a community working with medieval and renaissance culture and artefacts. Conceiving Iter as fundamentally serving in such ways the community of individuals using its resources would involve a shift in Iter's activity orientation:

> from records production and service provision (though this lies at the core of Iter), to facilitation of a community's 'scholarly primitives', its basic needs from the perspective of professional/user interactions (these include bibliographic management, conference services, and publishing mechanisms), and concomitant expansion of the data collected to include the full range of relevant data (e.g., scholars, institutions, events, research projects)[221]

By 2010 Iter, in association with the Electronic Textual Cultures Laboratory and Information and Technology Services of the University of Toronto Libraries, would release the initial iteration of "Iter Community," an early deployment of the open-source Drupal Commons system within an online research environment. The system provided Iter's users "a collaboration resource" for online discussions, document sharing, blogging, and social writing through wikis.

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[221] Siemens, "Initial Steps, Following a Larger Vision."

In 2013, as part of the Iter Community iteration timeline, Iter conducted interviews with members of the platform to assess the first prototype. Despite shortcomings of the original platform, the pilot project was perceived as vital to Iter's community of users. Initial groundwork was laid for a second version of Iter Community that would build upon the successes of the first, while better addressing community needs emergent at the five-year, halfway point, of the project.

Perhaps most significantly, the degree to which community members were comfortable with the use of technology in research and publication processes had increased beyond expectations since 2008, in keeping with the exponential growth of the digital humanities in general. Beyond the WordPress or Drupal Commons based amalgamation services outlined in the original pilot project plan, consultations reflected the interest of the community for more sophisticated online production and publishing mechanisms for research and teaching. By 2013 Siemens and others had also advanced the theoretical frame in which Iter Community project might best be conceptualised, with discourse expanding out from "scholarly primitives" to involve the notion of a "methodological commons," in which Unsworth's primitives can be modelled as shared tools, to undertake "problem-based knowledge representations" within a specific "community of practice." Iter Community would be a "social knowledge creation" environment to facilitate this model of transdisciplinary, public-facing, collaborative research.

In alignment with the general recommendations of the advisory group, later in 2013 agreements were established between Iter and Information and Instructional Technology Services at the University of Toronto Scarborough for deployment of cloud-based servers for the new iteration of Iter Community. Experimental infrastructure and development work would be spearheaded by the ETCL in Victoria. Under the direction of Siemens and Bowen, technical development and conceptual articulation for the new Iter Community is being led by Dr Matthew Hiebert, ETCL Postdoctoral Fellow for Iter and the Renaissance Knowledge Network and Assistant Professor of English at the University of Victoria. Programming services for Iter Community are provided by Shawn DeWolfe (ETCL), Ken Yang (UTL), and Bilal Khalid (UTL); infrastructure support has been provided by Wesley Huang (UTSC) and Juliana Peng (USTC); research assistance has been

provided by Kerri Grimaldi (ETCL); project management has been contributed by Margaret English-Haskin (Iter/UTL) and Daniel Sondheim (ETCL); technical consultants on the project include John Harper (UTSC), Belaid Moa (Compute Canada), and Corey Scholefield (UVic).

The Iter Community environment, running off a number of Linux servers at UTSC, provides web-accessible git repositories (GitLab); high performance search indexing (Solr and Tika); a project management system and knowledgebase (Jira and Confluence), granular user authentication; a single-sign on server appliance (Gluu); security and monitoring services; Drupal and WordPress development environments and workflows; Apache, MySQL, and PHP services; and sandbox space for Iter Community tool and platform evaluations, which have included AnnotateIt, CWRC Writer, Collex, EtherPad, LaTeX, Listserve, New Radial, Open Journal Systems, Pandoc, Scalar and others. Over a dozen pilot projects are already operating within the Iter Community environment or have been planned for upcoming development within, include the Institute for Research in Classical Philosophy and Science; *Humanism for Sale: Making and Marketing Schoolbooks in Italy, 1450-1650*; *Monacus*, an index of the online *Mediceo Avanti il Principato* fonds of the State Archives of Florence; the FICINO list archive; the Canadian Society for Renaissance Studies; community facilitation for a palaeography teaching project of the Newberry Library; *A Social Edition of the* Devonshire Manuscript; and others. By far the most vexed issue in the 2013 discussions around a new iteration of Iter Community was the extensible platform to be chosen as the basis for developing the central commons space for the community. To inform this debate and make a final decision, two additional Iter Community prototypes were sprint developed in 2014 for distribution to select community users, producing additional research to inform the decision: the first, a highly customised Drupal-based environment; the second, a highly customised instance of the Discourse forum platform. Through this testing, evaluation, and further consultation with its advisors, the Iter Community team decided in autumn 2014 to move forward with a Commons-in-a-Box based platform for the new iteration of the central community integration space. The platform is currently well into development and is on track for

its scheduled release in early June 2015. Importantly, the development cycle itself continues to closely involve the community of users Iter serves.

This progress made by Iter Community, and the expansion of Iter it will involve in the near to medium term, warranted the project becoming an independent division within Iter in late-2014. A formal advisory group was established, with Jason Boyd (Ryerson University), Constance Crompton (University of British Columbia - Okanagan), Matthew Davis (North Carolina State University), Laura Estill (Texas A&M University), and Diane Jakacki (Bucknell University) as its members.

It is worth noting that the appendices to the present document were developed within Iter Community (at rekn.itercommunity.org, a site which will see further development in the year ahead) using a custom-designed annotated bibliography creation framework to allow the core ReKN team, dispersed between multiple continents, to collaboratively create a born-digital resource to be remediated as a print-based research output.

Iter Community is a foundational project for the ways we are thinking through community, collaboration, and interoperability within ReKN. Potential synergies between ReKN and Iter Community would appear to warrant further discussion.

Building Infrastructure for Research: The Advanced Research Consortium (ARC)

ARC was formed in 2012 at Texas A&M University.[222] Led by Dr Laura Mandell, ARC represents a coming together of directors, co-directors, and staff from a number of online scholarly initiatives and efforts. ARC is imagined as a loose confederation of resources aggregated for usability and scalability in development. In its current form, ARC grew directly out of the trailblazing Networked Infrastructure for Nineteenth Century Electronic Scholarship (NINES). As a federated model for aggregated online resources, NINES represents a leap forward in how online scholarly resources could be aggregated, searched, and used in academic situations. Nevertheless, it was, by design, limited to the 19th century. In the wake of NINES' success, Dr Mandell led the development of a

[222] See the ARC site for extensive information about nodes, projects, metadata standards, and community efforts: Advanced Research Consortium, http://idhmc.tamu.edu/arcgrant.

sister site focused on the long 18th century: 18th Connect came online in 2010, with support from Gale Cengage and ProQuest. Notably, NINES and 18th Connect shared access to the English Short Title Catalogue (ESTC), presaging further common development. By summer 2012, a third node had been added to NINES and 18th Connect. The Medieval Electronic Scholarly Alliance (MESA) was launched at the International Medieval Congress in May 2012. That fall, ARC was launched as a "mother-ship" of nodes, serving as a centralised repository and large-scale development arm.

Throughout the development of separate nodes, a variety of tools, software, and projects have been developed by some combination of NINES, 18th Connect, and ARC. These include:

Collex: A set of tools designed to "aid students and scholars working in networked archives and federated repositories of humanities materials: a sophisticated COLLections and EXhibits mechanism for the semantic web."[223] It is free, generalizable, and open source; it has been deployed for all nodes in ARC. Collex XML lives on a server running a Solr indexer, supported by relational database for user information and a separate interface skin.

Juxta: An open source tool for comparing and collating multiple witnesses of a single textual work. Juxta exists as both a standalone, downloadable program and as a web-based tool. It can be integrated into a web site and controlled via API.[224]

Typewright: Developed in conjunction with 18th Connect and with the support of Gale Cengage and ProQuest, Typewright is a tool for correcting OCR produced from page images. As users correct documents, their text is re-integrated into the full-text database for the pages in question; in return, users receive the text they have transcribed in XML for use in preparing scholarly editions.[225]

Early Modern OCR Project (eMOP): eMOP is a Mellon-funded project designed to improve machine learning to create an OCR-generated corpus of early modern text. Existing OCR and metadata is often highly corrupt because existing OCR platforms simply cannot cope with 18th

[223] See the entry on Collex on the ARC site: "Collex," http://idhmc.tamu.edu/arcgrant/software/collex.
[224] Juxta, http://www.juxtasoftware.org.
[225] See Stephen Gregg's introduction to using Typewright: Gregg, "Digital editing with undergraduates: some reflections," http://shgregg.com/2013/09/23/digital-editing-with-undergraduates-some-reflections; see also "Welcome to Typewright," http://www.18thconnect.org/typewright/documents.

century fonts. Combining extensive training of the Tesseract OCR Engine, post-processing techniques based out of SEASR, and the Typewright software, eMOP seeks to ensure that existing digital facsimiles are as well catalogued and presented in full-text as possible.

As discussed above, ARC also has supported and continues to encourage the establishment of content-area nodes of aggregated content. Thus far the following nodes are affiliated with ARC (in chronological order):

MESA (Medieval Electronic Scholarly Alliance): The medieval period, from roughly 500 – 1500 AD. This node is fully online and has aggregated over 100,000 objects.[226]

18th Connect: The long 18th century. Currently fully online and growing within a defined plan.[227]

NINES (Networked Infrastructure for Nineteenth Century Electronic Scholarship): The 19th century. NINEs was the first node within ARC, emerging from the work of Jerome McGann and Bethany Nowviskie at the University of Virginia. Currently fully implemented and the most well-developed node in the ARC framework.[228]

ModNets (Modernist Networks): The modernist period, roughly 1900-1950. Currently nearing the end of an NEH Digital Humanities Startup Grant funding a one-day gathering to discuss metadata standards and RDF production for integration to the ARC catalogue.[229]

As this breakdown suggests, ReKN has been discussed extensively as a possibility to provide coverage of the early modern period as a scholarly content aggregator. When fully implemented, ARC will help to provide federated database access to digitized content from the medieval period to the 20th century. ARC serves as a central guiding organisation for the multiple nodes engaged in period-specific peer review and online aggregation. ARC is the physical home for the multiple nodes within the organisation, as well as housing the central metadata index that provides search capability to each node.

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[226] Medieval Electronic Scholarly Alliance (MESA), http://www.mesa-medieval.org.
[227] 18thConnect, www.18thconnect.org.
[228] Nineteenth Century Scholarship Online (NINES), www.nines.org.
[229] See "Metadata Schema for Knowledge Networks," https://securegrants.neh.gov/publicquery/main.aspx?f=1&gn=HD-51718-13.

Foundational Efforts in Text Analysis: The Text Analysis Portal for Research (TAPoR) and Voyant

The Text Analysis Portal for Research (formerly Text Analysis PoRtal) began as a large-scale Canadian infrastructure project in 2003. Based at McMaster University and consisting of a network of six humanities computing centres (McMaster, University of Victoria (in collaboration with Malaspina UC), University of Alberta, University of Toronto, Université de Montreal (law) and University of New Brunswick), TAPoR sought to build a "gateway to tools for sophisticated analysis and retrieval, along with representative texts for experimentation."[230] Each centre was imagined to exist independently as part of local research cultures but overall serve as a coordinated vertical portal for the study of electronic texts. This project was awarded $6.78 million CAD, with $2.62 million provided by the Canada Foundation for Innovation (CFI); the remainder derived from institutional and provincial funding. It was directed initially by Geoffrey Rockwell (University of Alberta), with the later addition of Kirsten C. Uszkalo (University of Alberta) and Stéfan Sinclair (McGill University). A number of use cases were originally outlined:

- Editors and translators add interpretative information to electronic versions of historically important texts to create rich electronic editions for use by other scholars, students or interested readers. Such electronic editions can include modern spellings, commentary, variant translations, references, multimedia supplements and images of the original manuscript all available at a click of a button.
- Researchers across the humanities and social sciences use electronic text collections to passages where issues are discussed and to retrieve documents to their questions.
- Social scientists use text analysis to study interviews, responses to questionnaires, collections of policy documents, or letters. By qualitative analysis they characterize or model the topics, opinions, or psychological traits exhibited in the texts.

[230] "TAPoR Infrastructure," http://tapor.humanities.mcmaster.ca/html/p_desc_infrastructure.html.

- Linguists add information to texts about language features so that they can study language use. Using these corpora (collections of texts) they write dictionaries, grammars, studies of language change over time, and analyses of language use in different communities.[231]

Overall, TAPoR was imagined as "a workbench of text processing tools that users can use on e-texts they bring or find on the Internet." Much progress was made towards this goal; earlier versions of the TAPoR site were able to ingest HTML, XML, and plain text; these texts could be subjected to a number of analyses, including concordance, tokenisation, collocation, extracting text, co-occurrence, date extraction, and so on. These tools are still usable and can be found here: http://taporware.ualberta.ca/~taporware/.

In 2010, the TAPoR team began a redesign of the site; this eventually lead to the current TAPoR resource. The current site (http://www.tapor.ca/) serves as a directory of text analysis and production tools and platforms. Rather than allowing users to use various tools on-site, TAPoR 2.0 provides short annotations describing each tool, along with documentation records, various tags, a rating system, and links to the tool itself. Some tools are necessary to download; others are web-based. It is a highly useful resource for discovering the best tools for a given use case, and as a guide for those unfamiliar with text analysis. It does not, however, allow for the use of tools directly in the TAPoR site in the same way that TAPoR 1.0 allowed.

At the same time, Rockwell and Sinclair began work on another site: http://hermeneuti.ca/. This site served three functions: It mounted a book about text analysis; provided a portal to Voyeur tools (now Voyant tools); and housed documentation for the Voyeur tool set. Of these three branches, it is Voyant that is most relevant to the work of ReKN. Voyant is a "labour of love" descended from HyperPo, Taporware, and TACT.[232] Voyant aggregates and integrates two-dozen tools that allow for a variety of ways to explore text. These include:

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[231] A full list of use cases: Rockwell and Lancashire, "What is text analysis?," http://tapor.humanities.mcmaster.ca/html/p_desc_what_is.html.
[232] See the Voyant documentation here: Sinclair, Rockwell and the Voyant Tools Team, "About Voyant Tools," http://docs.voyant-tools.org/about.

Bubbles: represents the relative frequency of words in a corpus through a cloud of bubbles; the size of each bubble is proportionate to the frequency of the word in the corpus.

Cirrus: displays the frequency of words in a corpus; words that occur more frequently are larger.

Corpus Summary: Provides a simple textual overview of a given corpus, including number of words, number of unique words, longest and shortest documents, vocabulary density, etc.

Termometer: Shows change in frequency of words across a corpus over time via movement on the y-axis.

Links: Represents the collocation of terms in a corpus by showing them in a network using a force-directed graph.

Lava: Displays a corpus in a 3-dimensional environment in multiple levels.[233]

Voyant is able to ingest textual content in a number of formats, including plain text, HTML, XML, PDF, RTF, and Microsoft Word. These files can be directly ingested; alternatively, Voyant can work directly with text at a given URL (or with a web page at a URL). The Voyant tool set can be downloaded as VoyantServer and run locally on an off-line machine; doing so is comparatively easy. Importantly for ReKN, Voyant is also able to be embedded (in the form of individual corpus tool displays) within a given site. Taken together, these various attributes make Voyant a powerful set of tools for working with texts of many different sorts; this portability also means that it is an ideal tool stack to consider for integration into a ReKN environment.

Digital Publication of Academic Research: Trends and Examples

Digital publication of research materials related to the early modern period can roughly be classified as proceeding in three ways:

1. It is created by publishers in-house and distributed in PDF format via a variety of aggregators and publication libraries like JSTOR or Project Muse. This is especially true of journal articles that constitute the bulk of secondary literature in the humanities.

[233] Documentation for the full list of included tools, including extensive explanations and how-to guides, can be found on the Voyant Tools Index: Sinclair, Rockwell and the Voyant Tools Team, "Tools Index," http://docs.voyant-tools.org/tools.

2. It is created as an XML document encoded to either the Text Encoding Initiative Guidelines or a project-specific set of standards. This is increasingly common practice for digital scholarly editions and digital archives representing primary source textual content.
3. It is in a standalone or boutique format that is difficult to aggregate, catalogue, and otherwise work with within existing scholarly ecosystems of content management. These include innovative, non-traditional publication platforms like CommentPress, Wordpress, Scalar, TEI Boilerplate, and Roma, but also legacy sites using frames and tables, odd Unicode fonts, and so on.

Each of these cases pose difficulties. The Iter Bibliography, for instance, aggregates bibliographic records in the MARC format; each of these records contains a button to "check for full text." Doing so produces an OpenURL query that is directed to an institutional link resolver. When this works, it is flawless; when there are issues with local link resolution (such as a library having switched from the SFX system to the 360 system), it necessitates logging in separately to a library systems and finding individual articles in the traditional way. Oftentimes, these articles are in PDF format. Finding the article itself usually ends the trail of links, but it may contain no OCR content and no metadata. It is useful for reference reading, but any content meant for integration to an article is often typed by hand or grabbed in roundabout fashion via an application like Zotero. This is important to keep in mind when we consider building a production environment for research: for many users, the end goal of this environment will be the production of secondary criticism on early modern texts, criticism that will need to be exported either into Microsoft Word or plain text for submission to a journal for peer review. Eventually those documents will be typeset into PDF and placed online. Publication can thus mean quite different things depending on user community.

The second major category for published digital content is that of the digital scholarly edition. The TEI has found enduring success as the arbiter of an international standard for the archival preservation and digital publication of historical texts. The list of projects using TEI is extensive, and includes illustrious and foundational content such as the Women Writers Project, the British National Corpus, the Orlando Project, The *Acts and Monuments* Online, The Shelley-Godwin

Archive, and many more.[234] The TEI Guidelines are actively encouraged by the US National Endowment for the Humanities, the Canadian Social Sciences and Humanities Research Council, and the UK Arts and Humanities Research Council. Training opportunities are routinely planned and funded by these organisations. Examples include the Digital Humanities Summer Institute, the Taking TEI Further series (offered in conjunction with the Women Writers Project), the Digital Humanities at Oxford Summer School, and the Culture and Technology Digital Humanities at Leipzig training programmes.

For those not needing or wanting to work with the Oxygen software to produce XML documents from scratch, a number of projects have explored how to simplify TEI encoding for non-specialist users. The Canadian Writing Research Collaborator (CWRC) is developing CRWRC Writer, an in-browser TEI markup environment with the following features:

> Close-to-WYSIWYG editing and enrichment of scholarly texts with meaningful visual representations of markup;
>
> Ability to add named entity annotations to texts;
>
> Ability to combine TEI markup for the text and stand-off RDF for named entities;
>
> Ability to export using 'weavers' that recombine the plain text, the TEI, and the RDF into different forms (including an embedded TEI-compliant XML);
>
> Documented code to allow editorial projects to incorporate CWRC-Writer into their environments.[235]

Similarly, the Folger Shakespeare Library has recently received funding from the Institute of Museum and Library Services to produce a searchable database of encoded semi-diplomatic transcriptions from the Folger's collection of manuscript holdings. Central to the success of Early Modern Manuscripts Online (EMMO) is the use of Dromio, and in-house palaeographic

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234 See the full list, maintained by the TEI: "Projects Using the TEI," http://www.tei-c.org/Activities/Projects.
235 See the CWRC team's abstract from Digital Humanities 2012 for a further discussion of CWRC Writer: Rockwell et al., "CWRC-Writer," http://www.dh2012.uni-hamburg.de/conference/programme/abstracts/cwrc-writer-an-in-browser-xml-editor.1.html. The CWRC site also contains additional information on the tool: Brown, "CWRC Writer," http://www.cwrc.ca/projects/infrastructure- projects/technical-projects/cwrc-writer.

transcription platform that integrates highlight and click functionality that, in the back end of the application, results in TEI encoded XML.[236] It is meant to be used in conjunction with manuscript image facsimiles provided by the Folger's digital image repository Luna. Dromio is quite similar in its capabilities to CWRC Writer, although Dromio is far more stripped down and in active development. It is based on Folger servers and available only to those participating in activities like Folger courses in paleography or sponsored transcription events. The XML documents produced are held internally.

T-Pen stands for "Transcription for Paleographical and Editorial Notation" and is based at the Center for Digital Theology at St Louis University. It is, much like Dromio, designed to enable text transcription and encoding in conjunction with viewing a selected set of manuscript image facsimiles. Interestingly, T-Pen openly eschews TEI standardisation; instead, it is designed to allow for anything ranging from plain text transcription to transcription with unique characters (such as the eth [ð] or thorn [Þ]) to XML tags to paratextual annotations. The tool automatically detects lines, columns, and other layout features, as well as allowing for project collaboration on transcriptions and annotations. Projects can be exported to a number of formats, including XML/plaintext; PDF; RTF; and HTML. It does not validate XML and provides only basic formatting for PDF, RTF, and HTML exports (most users import into a separate program for editing and/or further work).[237]

Amongst the many diverse options for digital dissemination, two should be included here: CommentPress and TEI Boilerplate. CommentPress is designed as a Wordpress-compatible plugin that allows for collaborative annotation. First developed by the Institute for the Future of the Book in 2004, it is currently on version 3.5, it is described thusly: "Annotate, gloss, workshop, debate: with CommentPress you can do all of these things on a finer-grained level, turning a document into a conversation. It can be applied to a fixed document (paper/essay/book etc.) or to a running

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[236] For an overview of EMMO see this post on *The Collation*, the Folger's in house research blog: Wolfe, "EMMO," http://collation.folger.edu/2013/11/emmo-early-modern-manuscripts-online. For a recap of the first Transcribathon that EMMO has sponsored, as well as screenshots of the Dromio tool in action, see this post: Dingman, "A Transcriba . . . what?," http://collation.folger.edu/2014/12/a-transcriba-what.

[237] T-Pen is discussed at length here: Ginther, "T-PEN: A New Tool for Transcription of Digitized Manuscripts," https://earlymodernonlinebib.wordpress.com/2012/10/22/t-pen-a-new-tool-for-transcription-of-digitized-manuscripts.

blog."[238] CommentPress is designed explicitly to leverage digital platforms to enact critical arguments about the nature of text and of the book. Several notable works have been published using CommentPress, including Kathleen Fitzpatrick's *Planned Obsolescence*,[239] an experimental issue of the journal *Shakespeare Quarterly* on Shakespeare and New Media,[240] and the currently in progress book *:(SURVEILLER ET SOURIRE :).*[241]

TEI Boilerplate, on the other hand, is designed as "a lightweight, HTML5 compliant framework for publishing TEI documents. TEI Boilerplate (TEIBP) is designed to bridge the gap between the browser-friendly features of HTML and the semantic richness of native TEI documents."[242] Developed at Indiana University, TEI Boilerplate is designed to allow for the easy publication of complex TEI documents online. Using XSLT, JavaScript, and CSS, XML documents can be easily transformed on the fly into custom rendered HTML. Changes in presentation can be undertaken by simply edition CSS rather than engaging with XSLT. TEI Boilerplate is also compatible with Omeka, the exhibit building platform developed by the Center for History and New Media. Simply put, TEI Boilerplate allows for non-expert users to immediately publish XML content while immediately being able to edit formatting via CSS. It is highly useful in teaching contexts as it allows for immediate feedback for thinking through how XML documents may be displayed in multiple ways for different contexts.

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238 See *Commentpress: A WordPress plugin for social texts in social contexts*, http://futureofthebook.org/commentpress.
239 Available here: Fitzpatrick, *Planned Obsolescence,* http://mcpress.media-commons.org/plannedobsolescence.
240 See: Rowe, "Welcome," http://mcpress.media-commons.org/ShakespeareQuarterly_NewMedia.
241 See: Vitali-Rosati et Sinatra, *:(SURVEILLER ET SOURIRE :),* http://mcpress.media-commons.org/regardnumerique.
242 Walsh, TEI Boilerplate, http://dcl.ils.indiana.edu/teibp.

Building ReKN: Proposed Implementation and Pragmatics

ReKN is at once a scholarly working environment and a community of users, researchers, developers, and the public. For the everyday academic user, ReKN will be a single integrated environment for the discovery of resources, the analysis of textual information, and the production of scholarly communications and publication. As we imagine and discuss below, this ReKN will be a single point of entry into an entire world of scholarly activity, but one specialised for and oriented to scholars of the Renaissance. It is a rescue for searching and discovering, for analysing and exploring, and for publishing and writing. And in all of these diverse activities we are cognisant of the many ways the community is formed, collaboration occurs, and research is shared and debated. ReKN integrates this from its inception in the ways that not only researchers interact with each other, but the many ways in which digital resources and tools benefit from interoperability and cross communication. ReKN is at once a unique technological resource, a focal point for diverse digital resources, and a community—of individuals, of practice, and of scholarly work.

Possible Use Scenarios

As our discussions move into the technical and social infrastructure for developing and implementing ReKN as a holistic research, analysis, and production environment, it may prove useful to outline possible use scenarios. If the goal of the ReKN team is to produce a one-stop shop for early modern studies in the digital world, this list of possibilities could be endless. These three examples may be augmented by others at a later date. As they stand, each represents a certain type of user who is seeking to achieve different goals by using ReKN.

Scenario 1: Transcription and Edition Building

A user logs on to the ReKN site and is faced with a profile page similar to MLA Commons or Iter Community. After checking notifications, this user decides to create a transcription of a text held by

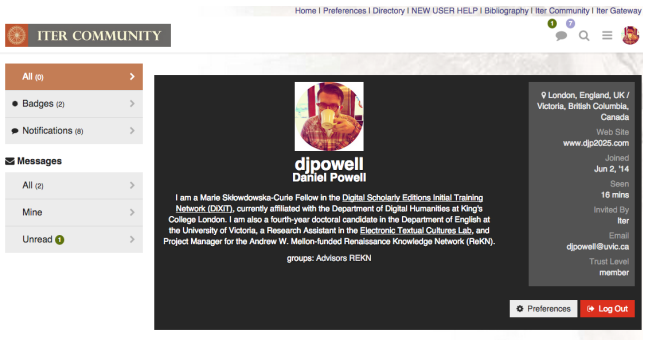


Figure 6 - 2: Iter Community profile page. See Iter Community, http://community.itergateway.org.

Early English Books Online. She enters a search term to find this holding, ticking off a box to search only primary source documents. Her search finds it listed in the overall ReKN directory; clicking on the entry, she is prompted to log in to her home library for access to EEBO. Signing in with valid credentials, ReKN pulls the EEBO record and page images into the user's workspace. Clicking on the tab for "Transcription," the ReKN environment opens a parallel pane displaying a WYSIWYG text editor. This is mostly an empty screen, with a small set of default buttons. This user has also defined a button to mark up proper names with the default TEI encoding for such features, as well as a small set of buttons to insert special characters. When transcribing, she notices a proper name. Highlighting it, she clicks on the TEI button for proper names. The selected string changes colours slightly to indicate it has been marked up. She continues transcribing. The document is short, so she finishes transcribing some time in the future. This transcription is destined for a larger collection of excerpts, so the user chooses "Export" from the menu. Presented with several options, she selects "XML" and clicks export. A standalone XML file is downloaded to her local hard drive, which she then emails to the large project she is working with.

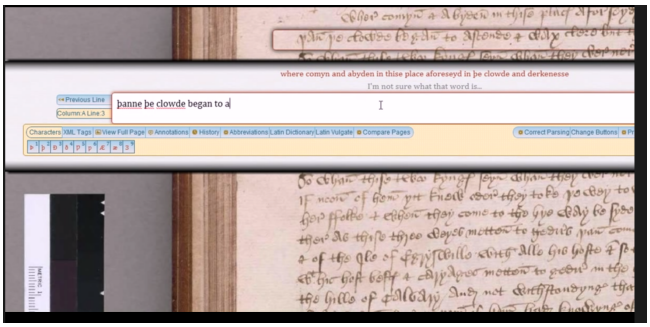


Figure 6 - 3: T-Pen Transcription Tool. See Transcription for Paleographical and Editorial Notation (T-PEN), http://t-pen.org/TPEN.

Figure 6 - 4: EEBO Page Images. See *Early English Books Online*, http://eebo.chadwyck.com.

Scenario 2: Collaborative Authorship and Citation in Academic Writing

A user logs on to the ReKN site and is faced with a profile page similar to MLA Commons or Iter Community. They immediately move to view their notifications, as they have been working collaboratively on an article destined for submission to the journal *Early Theatre*. Seeing a notification that a colleague has left a comment in their shared document workspace, he clicks on the title of the document in question. This opens a parallel pane in ReKN, displaying the in-progress document and the notifications area. Closing the notifications area, the user is faced with a document containing multiple comments and emendations. The notification link has opened the document on the most recent comment. It is a request for a citation to be added for a particular unattributed quotation. Checking the *Early Theatre* style guide, the user notes that endnotes are the preferred citation method. Moving to the top menu of the text editor, he clicks on "Insert Endnote," prompting an empty footnote to appear. Clicking on the "Search" tab, a parallel pane containing a search box

Figure 6 - 5: MediaCommons. Fitzpatrick, *Planned Obsolescence,* http://mcpress.media-commons.org/plannedobsolescence.

Figure 6 - 6: An article in the journal *Early Theatre*. See Ostovich and Gough, *Early Theatre*, https://earlytheatre.org/earlytheatre/index.

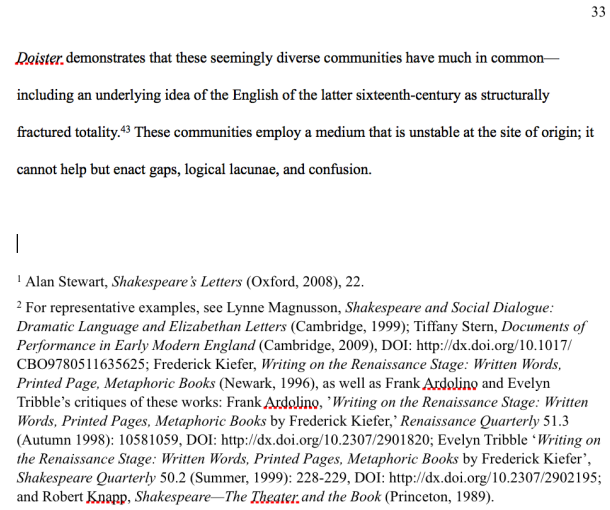
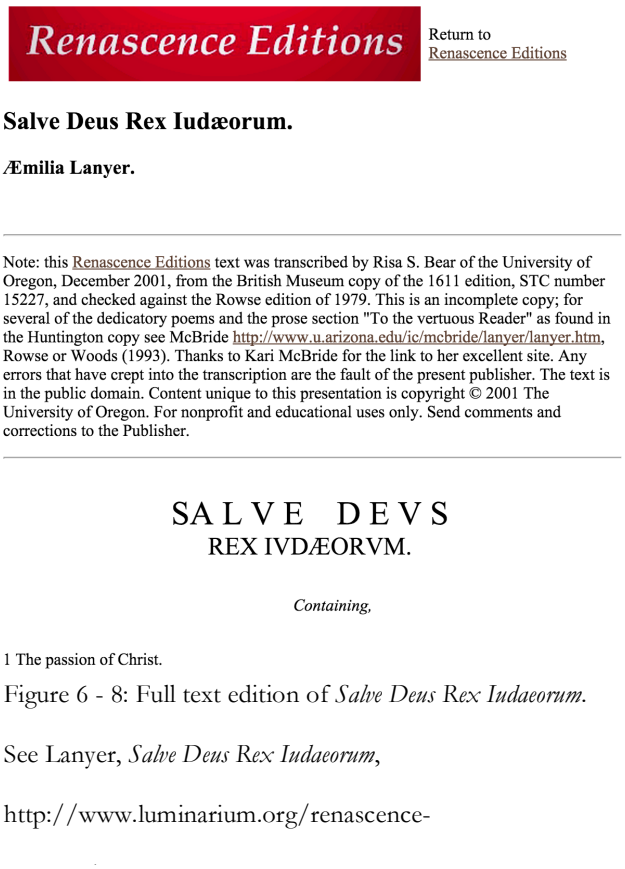


Figure 6 - 7: Endnotes in an *Early Theatre* article. See Ostovich and Gough, *Early Theatre*, https://earlytheatre.org/earlytheatre/index.

opens. Pasting in the quote for which a reference was requested, he runs a search for the string. Powered by Google, a list of results is returned, with the first being a likely contender for the article in question. Clicking on this result, the user is authenticated by the journal in question automatically and brought to the article in question—all within the ReKN Search pane. Looking at the article, he quickly finds the quotation needing citation, copies the suggested citation to the clipboard, and pastes it into the word processing document. With this citation in place, the piece is ready to be exported and submitted to a journal. He clicks "export," selects "Microsoft Word," and the article is exported to his local hard drive.

Scenario 3: Exploratory Text Analysis of Canonical Work

A graduate student is preparing for a presentation on the early modern poet Aemelia Lanier. Knowing very little about her corpus, she logs in to ReKN site and is faced with a profile page similar to MLA Commons or Iter Community. Ignoring everything, she turns to the Search box and puts in Aemelia Lanier's name. A number of articles and full-text primary source materials appear. Noticing the "Analyse" tab, she opens that tab, prompting a parallel pane to appear with a number of text analysis tools. Static directions suggest pasting in a text to explore. Looking back at her search results, the student ticks a box to search for only full text available resources. Running the search again, *Salve Deus Rex Iudaeorum* appears. Clicking on this entry, she is brought to the Renascence Edition of the poem. With one pane displaying the poem and the other displaying a toolbox, she clicks "import" from the menu button that appeared


Renascence Editions

Return to Renascence Editions

Salve Deus Rex Iudæorum.

Æmilia Lanyer.

Note: this Renascence Editions text was transcribed by Risa S. Bear of the University of Oregon, December 2001, from the British Museum copy of the 1611 edition, STC number 15227, and checked against the Rowse edition of 1979. This is an incomplete copy; for several of the dedicatory poems and the prose section "To the vertuous Reader" as found in the Huntington copy see McBride http://www.u.arizona.edu/ic/mcbride/lanyer/lanyer.htm, Rowse or Woods (1993). Thanks to Kari McBride for the link to her excellent site. Any errors that have crept into the transcription are the fault of the present publisher. The text is in the public domain. Content unique to this presentation is copyright © 2001 The University of Oregon. For nonprofit and educational uses only. Send comments and corrections to the Publisher.

SALVE DEVS
REX IVDÆORVM.

Containing,

1 The passion of Christ.

Figure 6 - 8: Full text edition of *Salve Deus Rex Iudaeorum.* See Lanyer, *Salve Deus Rex Iudaeorum*, http://www.luminarium.org/renascence-

when ReKN registered a full text resource. This automatically imports the full text of the poem into a Voyant-like interface and processes it; the Search pane is minimised and the Analysis portal expands to fill the screen. A list of common stop-words has been applied, and the student notices that the words "faire," "death," and "grace" appear quite often. Looking more closely at "faire," she notices that it appears quite often at the beginning, stops appearing in the middle, and increases again at the end. Looking more closely at the full text of the poem, she realises that the first several sections of the volume are actually dedicatory epistles. Based on other reading for the course, she knows that dedicatory epistles were common in volumes of early modern poetry, and especially important for those seeking favour at court. She decides to create an argument based on the idea of linking fair skin with both Eve and with poetic patrons—a topic with special relevance as Aemilia Lanier is commonly discussed as dusky and dark skinned in appearance, possibly with a Jewish heritage. Moving to the textual editing pane in ReKN, she begins making notes for her presentation. As she progresses, she often turns to the Search function in ReKN to locate secondary criticism with selected keywords having to do with Aemelia Lanier, portrayals of women in Jacobean poetry, and post-colonial studies of early modern England. As she moves between work panes, the textual analysis tool are automatically minimised and forgotten. Eventually she exports her notes into Microsoft Word format.

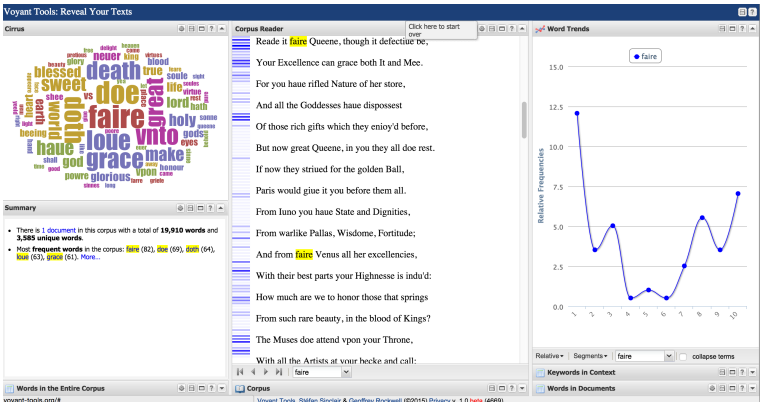


Figure 6 - 9: Voyant exploration of Full text edition of *Salve Deus Rex Iudaeorum*. For Voyant, see Sinclair, Rockwell and the Voyant Tools Team, Voyant, http://voyant-tools.org.

In the first scenario, the user could be an advanced graduate student or faculty member. They are invested in creating a rigorous scholarly edition, one that is going to be aggregated or compiled with a number of other, similar bodies of work. This may be, for instance, an archive of early modern women's writing that is previously only accessible in manuscript page image

facsimile, as in the Perdita Project from Adam Matthew Digital. This user is likely skilled in palaeography but only acquainted briefly with digital tools; she may be working with a robust style guide for preparing a transcription.

In the second scenario, the user is invested in collaboratively creating a manuscript for submission to a well-known journal in the field of early modern studies. His goal is to have a manuscript in an acceptable format (i.e., Word) to submit for peer review in a defined, online system the journal already has in place. Theoretically, this could be prepared in Google Drive or by a single individual using email and/or Skype as collaborative tool. Co-creation in the ReKN environment makes this process easier. It also allows for the simple integration of search and retrieval within the same environment, to the point where citations can be produced, copied, and pasted with correct formatting within the ReKN environment.

Scenario three is one that is increasingly likely as digital tools make their way into classrooms. One way to encourage comfort and familiarity with and use of digital tools is to make them active parts of the learning process. Text analysis and visualisation can be a basic part of this. Workshops on Voyant and TAPoR often emphasise how to actively teach with these tools.[243] Graduate students are well-positioned to use analytical tools as exploratory interfaces, not to argue for or against a fact of statistical analysis, but to learn how to use digital tools to form area-specific questions of wider relevance to the field. This type of user has the least patience for ReKN as a digital platform; she is not interested in the back end, the possibilities of aggregation, or anything more complex than what the environment can do for her research now. As the scenario shows, it has the possibility to actively contribute to a research agenda in unexpected ways.

Key Points for Consideration

This white paper is one output of a 13-month planning grant. As part of that, it is intended to provide fodder for community consultation and discussion, to provide a roadmap for technical

[243] See the Voyant Tools workshop at Digital Humanities 2013 for a typical example of this tactic: "Voyant Tools, Teaching Edition," http://digihum.mcgill.ca/voyant/workshops/dh13.

implementation, to provide an overview social and cultural factors, and to propose specific topics for discussion at the ReKN consultation meeting in Arizona. As part of that process, this section outlines, in broad terms, key points related to implementation to keep in mind when discussing ReKN as a fully realised scholarly environment. These points draw heavily on previous efforts in scholarship, including REKn, PReE, Iter, various ARC nodes, and the many prototypes of the INKE group of digital humanists. Where specific resources, toolsets, platforms, or formats are named, we expect that these will serve as building-block level components for ReKN. They may not necessarily be recognisable as such once they are integrated. It may also be easier to incorporate the capabilities for any given tool or platform without integrating that tool per so; these issues must be tackled on a case-by-case basis.

As we wrote above, we took the 2011 recommendations of ReKN as a set of suggested sign-posts for future development. This version of ReKN is one that integrates recent work on social knowledge creation, advances in technological platforms, the codification of tools, and developments in digital early modern studies.[244]

Our thinking about the technical architecture of ReKN is guided by two tenets: First, that ReKN is not only a technical environment and product, but represents a real-world social network of knowledge creation prototyping; in other words, how do can we, as scholars of the Renaissance and digital humanists, use cutting-edge techniques to augment the critical concerns we hold. ReKN is thus both silicon and social, a network of practice and of research. Second, ReKN does not hope to reinvent those tools, archives, platforms, or projects that represent significant investments in time, money, expertise, and research production. Instead, we conceive of ReKN as a holistic environment that may take the best of what early modern studies and digital scholarship have to offer and build, piece by piece and project by project, a computational tool (or set of tools) that can offer direct and immediate impact in our content focus area. In this way we move beyond Unsworth idea of the scholarly primitives of knowledge production to a consideration of how digital

[244] For a comprehensive bibliography of social knowledge creation, see Arbuckle et al., "Social Knowledge Creation: Three Annotated Bibliographies," http://src-online.ca/index.php/src/article/view/150.

knowledge spaces—in the form of online archives, catalogues, analytical tools, visualisation software, publication platforms, etc.—can be productively conjoined and integrated to become an environment more robust than the sum of its parts. ReKN is committed, then, to a re-exploration of professional reading *and* academic publishing; of resource discovery *and* exploratory text analysis; of research networks in online *and* real-world situations; and of early modern studies *and* digital scholarship. Put another way, ReKN poses the question of what happens when researchers move beyond the basic scholarly tasks that have been and are actively being facilitated by digital scholarship to a syncretic environment that allows for the production of genuinely new critical and historical insights into a deeply embedded scholarly area of inquiry? How we build ReKN, as much as how it is used, will help us to better understand how best to answer.

ReKN as a research environment will thus serve as a focal point for the intersection of diverse research communities. It is a place for intercommunication of research data, analytical tools, and production platforms, one that gains its strength from being a project where such intersections might occur.

The following are key goals we hope to achieve with ReKN, as well as highlighted examples of the type of resources we hope to integrate:

Available online as a web-based resource

Clean and modern UX/UI

Suitable for a variety of monitor sizes and styles

Based on a Lucene/Solr full-text server

Built in Ruby on Rails as the primary programming language

Key resources of the early modern period for discovering primary and secondary resources, including:

Primary Sources

English Short Title Catalogue (including Wing and Thomason Tracts)

Iter Italicum

Heritage of the Printed Book Database

EEBO-TCP

Standalone projects as outlined in Appendix I.

Secondary

Iter Bibliography

Collection of text analysis and exploration tools

Voyant Toolbox

TAPoR

Juxta / Juxta Commons

WYSIWYG text editor and transcription environment for producing plain-text content or TEI XML, designed to support producing editions of content

T-Pen

Dromio

CWRC Writer

Publication editor for secondary criticism in the form of middle-state publication or exported text in widely accepted formats (RTF, Microsoft Word, Open Office, PDF, HTML)

Social networking and shared annotation tools

Iter Community

MLA Commons

CommentPress

Although our final goal is to build an integrated research environment for those working with and on early modern materials, effectively facilitating discoverability is of the utmost importance. ReKN is associated with the Advanced Research Consortium, a large-scale infrastructure effort to federate metadata for a wide variety of digital projects, archives, databases, and editions. This is a complex problem, as early modern studies has a large and well established tradition of reference infrastructure. Thus discoverability means that newly produced electronic projects must integrate with existing large scale standards, or that both print and electronic materials must be updated to a third type of standardisation.

More than many areas of literary and historical studies, early modern England has faced intense academic scrutiny, beginning, arguably, in the early 18th century with antiquarian efforts to recover and catalogue medieval manuscripts that had since spread throughout the British Isles. The founding of the British Museum Department of Printed Books in the 1750s can be taken as indicative of such trends. Despite this early start, such classification got well underway with the 19th century production of a complete catalogue of printed books in the British Museum, though that was not completed until well after mid century. These later years also saw sustained efforts to organise information on a wide variety of printed content, with A. W. Pollard and G. R. Redgrave beginning the *Short Title Catalogue* (*STC*) in 1918 and publishing first in 1926. This volume, alternatively referred to as *STC* or Pollard and Redgrave, recorded all book sprinted in England, Scotland, Ireland, as well as English books printed abroad, from 1475-1640. The first edition contained over 26,000 entries; the second, published in 1976, contained over 35,000. Each publication was assigned an *STC* number, a number with changed with edition and printing. In many ways the *STC* became the standards for referencing early modern materials directly (i.e., those not in a prepared scholarly edition). Augmented by the *Wing Short Title Catalogue (1641-1700)* and the *Eighteenth Century Short Title Catalogue*, this system represented a large portion of all printed books in the United Kingdom by the 1980s. Around that time, they were all superseded by the digital English Short Title Catalogue, now a resource run by the British Library and maintained in the MARC format. Alongside this monumental effort are smaller resources like W. W. Greg's *Bibliography of English Printed Drama*, there exists a substantial print tradition of providing for information aggregation in early modern studies.

Alongside these field-specific print resources (some of which have now moved online), ReKN is faced with a vibrant number of electronic projects invested in precisely this type of work. Ideally, ReKN will be interoperable with other large data aggregation projects, as well as learning the lessons of such efforts moving forward. Foremost amongst these are the Iter project. Iter was founded in 1994 as a non-profit partnership dedicated to advancing the study and teaching of the medieval and early modern periods via digital means. Associated with, amongst others, the Renaissance Society of American and the Sixteenth Century Society and Conference, Iter provides online access to a

number of journals, full-text e-books, scholarly editions, and the Iter Bibliography. The Iter Bibliography is an Open URL and Zotero enabled bibliography composed of secondary source materials, citations for books and journal articles (articles, reviews, review articles, bibliographies, catalogues, abstracts, discographies), citations for dissertation abstracts, citations for essays in books (including conference proceedings, exhibitions, encyclopaedias, etc.). At last count the Bibliography contains over 1.2 million individual items and is continuously updated. Records are kept in MARC format. This dataset is foundational to ReKN whatever its final shape.

Although Iter has made remarkable progress towards centralising information access in early modern studies, projects in adjacent fields have also been making great strides. The Advanced Research Consortium (ARC) federates MESA, NINES, 18th Connect, and ModNets. These nodes run on Collex, a software platform custom designed at the University of Virginia a number of years ago. Collex runs on what Bethany Nowviskie calls "a Dublin Core flavor of RDF" that both allows users to create their own tags and facilitates faceted searching of materials. Given ReKN's close relationship to ARC, we are actively working towards a metadata solution (in both content and architecture) that allows integration or portability.

ARC runs on Collex. Other major projects like the Canadian Writing Research Collaboratory is an "infrastructure project designed to enable unprecedented avenues for studying the words that most move people in and about Canada." More concretely, they are building a database of Canadian digital content (Online Research Canada, ORCA), to "house born-digital scholarly materials, digitised texts, and metadata (indices, annotations, cross-references)." The seminal Orlando Project is a foundational rescue for ORCA, with around a dozen projects currently being federated. Beyond even aggregation, though, CWRC hopes to build "a toolkit for empowering new collaborative modes of scholarly writing online; editing, annotating, and analysing materials in and beyond ORCA; discovering and collaborating with researchers with intersecting interests; mining knowledge about relations, events and trends, through automated methods and interactive visualisations; and analysing the system's usage patterns to discover areas for further investigation." They deploy a controlled vocabulary drawn from the Getty Art and Architecture Thesaurus to populate their RDF.

In many ways, CWRC is doing for Canadian content and studies what ReKN hopes to do with early modern content and studies.

For ReKN, standards and metadata means two things: first, it must draw on large-scale, centuries old research infrastructure in printed related to the early modern period, ranging from cataloguing systems to bibliographies of primary materials. Second, it must take shape within widely used and translatable standards for digital assets management in both content specific areas (e.g., Iter, the ESTC, and EEBO-TCP) and adjacent chronological and subject periods (e.g., the ARC consortium, CWRC, and the Editing Modernism in Canada corpus). Threading this needle requires a great deal of research into shared standards, conversations with other projects, awareness of disciplinary and field-specific histories of formation, and a subtle understanding of possibilities for an metadata architecture. To balance these at times competing needs, we are actively discussing whether or not to house or master metadata in Dublin Core or MARC 21 XML. Of course, this is a somewhat arbitrary choice as cross walking is certainly possible between standards (via MARC 21), although with possible loss and conversion issues. It is not an inconsiderate concern that the Iter Bibliography is natively in the MARC format. Similarly, should ReKN deploy a controlled or semi-controlled vocabulary within a chosen metadata scheme, similar to CWRC? NINES and other ARC nodes use open vocabularies, with the only exception being genre (which is chosen at ingest for items). CWRC uses the Getty Art and Architecture Thesaurus. Iter has partially deployed controlled vocabularies internally. Many of the individual resources we are federating use their own bespoke vocabularies and idiosyncratic systems of organisation. What level of standardisation is desirable, and what is feasible if desired?

Aggregation by itself, though, is only part of ReKN's mission. As stated above, we hope to build a holistic environment for discoverability, analysis, and research. Again, faced with a complex and deep field, we have chosen to begin by thinking only about text analysis tools. Within ReKN, therefore, a user might run a search or browse the collections, finding particular texts with which to work. If those resources are available in full text, ReKN will allow for those texts to be called in to integrated analytical tools such as the ones listed in the Text Analysis Portal for Research (TAPoR)

or deployed within Voyant.[245] Once ported in, full text materials—whether an individual play or the entirety of English drama or the Shakespeare corpus—can be explored and researched using a variety of tools. An EEBO-TCP text could be called into WordFreak or Juxta, for instance, to run a concordance on them, explore Keywords in Context (KWIC), or collocate multiple texts.[246] For those interested in building editions, textual content might be exported directly to platforms like the Versioning Machine or Juxta Commons.[247] Some tools are not web based, of course, but ReKN hopes to provide access to entries about them or facilitate their download, possibly via TAPoR and similar projects. Eventually, insights from or texts build within these tools will be able to move fluidly themselves to a production environment for scholarship and editions.

Community Adoption and Suitability

As noted in our discussion of the backgrounds to developing ReKN as a robust digital resource and research platform, particular difficulties emerge at the intersection of digital humanities and early modern studies. This section addresses how best to gain social and cultural traction as we move forward with developing ReKN as a fully implemented environment.

The key point in this process is simple to articulate but difficult to put in practice: for ReKN to be successful, it should become an accepted part of how scholarly research related to the early modern period is undertaken by undergraduates, graduate students, and faculty. It should be held in high esteem by peer reviewers, cited as a legitimate resource, and discussed in the same breath as resources like the Short Title Catalogue, EBSCO, and Microsoft Word. This is not easy, but it is a clear end point at which we might claim that academic work on the Renaissance has become truly digital in its methods.

Digital projects face profound difficulties in reaching such a point. Too often, digital resources and research environments are full of bugs, inefficient, require too much technical proficiency to use, or are tangential to the research task at hand. To avoid these pitfalls, ReKN must be imagined as the "killer app" for a new generation of scholars researching the early modern period. In this

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[245] See TAPoR, http://www.tapor.ca and Sinclair, Rockwell and the Voyant Tools Team, Voyant, http://voyant-tools.org.
[246] See WordFreak, http://www.tapor.ca/?id=300 and WordWanderer, http://www.tapor.ca/?id=476.
[247] See Versioning Machine, http://v-machine.org and Juxta Commons, http://juxtacommons.org.

context, we think ReKN can be a singular platform-community whose benefits so strong and clear to wider communities of researchers that it becomes de rigour for Renaissance scholarship and a model for other disciplinary areas of inquiry. Thinking through how to develop such a platform cannot help but make reference to the basic tasks of scholarship, although a killer application must bring multiple functionalities together to create a resource that is more than the sum of its parts, or indeed its component capabilities.

More than decade ago, John Unsworth attempted to synthesise and discuss a number of "scholarly primitives," a "finite list of of self-understood terms" out of which a logic of scholarly research might be discussed. Writing that such a list should consist of "some basic functions common to scholarly activity across disciplines, over time, and independent of theoretical orientation," Unsworth lists a number of primitives: discovering, annotating, comparing, referring, sampling, illustrating, and representing.[248] Expressed as a set of guiding principles for digital humanities tool design, this list of functions has since percolated through the discipline and been taken as a starting point for a number of projects and initiatives.[249] They have also prompted internal, epistemic discussion of what exactly constitutes a primitive in the sense of a fundamental building block of knowledge activity, with Willard McCarty taking the view that primitives should "be discovered pragmatically, gradually, by experimentation" rather than "an overarching theory or satisfactory formalization."[250] It is with these issues, and many others, in mind that ReKN has taken shape. In particular, we hope ReKN will embody how tools for humanities research might take shape in the future while at the same time refining how the idea of common methodological practices might be applied in practice for particular content area research. Crucially, ReKN will not be oriented towards the humanities as a whole, but will specifically target Renaissance digital projects, analytical tools, and scholars who would most benefit from such a focused professional

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[248]See Unsworth, "Scholarly Primitives," http://people.brandeis.edu/~unsworth/Kings.5-00/primitives.html.
[249] See, for example: Schreibman et al, *Beyond Infrastructure*," http://dh2013.unl.edu/abstracts/ab-276.html; Palmer, Teffeau, and Pirmann, "Scholarly information practices in the online environment," http://www.oclc.org/programs/publications/reports/2009-02.pdf; Benardou et al., *A conceptual model for scholarly research activity*, https://www.ideals.illinois.edu/bitstream/handle/2142/14945/benardou.pdf; and Bradley and Vetch, "Supporting annotation as a scholarly tool," 225-241.
[250] McCarty, "Humanities computing," 103-125.

research and production environment– aligning with, and co-contributing to the work of, others in the ARC network and beyond.

ReKN has thus from the beginning been imagined as a working space specifically designed for researchers of the Renaissance, a specific historical period with a large body of existing scholarship, robust scholarly attention, internal debates and resources, and an established set of individuals who actively make, use, and cite relevant informational resources. This white paper attempts to synthesise and map multiple existing fields of scholarship, with special attention paid to the intersections between them. The Backgrounds section above, in addition to the attached appendices, attempt to grapple with this massive amount of information. In other words, it is difficult to know what ReKN should be if we don't know what early modern studies already is. ReKN must harness the complexity of an existing field rather than reduce that field's activities to a set of underlying principles.

Substantial progress has already been made towards laying the groundwork for a rollout of ReKN as a new resource for scholars working in this field. The project has been extensively discussed at the New Technologies in Renaissance Studies panels at the Renaissance Society of America beginning in 2007 and continuing in 2009, 2012, and 2014. It has been presented at various gatherings of the Implementing New Knowledge Environments initiative, including events in Whistler, British Columbia; New York, New York; and Sydney, New South Wales. ReKN has also been discussed at length in local symposia, workshops at the Folger Shakespeare Library, and with affiliated team members.

The online, public facing guide to early modern digital humanities will also prove a useful source of information for a variety of individuals ranging from students to tenured faculty. This online resource will be adapted from the annotated directors included here as appendices. Mapping these fields, and the intersections between them, is valuable in its own right; it will also serve as a valuable way to introduce the mission of ReKN, its scope, and current developments. As this site grows and is refined, it will contain a project blog, social media outreach, and so on.

Moving Forward

Effectively positioning ReKN as a default platform for research will require a number of complementary efforts. These include:

- Presentations and discussion at major content area conferences including: Renaissance Society of America; the Sixteenth Century Society and Conference; the Shakespeare Association of America; the Modern Language Association convention; and the American Historical Association convention;
- Workshops at these major conferences to train interested individuals in using ReKN and how doing so might improve their scholarship and affect larger discourses within early modern studies;
- Pedagogical outreach and training in undergraduate and graduate level classrooms. Research and methods courses for incoming Master's and PhD students are particularly well suited to discussing the merits and uses of research platforms such as ReKN;
- Peer-review of ReKN in flagship journals like *Shakespeare Quarterly*, *Renaissance Quarterly*, *Shakespeare*, *The Sixteenth Century Journal*, or *English Literary Renaissance*;
- Use of with and support by flagship institutions like the Folger Shakespeare Library, the Huntington, the Newberry, or the Arizona Center for Medieval and Renaissance studies;
- Publication of critical publications (likely journal articles or book chapters) that directly address important questions within early modern studies using ReKN as a research tool, citing it as such. These articles are key to normalising use of ReKN, as the address topics unconnected to the development of digital tools *per se* but depend on the potential of such tools for facilitating new scholarly interventions;
- Publication of scholarly editions created using the ReKN environment;
- Active and sustained presence on social media such as the blogosphere, twitter, and listservs;
- Public and defined plan for long term stability. This will encourage uptake by new users and by those who have seen the "next big thing" come and go a number of times.

Community and Consultation: ReKN and Digital Early Modern Studies

As we have pointed out elsewhere, this document is designed to serve as a foundation for community consultation about how best to proceed with all aspects of ReKN's development. These aspects include:

Technical architecture;

User interface and design;

What resources to aggregate, and how best to do so;

What text analysis tools to build in, and how best to do so;

How best to support publication of both primary and secondary;

How best build a user community and present ReKN as a viable research platform.

We have ideas about how best to proceed with each of these broad sets of questions; nevertheless, we expect our community of consultants to bring individual areas of expertise to bear on any and all aspects of the project. Our process is designed to facilitate such exchanges. The core group also represents a valuable talent pool who are uniquely suited to understanding how to think through use scenarios, consider what diverse stakeholders might want to gain from involvement with ReKN, and how best to leverage diverse resources and institutions to build a successful ReKN. Open communication of this sort is integral to the development of ReKN as a both research community and as a technical resource that interconnects manifold digital affordances in an easily accessible way. Knowledge production, and early modern studies, is now a social enterprise that conjoins multiple literacies of deep knowledge with innovative methodological toolkits; it is social in both construction and in communication. ReKN will instantiate this in design and practice—as well as in the literal creation of scholarly communication networks in terms of peer review, technical standardisation, consultation gatherings, conference discussions, and so on.

Community Impact

We have noted elsewhere how ReKN is an active attempt to bridge existing divides amongst three primary groups: digital humanists who develop, prototype, and build methodological tools; early modern scholars who possess deep content area knowledge but may be unfamiliar with

computational methods of discovery, analysis, and dissemination; and digital early modern studies practitioners who possess broad knowledge linking both fields. ReKN is a thoroughly transdisciplinary effort, an attempt to augment early modern studies research through the development and deployment of innovative digital tools.

The benefits of ReKN as integrated research environment will be of direct and immediate use to scholars of the Renaissance not accustomed to employing digital methods and tools in their work. At its core, ReKN will be a scholarly environment that integrates and facilitates the regular work Renaissance scholars—information discovery, analysis, and repurposing for publication. These are complex tasks that have prompted the evolution of numerous standards, practices, resources, methods, and platforms. From the aggregated catalogues of the 19th century to peer-reviewed journals in the 20th, from the rise of theory as critical method to the advent of digital editions of primary resources, early modern studies is a wide-ranging and dense set of interconnected practices, resources, and methods. ReKN will both augment what the scholar of the Renaissance already does by allowing for quicker, more efficient interaction with a wide variety of materials and methods and also facilitate the search for new research questions and post answers.

The rise of online archives and editions of primary source content has already transformed how scholars of the early modern period access and use the historical record. Although certainly not without its faults, Early English Books Online, for example, allows, via the internet and based on subscriptions, global access to facsimile images of a wide range of early modern texts—texts that were previously completely inaccessible except to small minority of scholars.[251] *The Acts and Monuments Online*, on the other hand, makes multiple versions of John Foxe's crucial work accessible in high-quality editions.[252] *The Lost Plays Database* is a wiki that records mentions of plays and playwrights drawn from a variety of early modern English texts.[253] Appendix I, the Directory of Content Area Resources, lists a number of these resources. Early modern studies suffers because these multiple resources are not widely accessed by traditional scholars, partially because they each

[251] *Early English Books Online,* http://eebo.chadwyck.com.
[252] John Foxe's *The* Acts and Monuments *Online,* http://www.johnfoxe.org.
[253] The Lost Plays Database, http://www.lostplays.org/index.php/Main_Page.

must be searched individually, have wildly different types of interfaces, and are largely unknown to most scholars. In aggregating the many existing digital resources under a single search interface, ReKN will improve access to individual resources by content area specialists. Easy access to diverse digital resources is an integral part of helping non-digitally conversant early modern scholars to access digital content. These scholars—those conversant with early modern studies but not regular users of higher-level digital tools—are the target audience for ReKN.

Similarly, integrating analytical tools like the Voyant toolset with these search capabilities will bring what can seem to be specialised tools and publication avenues to the immediate attention of early modernists. In many cases, tools like such as those listed in TAPoR and actively developed and released by Voyant are designed to be downloaded and integrated into research platforms designed for specific constituencies. In large measure, such integration has not occurred, and this has contributed to the most cutting edge tools in textual analysis and exploration—in terms of keyword in context analysis, word frequency, vocabulary richness, and other complex visualisations—not being used by non-digital humanities scholars. ReKN is therefore both a way to innovate scholarly practices and to prompt new research possibilities and questions. The use of large-scale linguistic data has allowed Michael Witmore and Jonathan Hope, for example, to explore Shakespeare's generic language;[254] GIS allows Janelle Jenstad and the Map of Early Modern London team to bridge annotation, research, pedagogy, and visualisation in producing a multimodal model of the spaces of early modern London;[255] the Verse Miscellanies Online project brings open-source critical editions of seven printed verse miscellanies from the 15th and 16th centuries online for reading and research;[256] many more examples of projects can be found in the appendices. These projects have also prompted, as we record in Appendix VI, a plethora of critical work on early modern culture. This type of innovative work is simply impossible without high-quality metadata for discovery; online corpora, editions, textbases, secondary criticism and historical data for research and

[254] See Hope and Witmore, "The Hundredth Psalm to the Tune of 'Green Sleeves,'" http://dx.doi.org/10.1353/shq.2010.0002.
[255] Jenstad, *The Map of Early Modern London,* http://mapoflondon.uvic.ca.
[256] Verse Miscellanies Online, http://versemiscellaniesonline.bodleian.ox.ac.uk.

pedagogy; easily used text analysis tools for large-scale exploration; visualisation tools to more efficiently impart research results in multimodal form; and innovative publication platforms to impart research results to diverse communities, facilitate collaborative research production, and academic publication. Advanced infrastructure is vital to the production of high quality research using new tools. ReKN is such infrastructure.

Areas of Consultation

Flexible environmental design

ReKN is imagined as a holistic and dense research environment that combines discovery of resources (both secondary and primary) with a robust suite of text analysis tools. Both resources and analytical tools can be used to create scholarly content meant for diverse circumstances. Broadly construed, we imagine a workflow for scholars that proceeds from discovery to analysis to use in scholarly work—whether that work is reinterpreting a primary text for publication or integrating secondary materials into further critical publications. Each component in this discovery, analysis, and production matrix can be used alone or conjointly, in sequence or randomly. At first, we anticipate that this will mean easily portable (in the sense of being ported between and amongst multiple resources, archives, catalogues, analytical tools, and publication platforms) textual information; textual resources are integral to early modern studies, although we of course recognise the innovative work being done on visual and aural modalities of the Renaissance.[257] Scholars will be seeking to find, analyse, and use textual information within ReKN. Our initial workflow discussions will, appropriately, focus on how to design ReKN for thinking through textual information. This will, on the one hand, simplify our explorations of interoperable technical platforms and, on the other, allow ReKN to be introduced as a type of work environment that scholars of the Renaissance unfamiliar with digital scholarship will not find off-putting. Thus for ReKN, at this stage of discussion interoperability denotes a sort of

[257] Particularly notable here are two projects: *Emblematica Online* is digitising two of the world's foremost collections of Renaissance emblem books, held by the University of Illinois at Urbana-Champaign and the Herzog August Bibliothek Wolfenbüttel. See *Emblematica Online*, http://emblematica.grainger.illinois.edu. The second is the Virtual Paul's Cross project at North Carolina State University, an effort to explore the soundscape and physical layout of London's St. Paul's Cathedral circa 1622. See Wall, Virtual Paul's Cross, http://vpcp.chass.ncsu.edu.

modular exportability of textual content between resource collections, analytical exploration with computational tools, and some sort of scholarly production and/or communication. In these efforts we adapt and refine the scholarly functions outlined by Unsworth and others to their bare essentials; in doing so, we also have in mind that scholars of the early modern period have unique needs and interests.

Specific questions:

Does the flexibility of this design model make sense for how you work as an academic? Are the three categories of activity (discovery, analysis, production) adequate? Is this model viable?

For those working in early modern studies, does this workflow reflect your experiences in working with content area materials?

If you are familiar with large scale aggregation projects, does our architecture strike you as reasonable?

Is it a viable strategy to have as our goal moving textual information in various forms through a workflow as outlined?

Technical Implementation

Earlier iterations of ReKN and PReE relied on technology that has become outdated and that struggled at the time to deal with large amounts of content. Other aggregation projects rely on Collex to aggregate large amounts of textual data. Limited tool suites for text analysis have become highly polished and are easily portable. Publication platforms proliferate. Integrating tools and resources requires awareness of multiple standards and software. We have outlined one possibility for a technology stack that will accomplish our goals.

Specific questions:

Is there any intrinsic reason why the primarily open source and available sub-components (such as Voyant or CWRC Writer) would not play well together?

Should a goal of ReKN be to formulate and argue for standards amongst and across digital projects that will facilitate the sort of interoperability we outline here?

Metadata

Aggregation projects often require some common standards in formatting content for indexing and retrieval. Iter relies on MARC records; the ARC catalogue is built on Collex; standalone projects have unique and incompatible metadata, if they have any cataloguing information; CWRC uses RDF with a particular controlled vocabulary. We have planned on using the Dublin Core standard to produce ReKN-based RDF.

Specific questions:

We hope to use Dublin Core as a standard; what controlled vocabularies are widely used and openly available for populating these fields?

What metadata and technical standards should we be prepared to incorporate?

Is it possible to have a principled approach to the level or degree of compatibility between contributing systems that a single system of metadata would require?

If ReKN chooses a unified, base level system, is Dublin Core adequate? What are its strengths and weaknesses?

Please speak to the ease and/or difficulty of crosswalking large amounts of metadata.

Copyright and Access

The effective functioning of a scholarly workflow like we have in mind relies on user authentication and several levels of access and retrieval. We anticipate a collection of aggregated content (whether full text or records) that mixes open access and proprietary content. Various projects have modelled ways of working within the confines of privately held datasets and open access tools and platforms.

Specific questions:

Please speak to your experiences with user ids, single sign on, shared authentication, and link resolution.

We have had difficulty finding projects with the type of mixed setup outlined here. Please share examples of research environments that pull in access-restricted content.

Text analysis

Our project relies heavily on the idea of integrating text analysis tools for exploration and argument into the ReKN environment. We welcome discussion, suggestions, and advice about the landscape of text analysis tools that may be integrated into the ReKN environment. We have experience with two leading Canadian projects, Voyant and TAPoR. These are in many ways flagship efforts and represent substantial interventions in how best to present text exploration to non-specialist audiences. Is there a substantive difference for the average user between the basic exploratory tools of Voyant and the single-use, advanced tools found elsewhere?

Specific Questions:

Please share examples of tools, tool sets, platforms, or other exploratory interfaces that allow users to work with large amounts of textual information.

What experiences have you had with the Voyant tool set? Does it satisfy the exploratory and non-specialist user?

Should the role of our text analysis environment be to stimulate exploration and prompt further research questions or to provide a way to establish factual arguments about texts?

Community Building

As we have written about above, Iter Community is one example of how early modernists are using digital tools and platforms to facilitate community building, social knowledge creation, and increasingly diverse scholarly communication. We hope for ReKN to actively encourage and facilitate shared intellectual activity and community formation.

Specific questions:

How can we model real-world scholarly networks in virtual space? How might ReKN work to foster communities that exist in shared virtual and physical space?

How can these weak ties be turned into strong ties that result in innovative scholarship, co-authorship, and future projects? What is the role of infrastructure in structuring these social relationships?

How might ReKN work with existing communities or groups?

Export and Publication formats

ReKN currently hopes to build in the capability to export to Microsoft Word, rich text, HTML, XML, and PDF. These represent widely used formats in the academic world and attempt to balance editing primary sources with producing secondary research.

Specific questions:

What other formats, if any, would you recommend considering?

How should middle-state publication figure in to these plans? Should HTML be optimised, for instance, for insertion into a Wordpress blog site?

Should we think about adding document metadata to work originating in the ReKN production environment?

Sustainability and Funding Models

Long term sustainability for digital projects is a major issue, especially as many innovative digital humanities projects rely extensively on grant funds for technical development and personnel costs. Sustained funding, even at small levels, is often necessary to update interfaces, convert legacy data formats, and provide for server and maintenance costs.

Specific questions:

Please speak to projects that have successfully transitioned from grant-funded development to self-sustaining or institutionally affiliated funding models.

In your experience, how have projects navigated sustainability issues, open access, and proprietary content?

Plan and Schedule for Consultation Meeting

Consultation Meeting Agenda (Tentative)

This agenda is current as of 10 January 2015 and represents our tentative plan for the consultation and planning meeting we have planned for 4-5 February 2015 in Arizona.

4 February (Wednesday)

Mid-day: Arrivals and Hotel Check In

4.00: Working Session 1

Welcome, Bob Bjork, Director of the Arizona Centre for Medieval and Modern Studies

Opening remarks by Laura Mandel, Ray Siemens, Bill Bowen, and Daniel Powell

Overall focus of the meeting and consultation processes (Ray Siemens and Bill Bowen)

Logistics and administrative overview (Daniel Powell)

Brief contextualisation of ReKN research materials (Ray Siemens, Bill Bowen, Daniel Powell, and Matthew Hiebert)

7.00: Informal Dinner (Local restaurant, voluntary)

5 February (Thursday)

9.00-10.45: Working Session 2 — Non-Technical Aspects of ReKN

9.00-9.15: Framing

9.15-10.00: Breakout sessions for each working group

10.00-10.25: Reports from each group plus a summation of key points and suggestions

10.25-10.45: Summative discussion towards a consensus on key-points

10.45-11.15: Break

11.15-1.00: Working Session 3 — Technical Architecture and Implementation of ReKN

11.15-11.30: Framing

11.30-12.15: Breakout sessions for each working group, covering the topics (1) aggregating resources; (2) tools and features; and (3) publication platforms

12.15-12.45: Reports from each group plus a summation of key points and suggestions

12.45-1.00: Summative discussion towards a consensus on key-points

1.00-2.00: Lunch (Provided)

2.00-3.00: Working Session 4 — Matching field-specific needs to technical possibilities (Agenda to be drawn from white paper and discussions from morning sessions)

3.00-4.00: Working Session 5 — Prioritising and Partnering (Agenda drawn from white paper and morning sessions, plus discussion from Working Session 4)

4.00-4.30: Summary of discussion and next steps

6 February (Friday)

Morning: Invited attendees depart, or remain for ACMRS at own expense

Afternoon: ReKN team holds follow up meetings to outline parameters for next steps in project development, consider work plans for individual team members, and discuss funding opportunities

7 February (Saturday)

ReKN team departs, or remains for ACMRS at own expense

Chapter Seven: Prototype of Resources Related to ReKN

Overview

Resources related to the Renaissance Knowledge Network can be found here:

http://rekn.itercommunity.org/

This site is the present face of the Renaissance Knowledge Network (ReKN). This public facing resource provides access to an ongoing, partially crowdsourced environmental scan of the early modern studies as it intersects with the digital humanities. This scan takes the form of a comprehensive directory of annotated resources, complemented by an annotated bibliography; both are structured by a ReKN-specific taxonomy. This facet of ReKN will also fully integrate with the wider Iter Community environment. Iter, as an established, self-sustaining, and highly-used resource, has developed Iter Community as a platform for co-created scholarly communication and dissemination.

This phase of the Renaissance Knowledge Network was initiated in 2013 at the Electronic Textual Cultures Lab as part of a one-year Andrew W. Mellon planning grant. In its first phase, ReKN provides a public collaborative annotated bibliography and environmental scan of online materials and digital tools for early modern scholars. Matt Hiebert led planning and development of this site, while I led the environmental scan and created a foundational list of content for the ReKN annotated directories and bibliographies. Where possible, annotations and abstracts were scraped from online sources, with substantial revisions by Lindsey Seatter. More recently (fall 2015) Randa El Khatib has joined the ReKN team to add further items and revise existing content. Raymond G. Siemens and Bill Bowen serve as principal investigators for the project as a whole.

Contribution to Project

Throughout 2013 and continuing to the present (fall 2015) I served as Project Manager for the ReKN project. Working closely with the principal investigators and the larger reject team, I led day-to-day work on the project as a whole, both in terms of building existing resources and planning future directions. Some of these tasks included:

- Lead author for the ReKN white paper
- Lead author of the required Andrew W. Mellon planning grant report (submitted in fall 2015)

- Leader of environmental scan and project member in charge of the building of the public-facing resource linked to above
- Organiser of the ReKN planning meeting that took place in conjunction with the Arizona Centre for Medieval and Renaissance Studies Conference in February 2015
- Lead author of the follow-up report summarising our discussions at the Arizona planning meeting
- Lead author of the subsequent implementation grant (approximately $500,000 CAD), currently (November 2015) under consideration by the Andrew W. Mellon Foundation

The remainder of this chapter contains a number of screenshots chosen to demonstrate the project's design, functionality, and affordances.

Images drawn from the Renaissance Knowledge Network

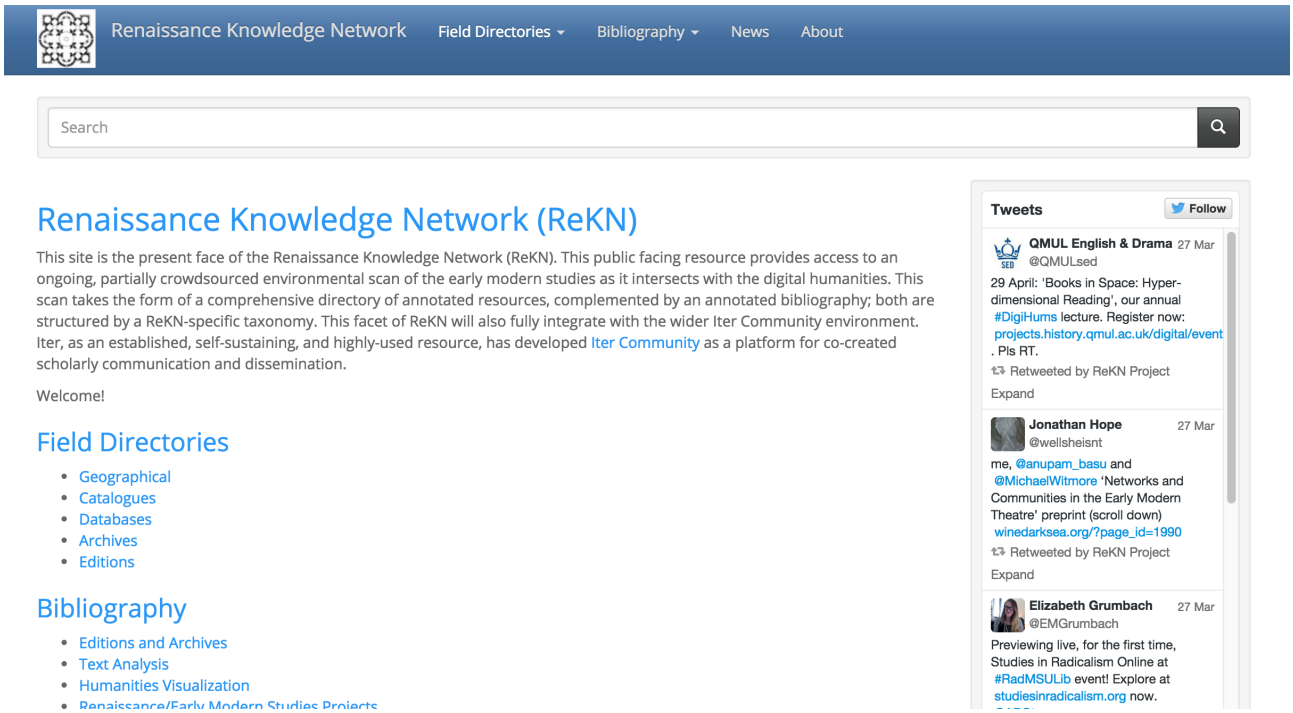


Figure 7 - 1: The homepage and partial table of contents of the Renaissance Knowledge Network. Renaissance Knowledge Network, http://rekn.itercommunity.org. All subsequent figures in this chapter may also be found on this domain.

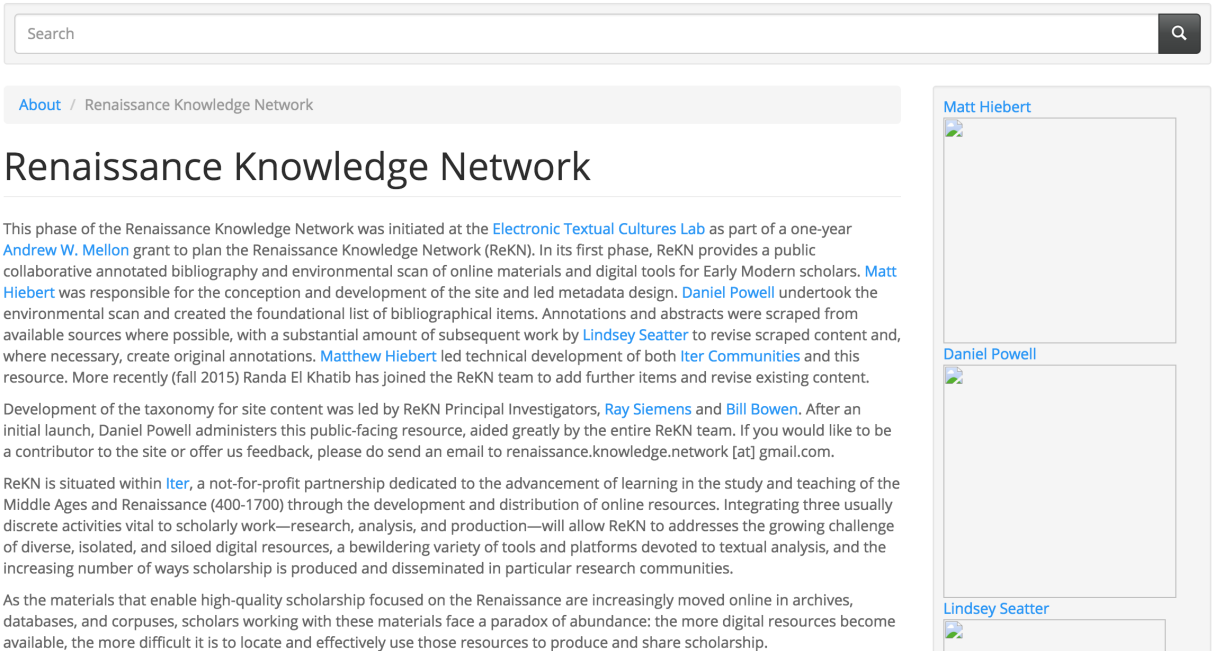


Figure 7 - 2: About the Renaissance Knowledge Network.

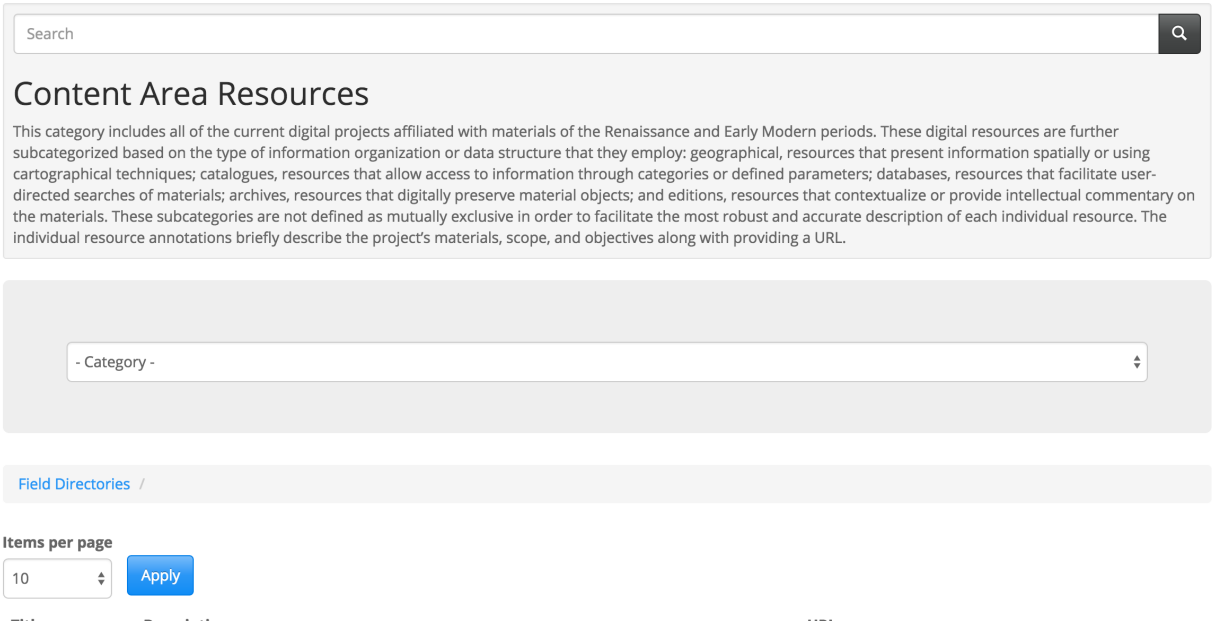


Figure 7 - 3: Detail and description of Content Area Resources annotated by the Renaissance Knowledge Network.

Digital Archive of Inaugural Lectures at Renaissance and Early Modern Universities	Digital Archive of Inaugural Lectures at Renaissance and Early Modern Universities is an online archive and database that preserves the "inaugural lectures of single university courses given from the Renaissance to the beginning of the eighteenth century". The project rationale is that while many of these documents are extant, they exist in few very copies and receive very little critical attention. Digital Archive of Inaugural Lectures at Renaissance and Early Modern Universities "aims to facilitate scholars in the examination of these documents by providing them with an access to a digital collection of searchable descriptions, digital photo-reproductions and codified transcriptions".	http://www.daril.eu/index.php?id=4andL=1
Digital Donne	"DigitalDonne is the online component of The Variorum Edition of the Poetry of John Donne (8 vols. Indiana UP, 1995-) a collaborative work drawing on the labors of over 30 scholars from the United States and abroad". The aim of the digital edition is two-fold: "to produce a newly edited critical text based on exhaustive analysis of all known manuscript and significant print sources of Donne's poetry and to present a complete digest of critical and scholarly commentary on the poetry from Donne's time to the present". The DigitalDonne project began in 1980 and in 2005 the online component was "substantially expanded" in order to accommodate a wide array of analytical and bibliographical tools. Recently, the project has expanded again to include "the most important of the early editions and manuscripts upon which the Variorum is based".	http://digitaldonne.tamu.edu/
Digitized Travel Accounts of Late Medieval and Early Modern Europe	Digitized Travel Accounts of Late Medieval and Early Modern Europe "aims to advance research on late medieval and early modern European travel accounts. This project provides digitized editions and research literature on approx. 375 different travels and pilgrimages through Europe in historical times". The majority of the information presented on this database was collected from "'analytical bibliographies' of medieval travel accounts". This database allows users to explore traveller records based on native country.	http://www.digiberichte.de/
Early Americas Digital Archive	The Early Americas Digital Archive (EADA) is an online database "of electronic texts and links to texts originally written in or about the Americas from 1492 to approximately 1820". EADA is an open resource developed for public research and teaching purposes. EADA was developed with the intention of serving as a "long-term and inter-disciplinary project	http://mith.umd.edu//eada/

Figure 7 - 4: Detail of early modern studies projects and accompanying annotations within Content Area Resources.

British Printed Images to 1700 (bpi1700)	"Began in April 2006, funded by the Arts and Humanities Research Council (AHRC) under their Resource Enhancement Scheme" and "led by Professor Michael Hunter from the School of History, Classics and Archaeology at Birkbeck, University of London, bpi1700 is a collaboration between Birkbeck and technical staff at the Centre for Computing in the Humanities at King's College, London." The British Printed Images to 1700 is a digital archive and library housing the prints and book illustrations of the Early Modern era. The project aims to offer various resources that expand scholarly knowledge of and understanding of the print library. The project is centred on a searchable print database that allows access to thousands of images.	http://www.bpi1700.org.uk/index.html
Calendrier Àlectronique des Spectacles sous l'ancien regime et sous la révolution	CESAR is an image database that archives various objects related to the French theatre of the seventeenth and eighteenth centuries. The imagebank and database preserve artistic renderings or engravings of portraits, stage-sets, playbills, frontispieces, and much more. CESAR is premised on connectivity and collaboration. It is the aim of the resources to link students, scholars, and enthusiasts together. The extensive project "contents are freely available and it is hoped that scholars working on any aspect of Ancien Régime and Revolutionary theatre will help to make this resource even more comprehensive and as reliable as possible by contributing data, annotations and corrections and by offering support in developing the site".	http://www.cesar.org.uk/cesar2/
Circulation of Knowledge and Learned Practices in the 17th Century Dutch Republic	Circulation of Knowledge and Learned Practices in the 17th Century Dutch Republic aims to explore and visualize how knowledge circulated during the booming scientific revolution of the 17th-century. In order to answer how knowledge was disseminated and appropriated, Circulation of Knowledge and Learned Practices in the 17th Century Dutch Republic built a web application called ePistolarium. Using this tool, researchers can "can browse and analyze around 20,000 letters that were written by and sent to 17th century scholars who lived in the Dutch Republic. Moreover, the ePistolarium enables visualizations of geographical, time-based, social network and co-citation inquiries".	http://ckcc.huygens.knaw.nl/
Cultures of	Begun in 2009, Cultures of Knowledge is a "collaborative, interdisciplinary research project based	http://www.culturesofknowledge.org

Figure 7 - 5: Detail of early modern studies projects and accompanying annotations within Content Area Resources.

Folger Digital Texts	The Folger Digital Texts are "free, high-quality digital texts of Shakespeare's plays and poems start with the basics: superb source texts, meticulously edited on the basis of current scholarship". The Folger Digital Texts are online renderings of the Folger Shakespeare Library editions completed in 2010 by editors Barbara Mowat and Paul Werstine. The digital texts have been enhanced with sophisticated coding that allows the poems and plays to be read as well as searched. The Folger Digital Texts are fully available in .pdf or.xml files to download for scholarly or personal use. This open access policy ensures the widest reach of this fabulous resource.	http://www.folgerdigitaltexts.org/
Henslowe-Alleyn Digitisation Project	The Henslowe-Alleyn archive preserves the personal and professional paper of Edward Alleyn and his father-in-law Philip Henslowe. Together, "these manuscripts comprise the largest and most important single extant archive of material on the professional theatre and dramatic performance in early modern England, the age of Shakespeare, Marlowe, Jonson, Middleton, Heywood, Dekker, Chettle, and so many of their contemporaries and colleagues". The aims of this digitization project are two-fold: "first, to protect and conserve these increasingly fragile manuscripts, and, second, to make their contents much more widely available in a free electronic archive and website, not only to specialist scholars but to all those interested in early modern English drama and theatre history, as well as social, economic, regional, architectural, and legal history, and palaeography and manuscript studies". The catalogue provides access to high-quality facsimiles of their material.	http://www.henslowe-alleyn.org.uk/index.html
Internet Shakespeare Editions	Established in 1996, "the Internet Shakespeare Editions (ISE) is a non-profit scholarly website publishing in three main areas: Shakespeare's plays and poems, Shakespeare's life and times, and Shakespeare in performance". The mission of the ISE is "to inspire a love of Shakespeare's works in a world-wide audience by delivering open-access, peer-reviewed Shakespeare resources with the highest standards of scholarship, design, and usability". In order to accomplish this goal the ISE has employed a team of scholars to re-edit each of Shakespeare's plays for a the digital medium. These editions are published as they progress - making the content available when it is completed and allowing the integration of multimedia to enhance the value of the edition.	http://internetshakespeare.uvic.ca/
John Foxe's	John Foxe's The Acts and Monuments Online, appearing online and unabridged after a 15-year	http://www.johnfoxe.org/

Figure 7 - 6: Detail of early modern studies projects and accompanying annotations within Content Area Resources.

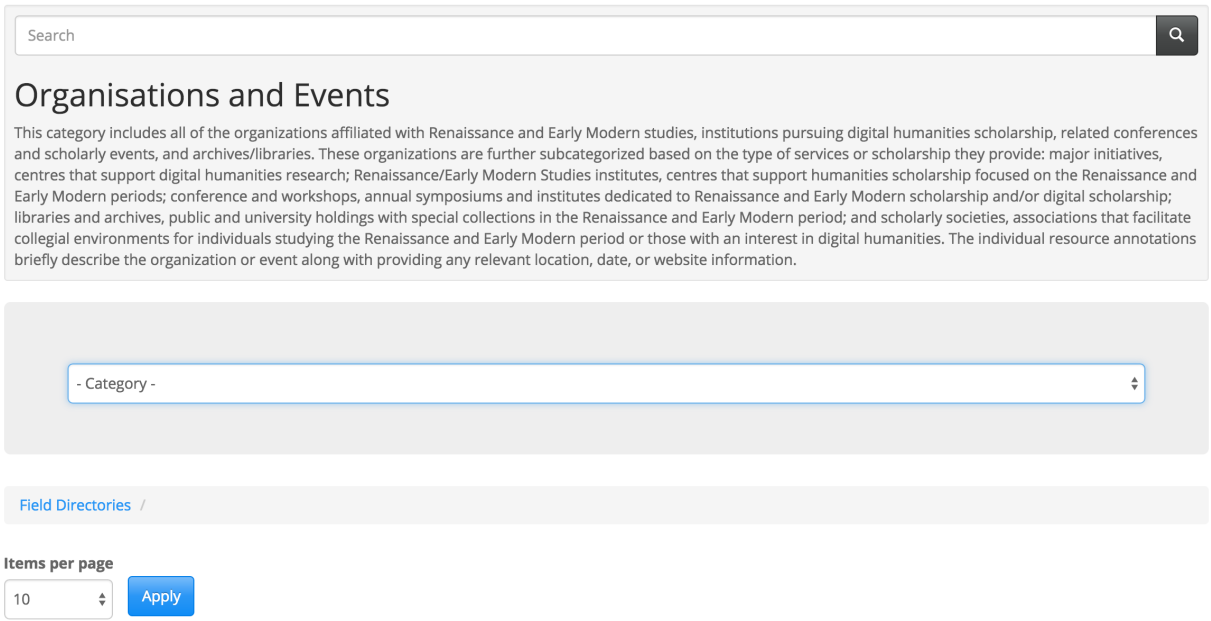


Figure 7 - 7: Detail and description of Organisations and Events annotated by the Renaissance Knowledge Network.

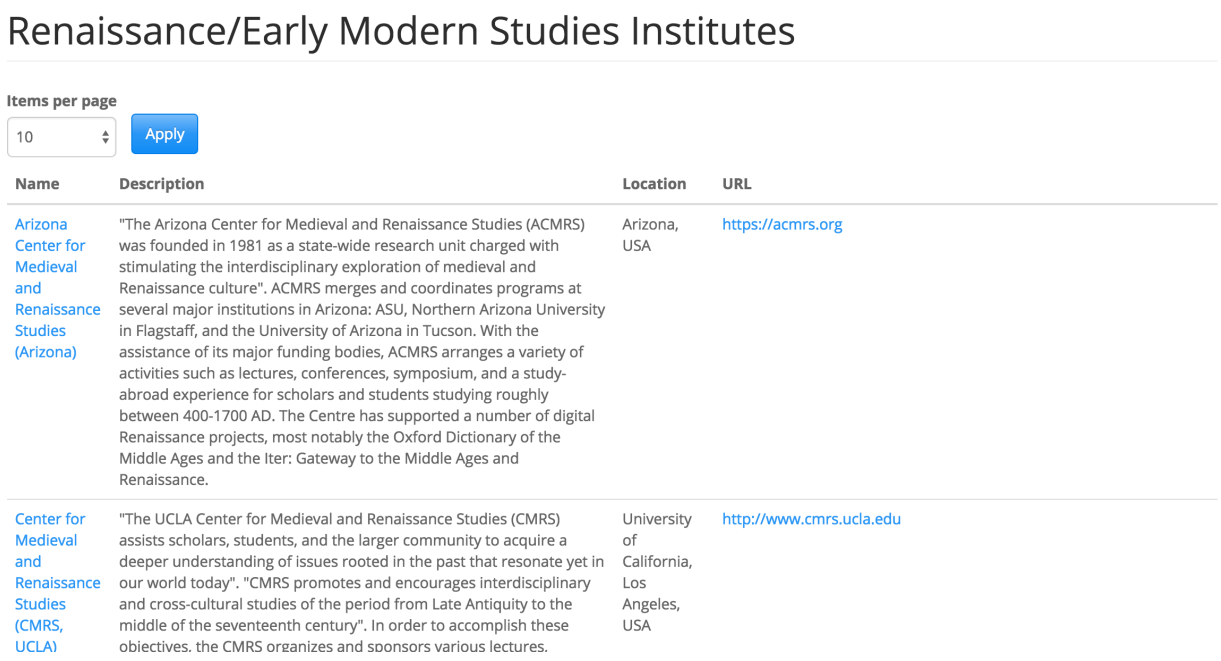


Figure 7 - 8: Detail of Early Modern Studies Institutes and accompanying annotations within Organisations and Events.

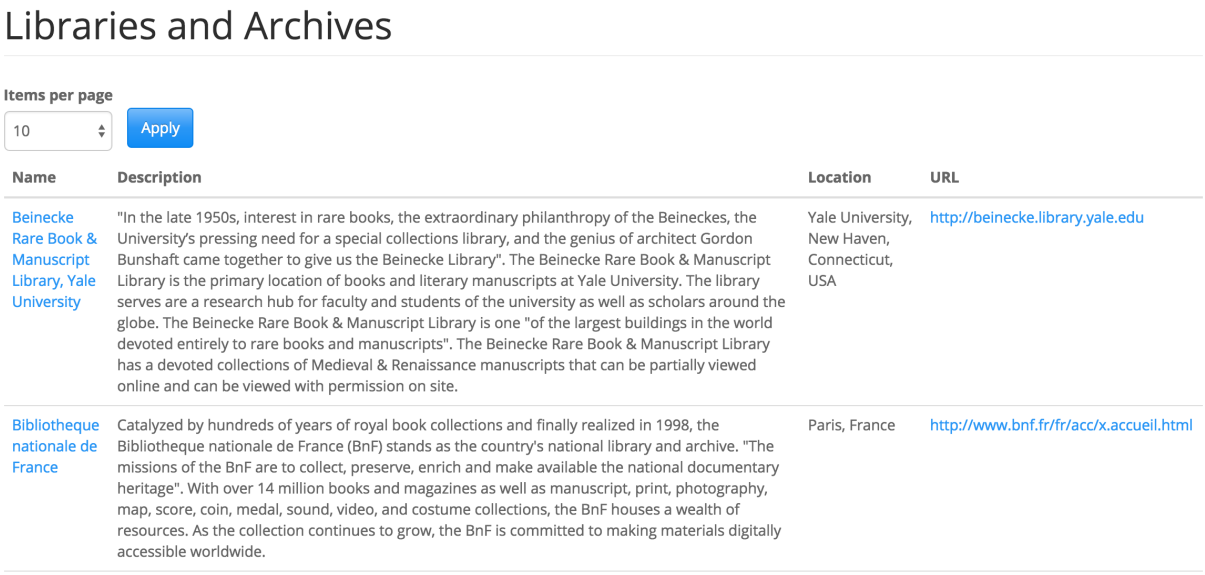


Figure 7 - 9: Detail of Libraries and Archives and accompanying annotations within Organisations and Events.

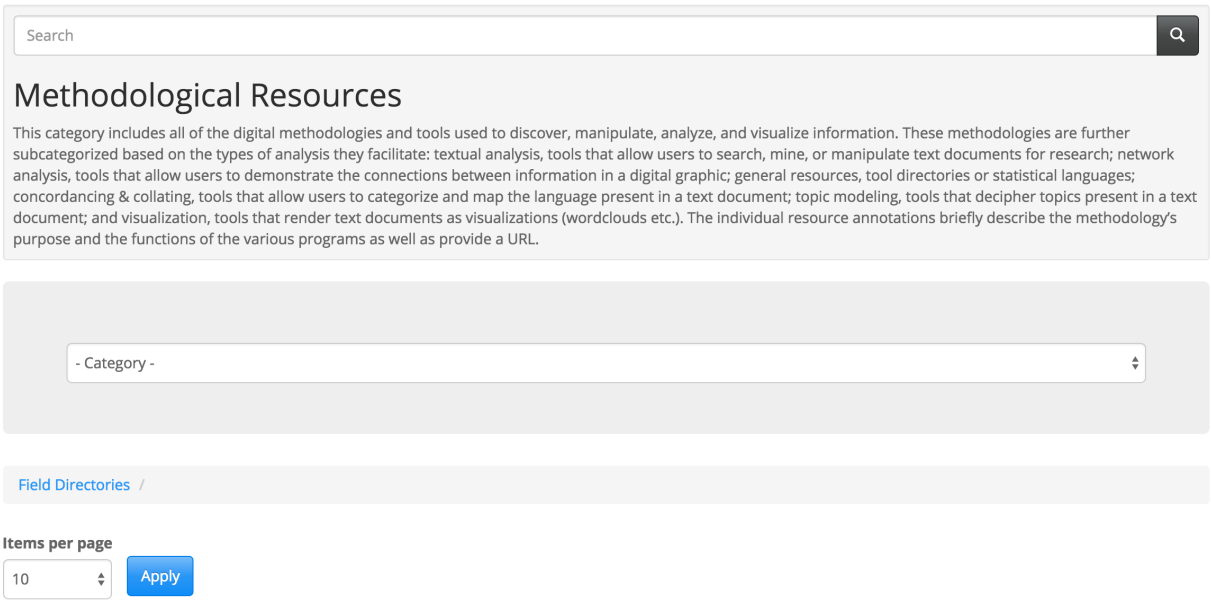


Figure 7 - 10: Detail and description of Methodological Resources annotated by the Renaissance Knowledge Network.

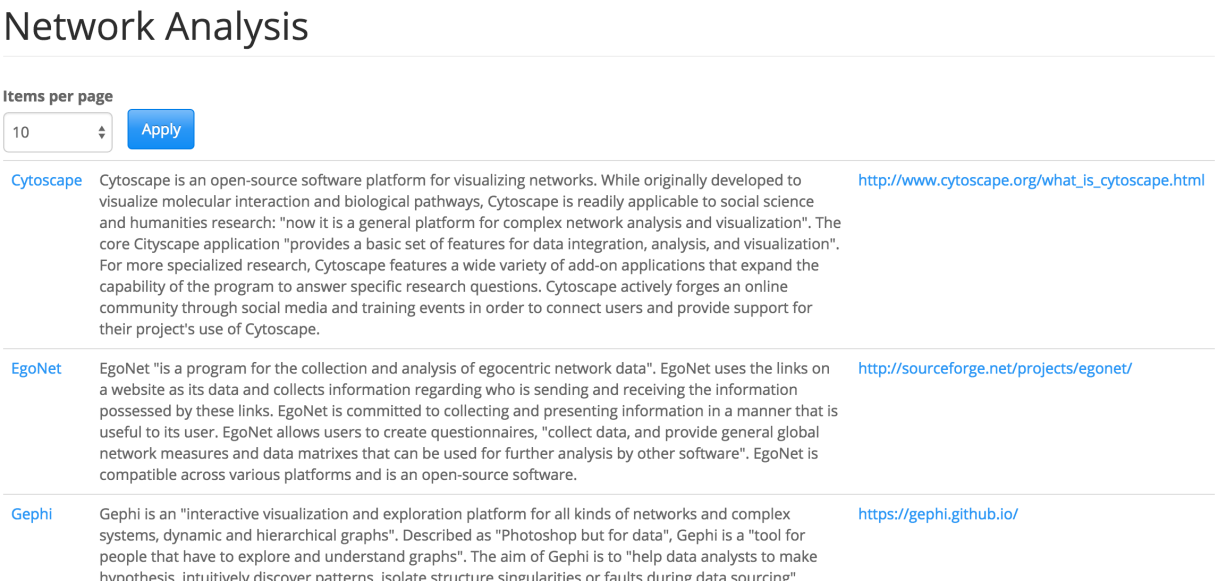
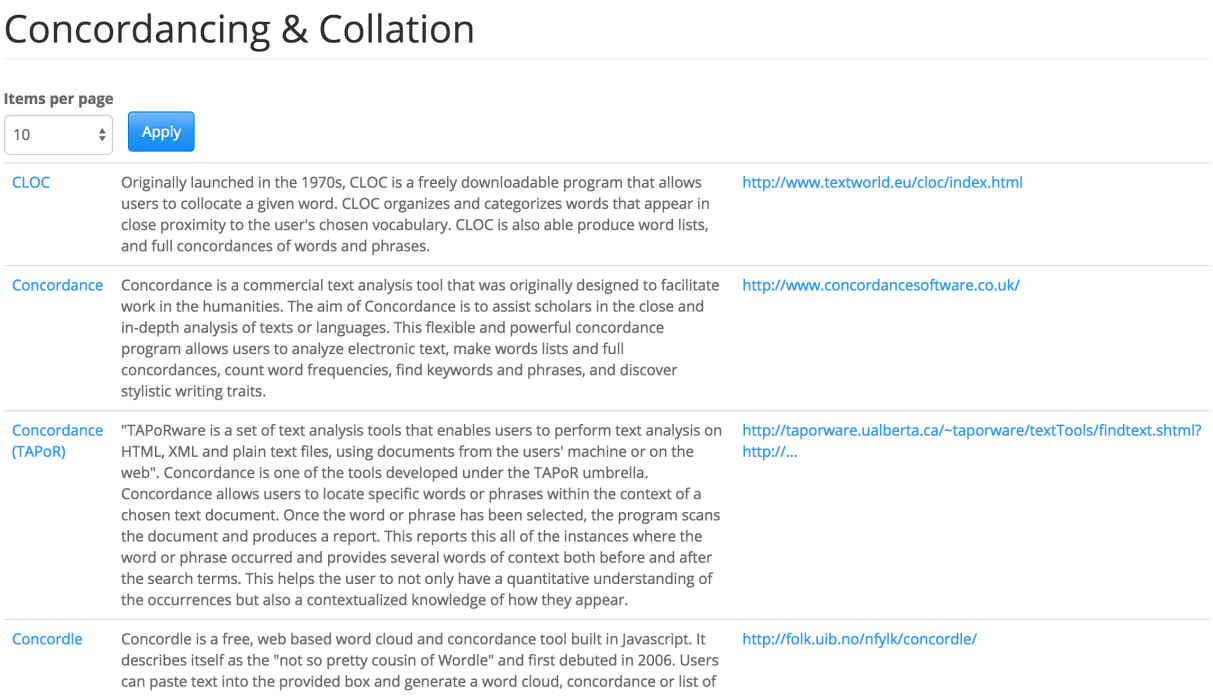


Figure 7 - 11: Detail of Network Resources and accompanying annotations within Methodological Resources.



Concordancing & Collation

Items per page

10 Apply

CLOC	Originally launched in the 1970s, CLOC is a freely downloadable program that allows users to collocate a given word. CLOC organizes and categorizes words that appear in close proximity to the user's chosen vocabulary. CLOC is also able produce word lists, and full concordances of words and phrases.	http://www.textworld.eu/cloc/index.html
Concordance	Concordance is a commercial text analysis tool that was originally designed to facilitate work in the humanities. The aim of Concordance is to assist scholars in the close and in-depth analysis of texts or languages. This flexible and powerful concordance program allows users to analyze electronic text, make words lists and full concordances, count word frequencies, find keywords and phrases, and discover stylistic writing traits.	http://www.concordancesoftware.co.uk/
Concordance (TAPoR)	"TAPoRware is a set of text analysis tools that enables users to perform text analysis on HTML, XML and plain text files, using documents from the users' machine or on the web". Concordance is one of the tools developed under the TAPoR umbrella. Concordance allows users to locate specific words or phrases within the context of a chosen text document. Once the word or phrase has been selected, the program scans the document and produces a report. This reports this all of the instances where the word or phrase occurred and provides several words of context both before and after the search terms. This helps the user to not only have a quantitative understanding of the occurrences but also a contextualized knowledge of how they appear.	http://taporware.ualberta.ca/~taporware/textTools/findtext.shtml?http://...
Concordle	Concordle is a free, web based word cloud and concordance tool built in Javascript. It describes itself as the "not so pretty cousin of Wordle" and first debuted in 2006. Users can paste text into the provided box and generate a word cloud, concordance or list of	http://folk.uib.no/nfylk/concordle/

Figure 7 - 12: Detail of Concordance and Collation resources and accompanying annotations within Methodological Resources.

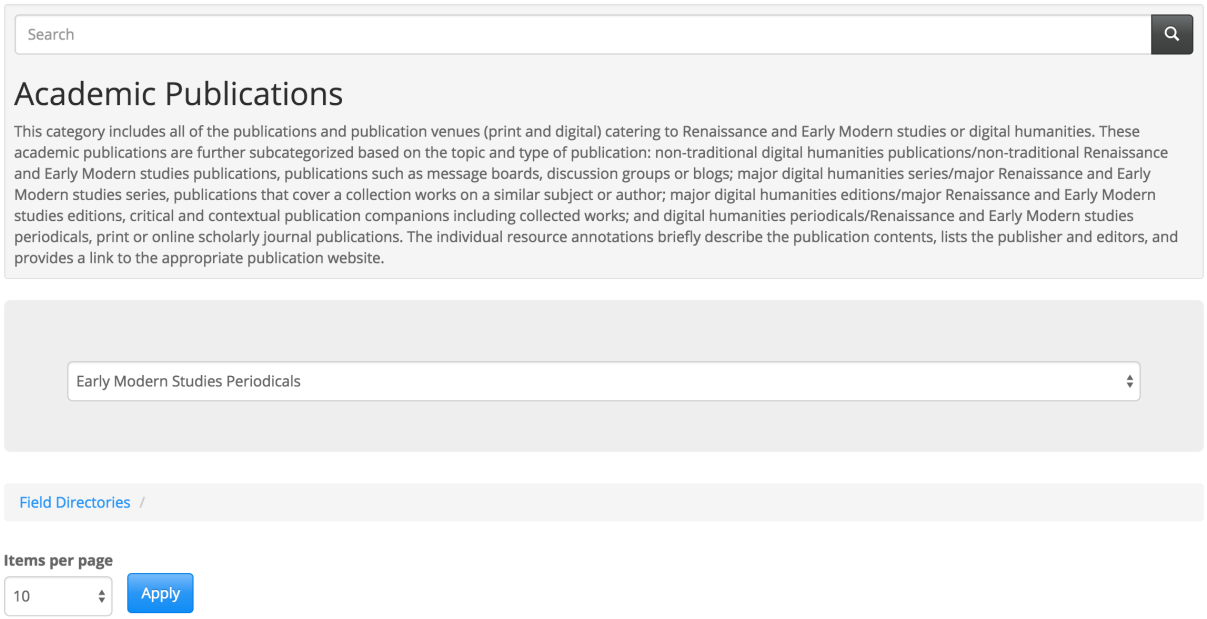
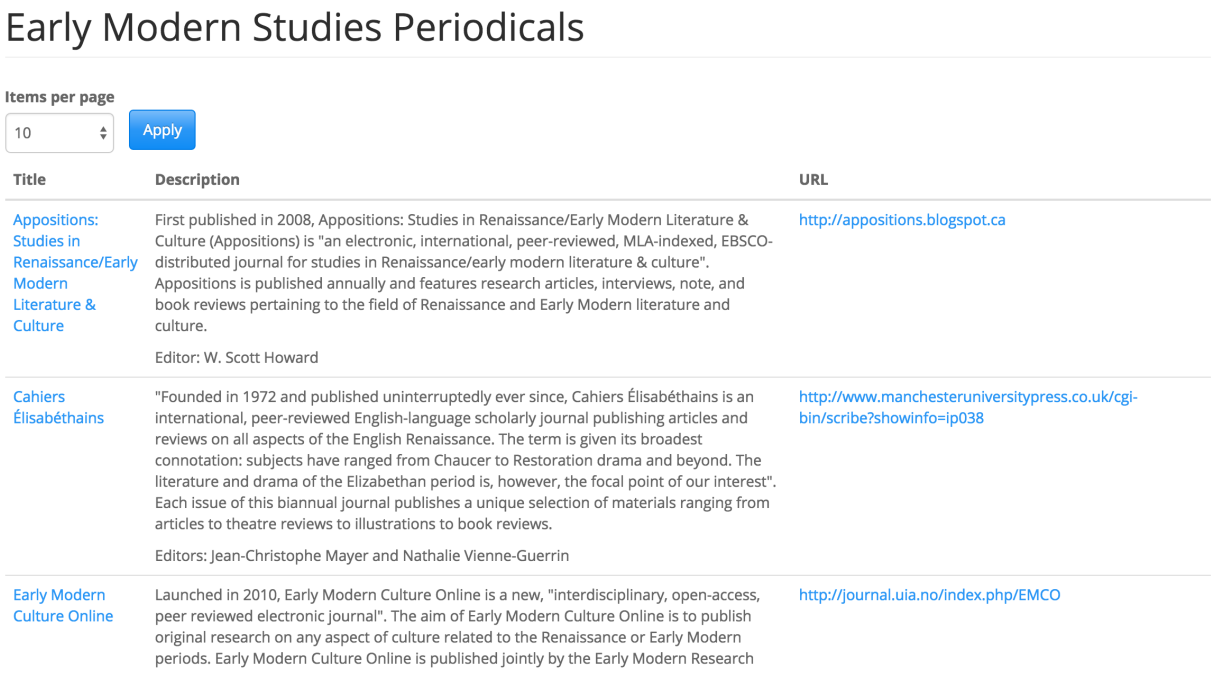


Figure 7 - 13: Detail and description of Academic Publications annotated by the Renaissance Knowledge Network.



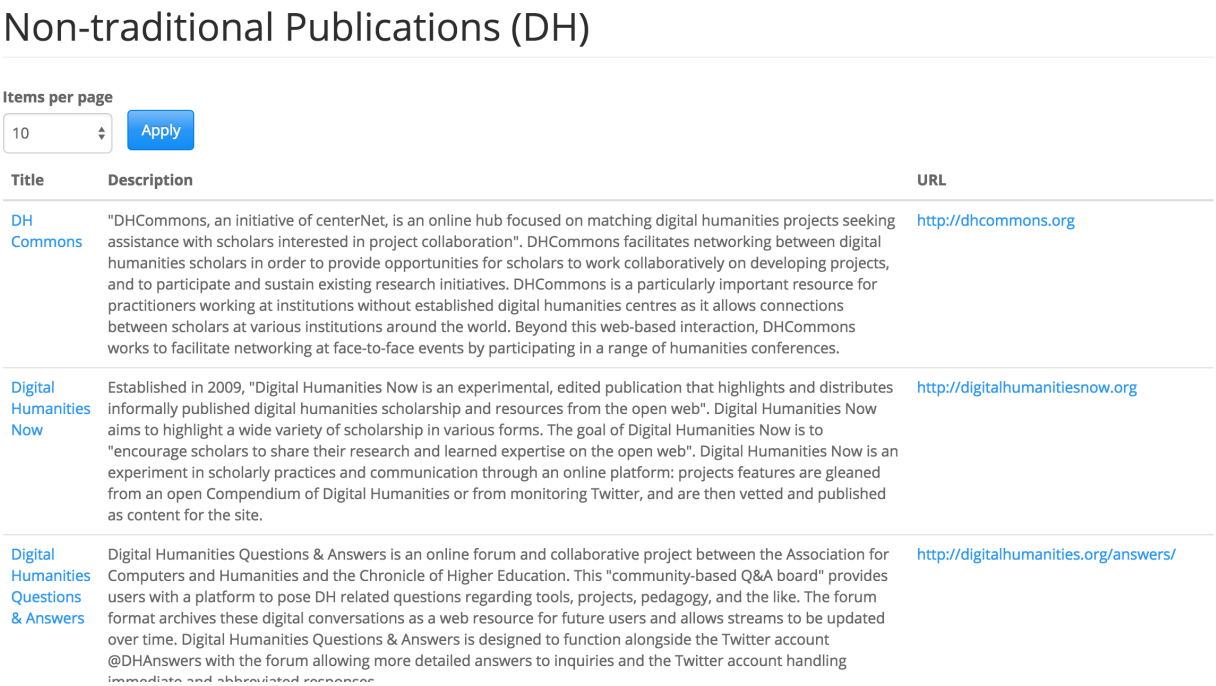
Early Modern Studies Periodicals

Items per page

10 Apply

Title	Description	URL
Appositions: Studies in Renaissance/Early Modern Literature & Culture	First published in 2008, Appositions: Studies in Renaissance/Early Modern Literature & Culture (Appositions) is "an electronic, international, peer-reviewed, MLA-indexed, EBSCO-distributed journal for studies in Renaissance/early modern literature & culture". Appositions is published annually and features research articles, interviews, note, and book reviews pertaining to the field of Renaissance and Early Modern literature and culture. Editor: W. Scott Howard	http://appositions.blogspot.ca
Cahiers Élisabéthains	"Founded in 1972 and published uninterruptedly ever since, Cahiers Élisabéthains is an international, peer-reviewed English-language scholarly journal publishing articles and reviews on all aspects of the English Renaissance. The term is given its broadest connotation: subjects have ranged from Chaucer to Restoration drama and beyond. The literature and drama of the Elizabethan period is, however, the focal point of our interest". Each issue of this biannual journal publishes a unique selection of materials ranging from articles to theatre reviews to illustrations to book reviews. Editors: Jean-Christophe Mayer and Nathalie Vienne-Guerrin	http://www.manchesteruniversitypress.co.uk/cgi-bin/scribe?showinfo=ip038
Early Modern Culture Online	Launched in 2010, Early Modern Culture Online is a new, "interdisciplinary, open-access, peer reviewed electronic journal". The aim of Early Modern Culture Online is to publish original research on any aspect of culture related to the Renaissance or Early Modern periods. Early Modern Culture Online is published jointly by the Early Modern Research	http://journal.uia.no/index.php/EMCO

Figure 7 - 14: Detail of Early Modern Studies Periodicals and accompanying annotations within Academic Publications.



Non-traditional Publications (DH)

Items per page

10 Apply

Title	Description	URL
DH Commons	"DHCommons, an initiative of centerNet, is an online hub focused on matching digital humanities projects seeking assistance with scholars interested in project collaboration". DHCommons facilitates networking between digital humanities scholars in order to provide opportunities for scholars to work collaboratively on developing projects, and to participate and sustain existing research initiatives. DHCommons is a particularly important resource for practitioners working at institutions without established digital humanities centres as it allows connections between scholars at various institutions around the world. Beyond this web-based interaction, DHCommons works to facilitate networking at face-to-face events by participating in a range of humanities conferences.	http://dhcommons.org
Digital Humanities Now	Established in 2009, "Digital Humanities Now is an experimental, edited publication that highlights and distributes informally published digital humanities scholarship and resources from the open web". Digital Humanities Now aims to highlight a wide variety of scholarship in various forms. The goal of Digital Humanities Now is to "encourage scholars to share their research and learned expertise on the open web". Digital Humanities Now is an experiment in scholarly practices and communication through an online platform: projects features are gleaned from an open Compendium of Digital Humanities or from monitoring Twitter, and are then vetted and published as content for the site.	http://digitalhumanitiesnow.org
Digital Humanities Questions & Answers	Digital Humanities Questions & Answers is an online forum and collaborative project between the Association for Computers and Humanities and the Chronicle of Higher Education. This "community-based Q&A board" provides users with a platform to pose DH related questions regarding tools, projects, pedagogy, and the like. The forum format archives these digital conversations as a web resource for future users and allows streams to be updated over time. Digital Humanities Questions & Answers is designed to function alongside the Twitter account @DHAnswers with the forum allowing more detailed answers to inquiries and the Twitter account handling	http://digitalhumanities.org/answers/

Figure 7 - 15: Detail of Non-traditional Publications within digital humanities and accompanying annotations within Academic Publications.

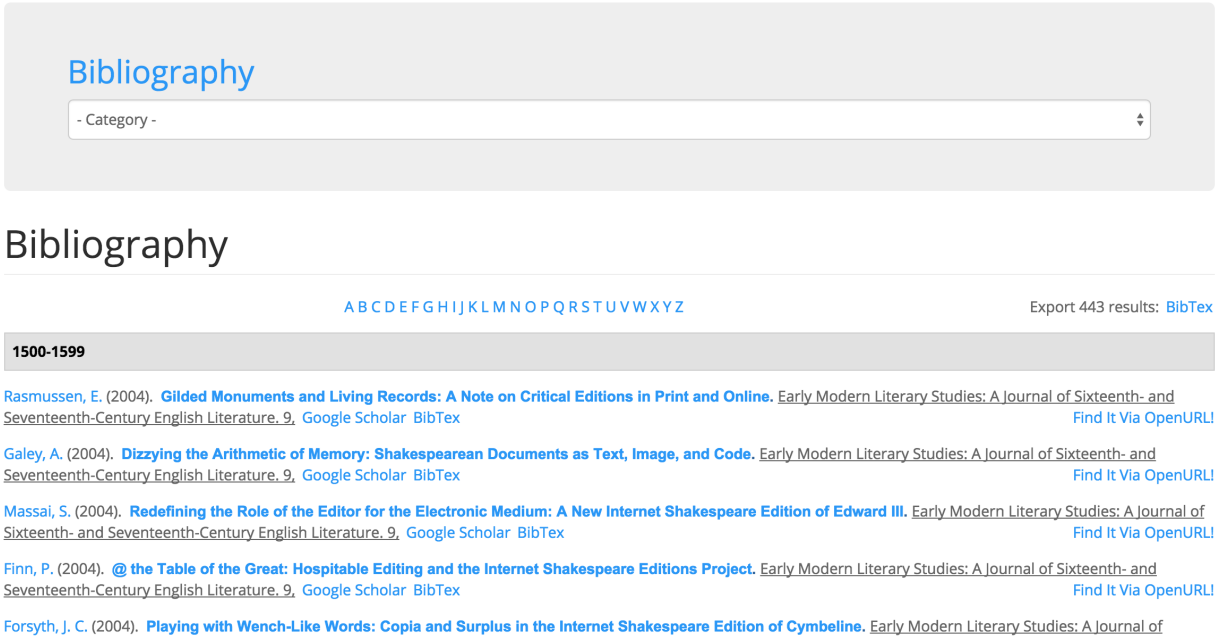


Figure 7 - 16: Detail of the Bibliography of the Renaissance Knowledge Network.

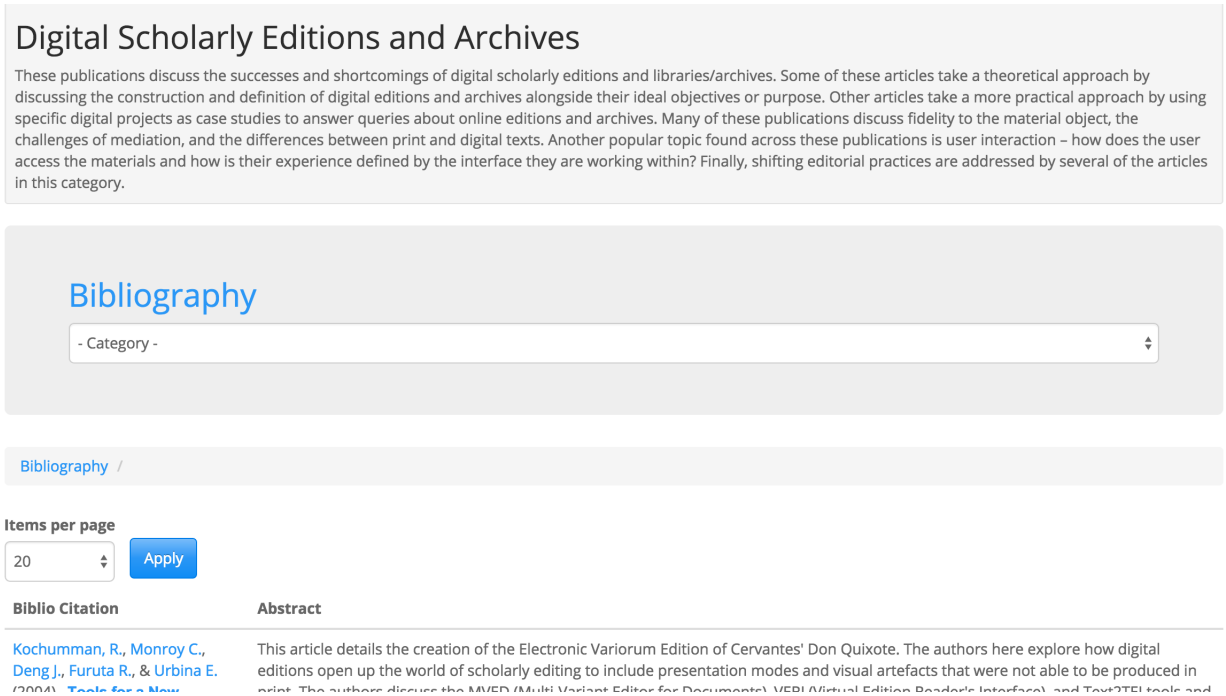


Figure 7 - 17: Detail of publications related to Digital Scholarly Editions and Archives and accompanying annotations within the project Bibliography.

Viscomi, J. (2002). **Digital Facsimiles: Reading the William Blake Archive.** Computers and the Humanities. 36, 27–48. Google Scholar BibTex Find It Via OpenURL!	In this article Joseph Viscomi critically address the issues presented with digital transcription and digital facsimile specific to the case of unique Romantic poet/illustrator William Blake. The failures to capture the physical qualities of Blake's text in modern print led to the creation of the Blake Archive in 1993. Overall, the Archive responds to all of the needs of such a varied body of work. The Blake Archive's attention to technological innovation and consistent privileging of the original work make it the "first place to stop when studying Blake." The Archive continues to strive to be a "pacesetting instance of a fundamental shift in the ideas of 'archive,' 'catalogue,' and 'edition' as both processes and products."
O'Donnell, D. Paul (2009). **Back to the future: what digital editors can learn from print editorial practice.** Literary and Linguistic Computing. 24, 113–125. Google Scholar Find It Via OpenURL! BibTex	In this article, Daniel O'Donnell examines the questions of theory, practice, and form when it comes to creating a digital edition. O'Donnell begins by acknowledging the various departures from the "normal" edition that are made possible in the digital medium: interactivity with uses, multiple displays, virtual realities, and decentred texts. However, O'Donnell argues that, despite the assumed divide, the print edition may inform and shape the trajectory of the digital in more ways than are anticipated. O'Donnell draws on the Old English text Caedmon's Hymn as a case study to show that the future of the digital lies in the print practices of the past.
Pierazzo, E. (2011). **A rationale of digital documentary editions.** Literary and Linguistic Computing. Find It Via OpenURL! Google Scholar BibTex	In this article, Elena Pierazzo argues for and illustrates the differences between print and digital editions. Pierazzo uses the Jane Austen's Fiction Manuscripts website as a case study. Pierazzo asserts that all editions - including digital editions - present selections of facts through an interpretive lens. However, whereas with print editions the medium of publication inhibited the types of selections scholars could make, the digital medium is face with the opposite issue - where to stop. Pierazzo suggest that editors consider the purpose of the edition, the intended audience of the edition, and the nature of the document they are working with when making their selections. Pierazzo concludes with a discussion on the purpose of including a facsimile alongside a diplomatic transcription edition.
Lavagnino, J. (2009). **Access.** Literary and Linguistic Computing. 24, 63–76. Google Scholar Find It Via OpenURL! BibTex	In this article, John Lavagnino discusses the current status of textual editions: how they are compiled, how they succeed, and how they fail. Lavagnino begins by creating a distinction between the mandates of digital editions and digital libraries. He moves on to discussing the biggest barriers preventing successful digital editions: the incorporation of two audiences. Lavagnino argues that the goal of catering to both a critical, literary audience and an editorial audiences sets digital editions up for limited success. Lavagnino argues that to overcome this challenge editions must be vigilant in providing the right material not all material. It is suggested that editions redefine themselves as criticism with textual access instead of text access and criticism in order to achieve great success.

Figure 7 - 18: Detail of publications related to Digital Scholarly Editions and Archives and accompanying annotations within the project Bibliography.

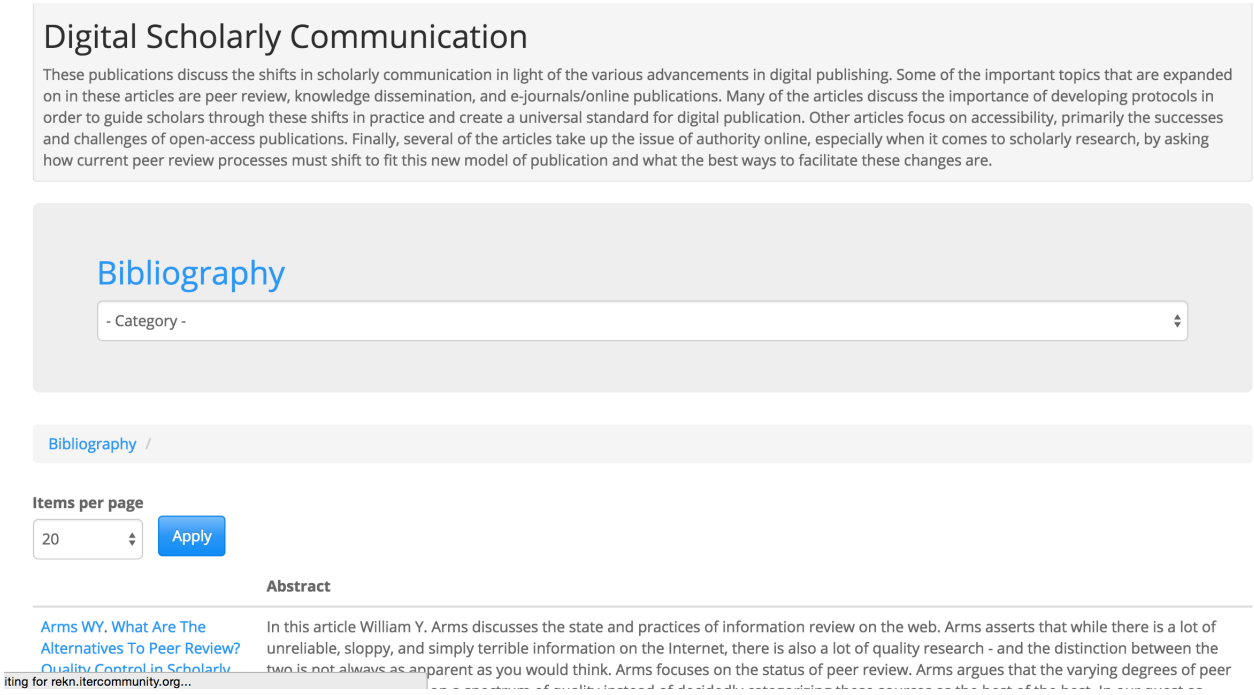
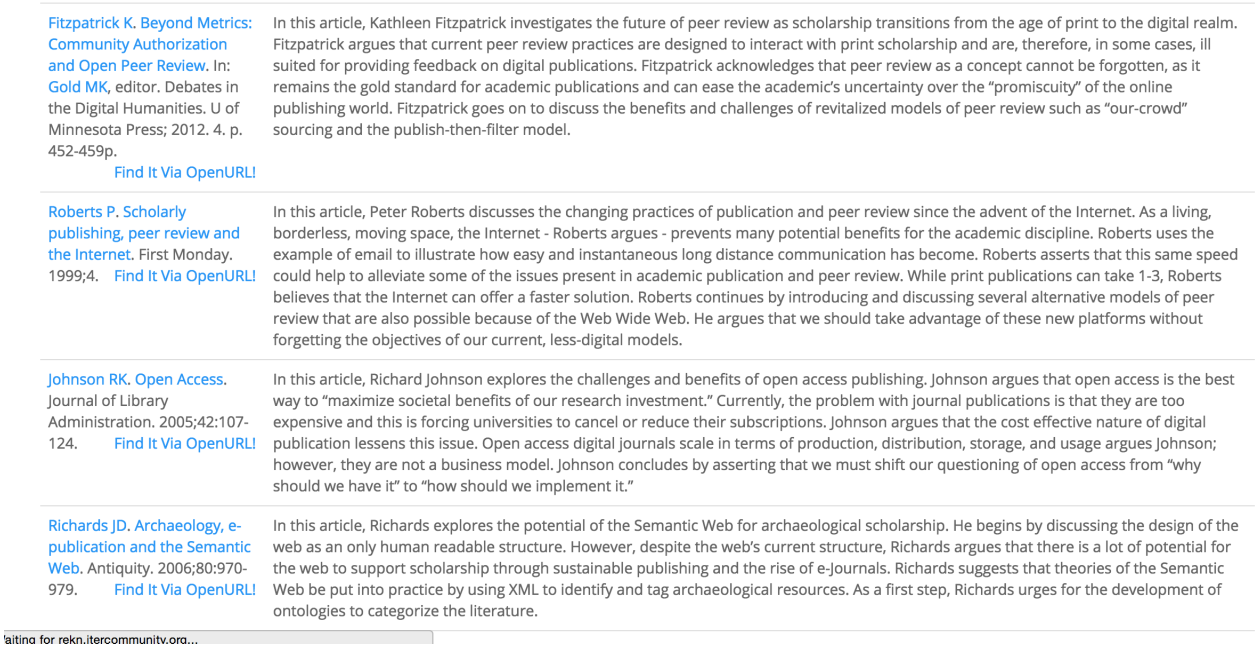


Figure 7 - 19: Detail and description of publications related to Digital Scholarly Communication and accompanying annotations within the project Bibliography.



Fitzpatrick K. Beyond Metrics: Community Authorization and Open Peer Review. In: Gold MK, editor. Debates in the Digital Humanities. U of Minnesota Press; 2012. 4. p. 452-459p. Find It Via OpenURL!	In this article, Kathleen Fitzpatrick investigates the future of peer review as scholarship transitions from the age of print to the digital realm. Fitzpatrick argues that current peer review practices are designed to interact with print scholarship and are, therefore, in some cases, ill suited for providing feedback on digital publications. Fitzpatrick acknowledges that peer review as a concept cannot be forgotten, as it remains the gold standard for academic publications and can ease the academic's uncertainty over the "promiscuity" of the online publishing world. Fitzpatrick goes on to discuss the benefits and challenges of revitalized models of peer review such as "our-crowd" sourcing and the publish-then-filter model.
Roberts P. Scholarly publishing, peer review and the Internet. First Monday. 1999;4. Find It Via OpenURL!	In this article, Peter Roberts discusses the changing practices of publication and peer review since the advent of the Internet. As a living, borderless, moving space, the Internet - Roberts argues - prevents many potential benefits for the academic discipline. Roberts uses the example of email to illustrate how easy and instantaneous long distance communication has become. Roberts asserts that this same speed could help to alleviate some of the issues present in academic publication and peer review. While print publications can take 1-3, Roberts believes that the Internet can offer a faster solution. Roberts continues by introducing and discussing several alternative models of peer review that are also possible because of the Web Wide Web. He argues that we should take advantage of these new platforms without forgetting the objectives of our current, less-digital models.
Johnson RK. Open Access. Journal of Library Administration. 2005;42:107-124. Find It Via OpenURL!	In this article, Richard Johnson explores the challenges and benefits of open access publishing. Johnson argues that open access is the best way to "maximize societal benefits of our research investment." Currently, the problem with journal publications is that they are too expensive and this is forcing universities to cancel or reduce their subscriptions. Johnson argues that the cost effective nature of digital publication lessens this issue. Open access digital journals scale in terms of production, distribution, storage, and usage argues Johnson; however, they are not a business model. Johnson concludes by asserting that we must shift our questioning of open access from "why should we have it" to "how should we implement it."
Richards JD. Archaeology, e-publication and the Semantic Web. Antiquity. 2006;80:970-979. Find It Via OpenURL!	In this article, Richards explores the potential of the Semantic Web for archaeological scholarship. He begins by discussing the design of the web as an only human readable structure. However, despite the web's current structure, Richards argues that there is a lot of potential for the web to support scholarship through sustainable publishing and the rise of e-Journals. Richards suggests that theories of the Semantic Web be put into practice by using XML to identify and tag archaeological resources. As a first step, Richards urges for the development of ontologies to categorize the literature.

Figure 7 - 20: Detail of publications related to Digital Scholarly Communication and accompanying annotations within the project Bibliography.

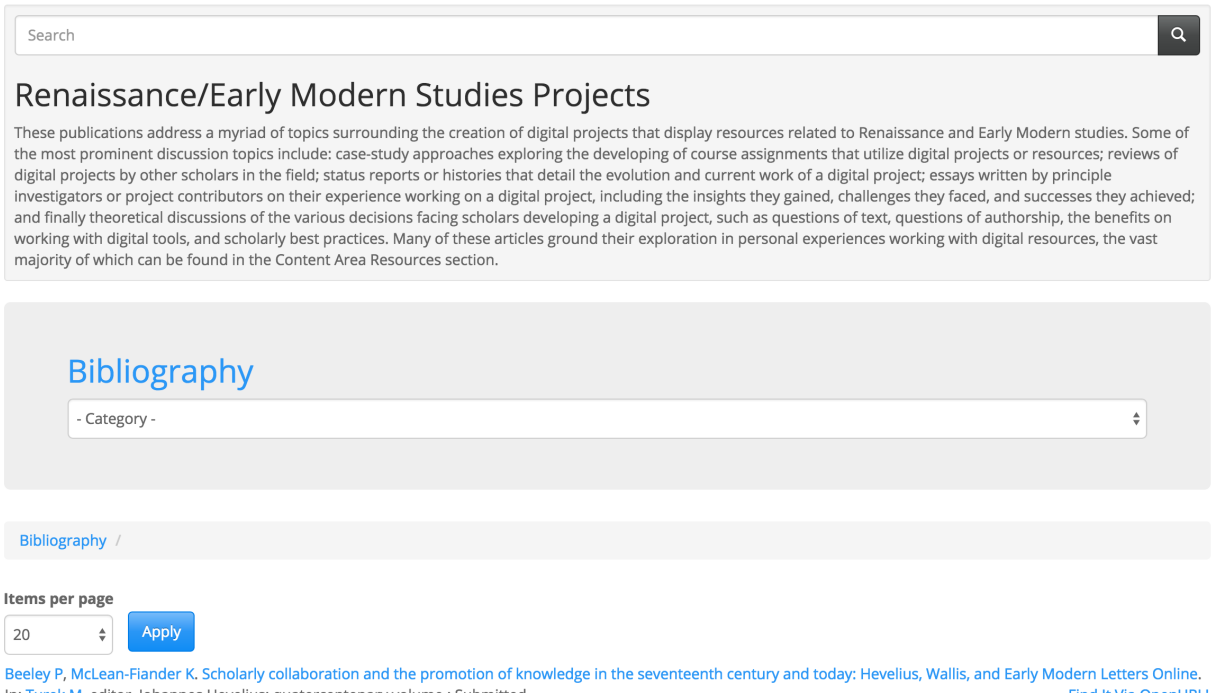
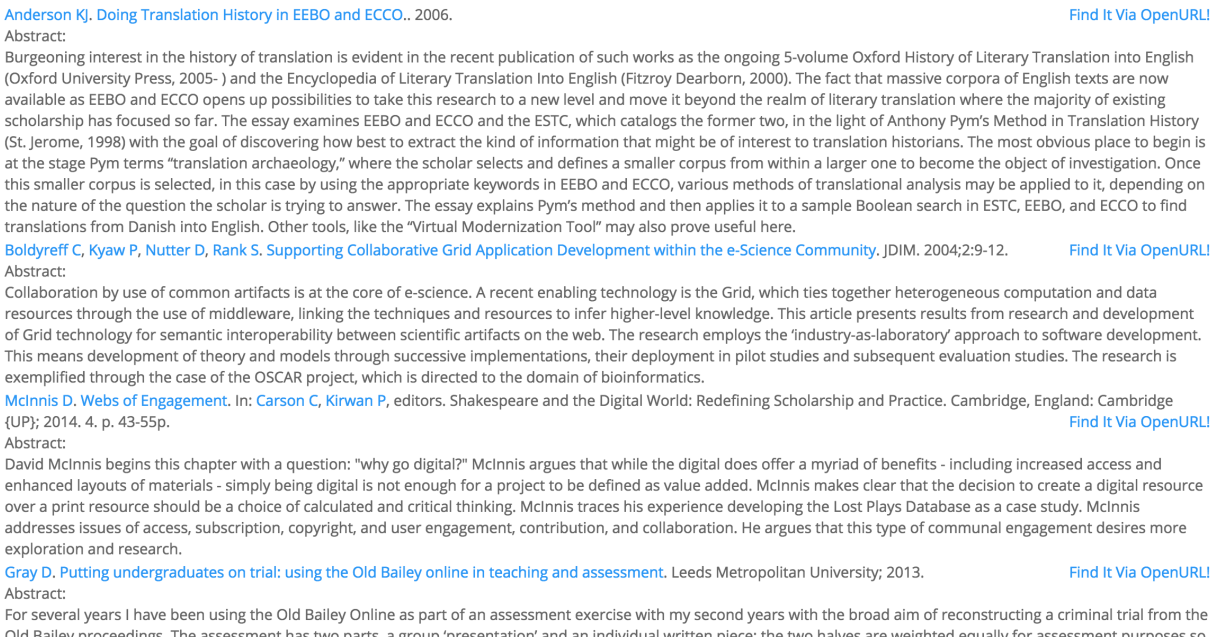


Figure 7 - 21: Detail and description of publications related to Renaissance / Early Modern Studies Projects and accompanying annotations within the project Bibliography.



Anderson KJ. Doing Translation History in EEBO and ECCO.. 2006. Find It Via OpenURL!
Abstract:
Burgeoning interest in the history of translation is evident in the recent publication of such works as the ongoing 5-volume Oxford History of Literary Translation into English (Oxford University Press, 2005-) and the Encyclopedia of Literary Translation Into English (Fitzroy Dearborn, 2000). The fact that massive corpora of English texts are now available as EEBO and ECCO opens up possibilities to take this research to a new level and move it beyond the realm of literary translation where the majority of existing scholarship has focused so far. The essay examines EEBO and ECCO and the ESTC, which catalogs the former two, in the light of Anthony Pym's Method in Translation History (St. Jerome, 1998) with the goal of discovering how best to extract the kind of information that might be of interest to translation historians. The most obvious place to begin is at the stage Pym terms "translation archaeology," where the scholar selects and defines a smaller corpus from within a larger one to become the object of investigation. Once this smaller corpus is selected, in this case by using the appropriate keywords in EEBO and ECCO, various methods of translational analysis may be applied to it, depending on the nature of the question the scholar is trying to answer. The essay explains Pym's method and then applies it to a sample Boolean search in ESTC, EEBO, and ECCO to find translations from Danish into English. Other tools, like the "Virtual Modernization Tool" may also prove useful here.
Boldyreff C, Kyaw P, Nutter D, Rank S. Supporting Collaborative Grid Application Development within the e-Science Community. JDIM. 2004;2:9-12. Find It Via OpenURL!
Abstract:
Collaboration by use of common artifacts is at the core of e-science. A recent enabling technology is the Grid, which ties together heterogeneous computation and data resources through the use of middleware, linking the techniques and resources to infer higher-level knowledge. This article presents results from research and development of Grid technology for semantic interoperability between scientific artifacts on the web. The research employs the 'industry-as-laboratory' approach to software development. This means development of theory and models through successive implementations, their deployment in pilot studies and subsequent evaluation studies. The research is exemplified through the case of the OSCAR project, which is directed to the domain of bioinformatics.
McInnis D. Webs of Engagement. In: Carson C, Kirwan P, editors. Shakespeare and the Digital World: Redefining Scholarship and Practice. Cambridge, England: Cambridge {UP}; 2014. 4. p. 43-55p. Find It Via OpenURL!
Abstract:
David McInnis begins this chapter with a question: "why go digital?" McInnis argues that while the digital does offer a myriad of benefits - including increased access and enhanced layouts of materials - simply being digital is not enough for a project to be defined as value added. McInnis makes clear that the decision to create a digital resource over a print resource should be a choice of calculated and critical thinking. McInnis traces his experience developing the Lost Plays Database as a case study. McInnis addresses issues of access, subscription, copyright, and user engagement, contribution, and collaboration. He argues that this type of communal engagement desires more exploration and research.
Gray D. Putting undergraduates on trial: using the Old Bailey online in teaching and assessment. Leeds Metropolitan University; 2013. Find It Via OpenURL!
Abstract:
For several years I have been using the Old Bailey Online as part of an assessment exercise with my second years with the broad aim of reconstructing a criminal trial from the Old Bailey proceedings. The assessment has two parts, a group 'presentation' and an individual written piece; the two halves are weighted equally for assessment purposes so

Figure 7 - 22: Detail of publications related to Renaissance / Early Modern Studies Projects and accompanying annotations within the project Bibliography.

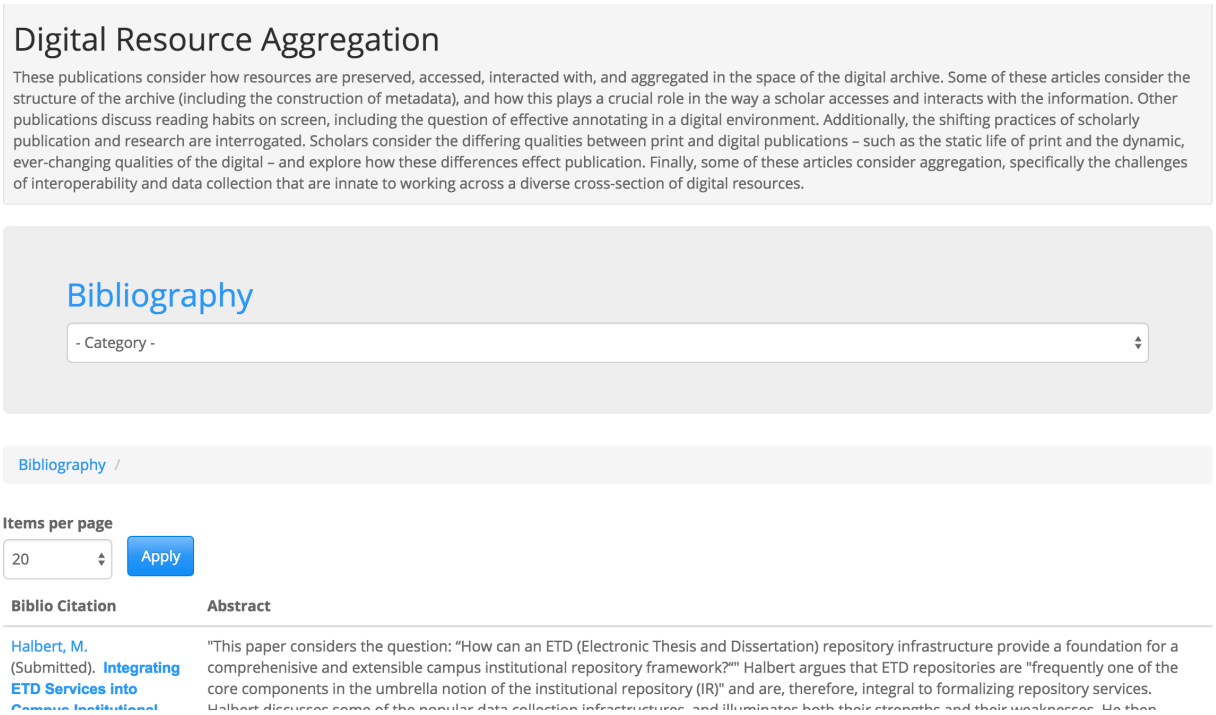
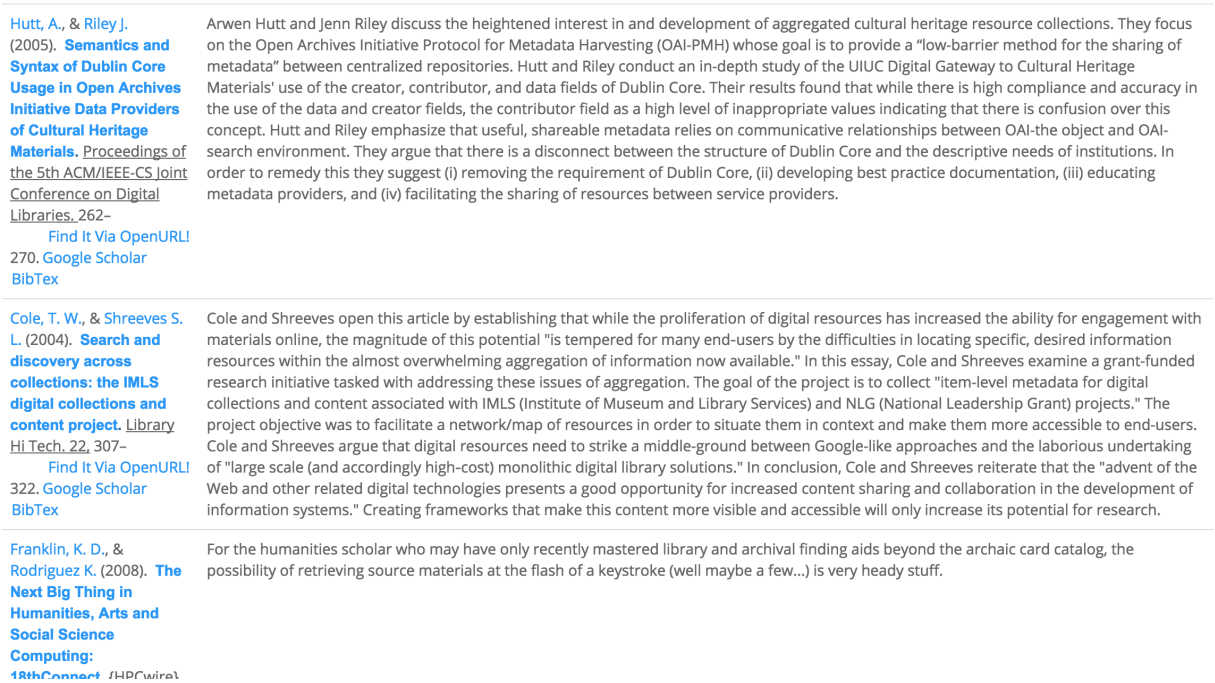


Figure 7 - 23: Detail and description of publications related to Digital Resource Aggregation and accompanying annotations within the project Bibliography.



Hutt, A., & Riley J. (2005). **Semantics and Syntax of Dublin Core Usage in Open Archives Initiative Data Providers of Cultural Heritage Materials.** Proceedings of the 5th ACM/IEEE-CS Joint Conference on Digital Libraries. 262–270. Find It Via OpenURL! Google Scholar BibTex	Arwen Hutt and Jenn Riley discuss the heightened interest in and development of aggregated cultural heritage resource collections. They focus on the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) whose goal is to provide a "low-barrier method for the sharing of metadata" between centralized repositories. Hutt and Riley conduct an in-depth study of the UIUC Digital Gateway to Cultural Heritage Materials' use of the creator, contributor, and data fields of Dublin Core. Their results found that while there is high compliance and accuracy in the use of the data and creator fields, the contributor field as a high level of inappropriate values indicating that there is confusion over this concept. Hutt and Riley emphasize that useful, shareable metadata relies on communicative relationships between OAI-the object and OAI-search environment. They argue that there is a disconnect between the structure of Dublin Core and the descriptive needs of institutions. In order to remedy this they suggest (i) removing the requirement of Dublin Core, (ii) developing best practice documentation, (iii) educating metadata providers, and (iv) facilitating the sharing of resources between service providers.
Cole, T. W., & Shreeves S. L. (2004). **Search and discovery across collections: the IMLS digital collections and content project.** Library Hi Tech. 22, 307–322. Find It Via OpenURL! Google Scholar BibTex	Cole and Shreeves open this article by establishing that while the proliferation of digital resources has increased the ability for engagement with materials online, the magnitude of this potential "is tempered for many end-users by the difficulties in locating specific, desired information resources within the almost overwhelming aggregation of information now available." In this essay, Cole and Shreeves examine a grant-funded research initiative tasked with addressing these issues of aggregation. The goal of the project is to collect "item-level metadata for digital collections and content associated with IMLS (Institute of Museum and Library Services) and NLG (National Leadership Grant) projects." The project objective was to facilitate a network/map of resources in order to situate them in context and make them more accessible to end-users. Cole and Shreeves argue that digital resources need to strike a middle-ground between Google-like approaches and the laborious undertaking of "large scale (and accordingly high-cost) monolithic digital library solutions." In conclusion, Cole and Shreeves reiterate that the "advent of the Web and other related digital technologies presents a good opportunity for increased content sharing and collaboration in the development of information systems." Creating frameworks that make this content more visible and accessible will only increase its potential for research.
Franklin, K. D., & Rodriguez K. (2008). **The Next Big Thing in Humanities, Arts and Social Science Computing: 18thConnect.** (HPCwire)	For the humanities scholar who may have only recently mastered library and archival finding aids beyond the archaic card catalog, the possibility of retrieving source materials at the flash of a keystroke (well maybe a few...) is very heady stuff.

Figure 7 - 24: Detail of publications related to Digital Resource Aggregation and accompanying annotations within the project Bibliography.

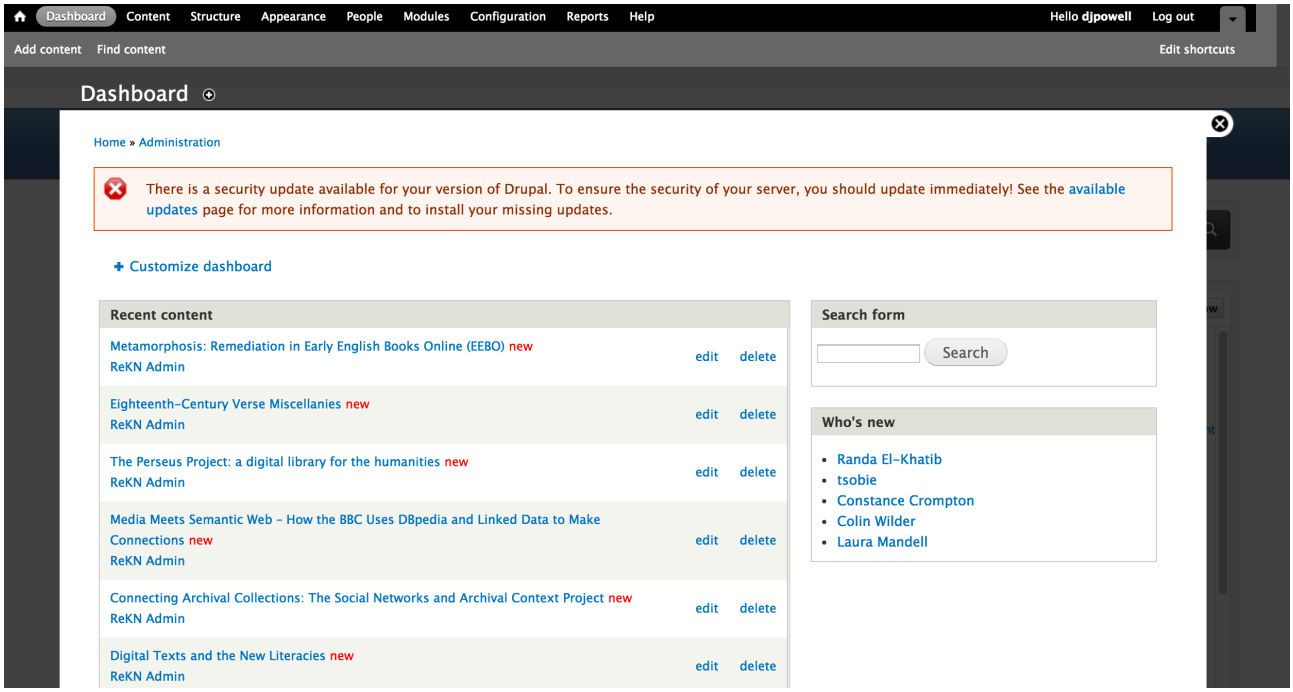


Figure 7 - 25: Drupal dashboard for the public-facing Renaissance Knowledge Network site. Renaissance Knowledge Network, http://rekn.itercommunity.org.

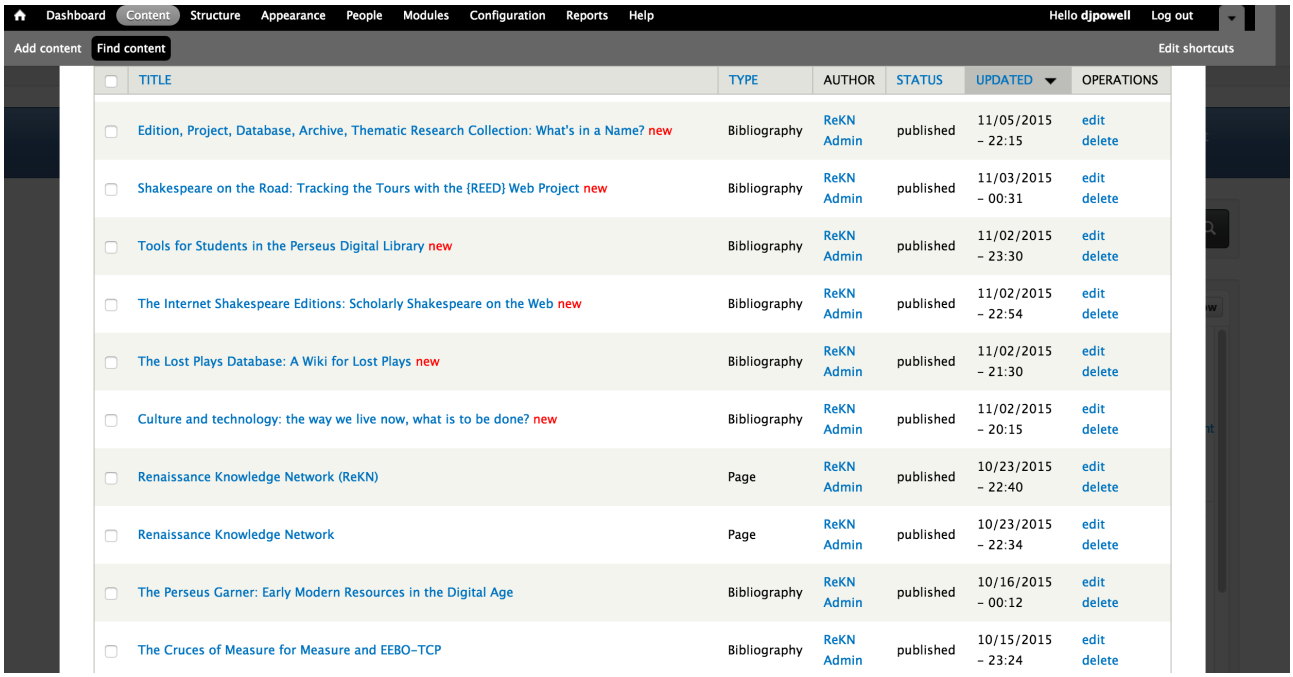


Figure 7 - 26: Content dashboard for the public-facing Renaissance Knowledge Network site.

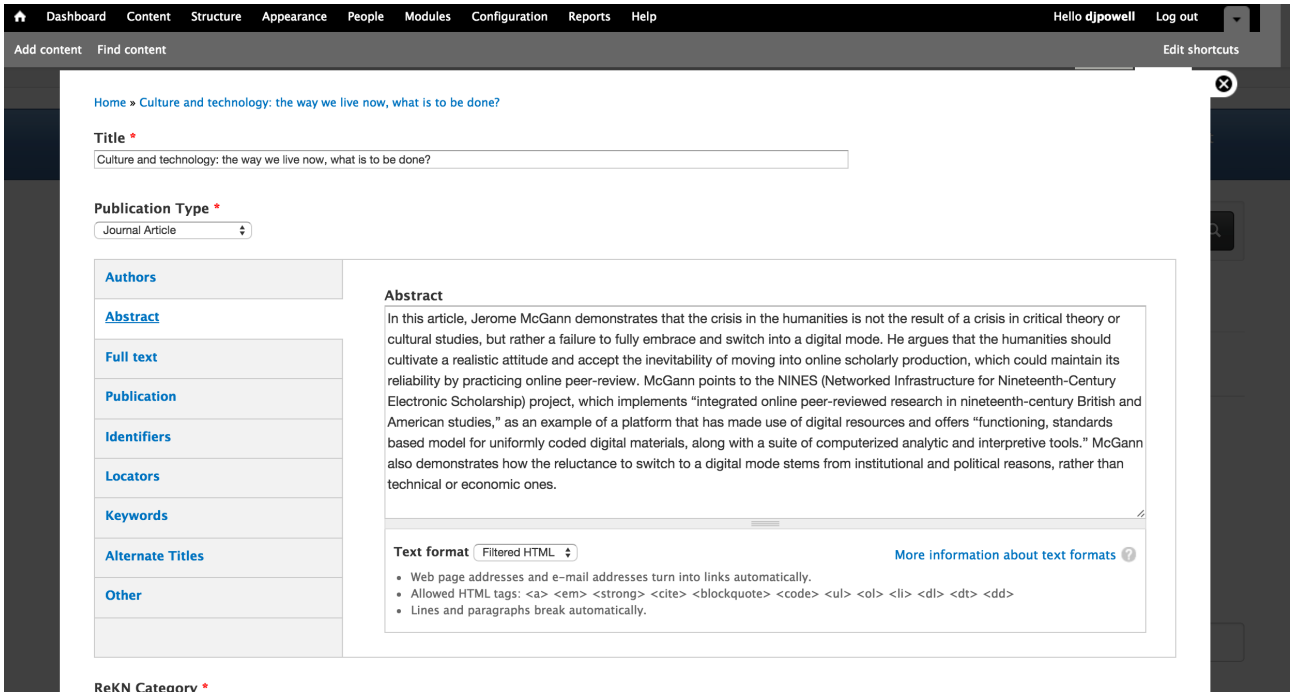


Figure 7 - 27: Editorial Interface for editing a single content object on the public-facing Renaissance Knowledge Network site. This bibliographic entry can be accessed here: http://rekn.itercommunity.org/node/1863.

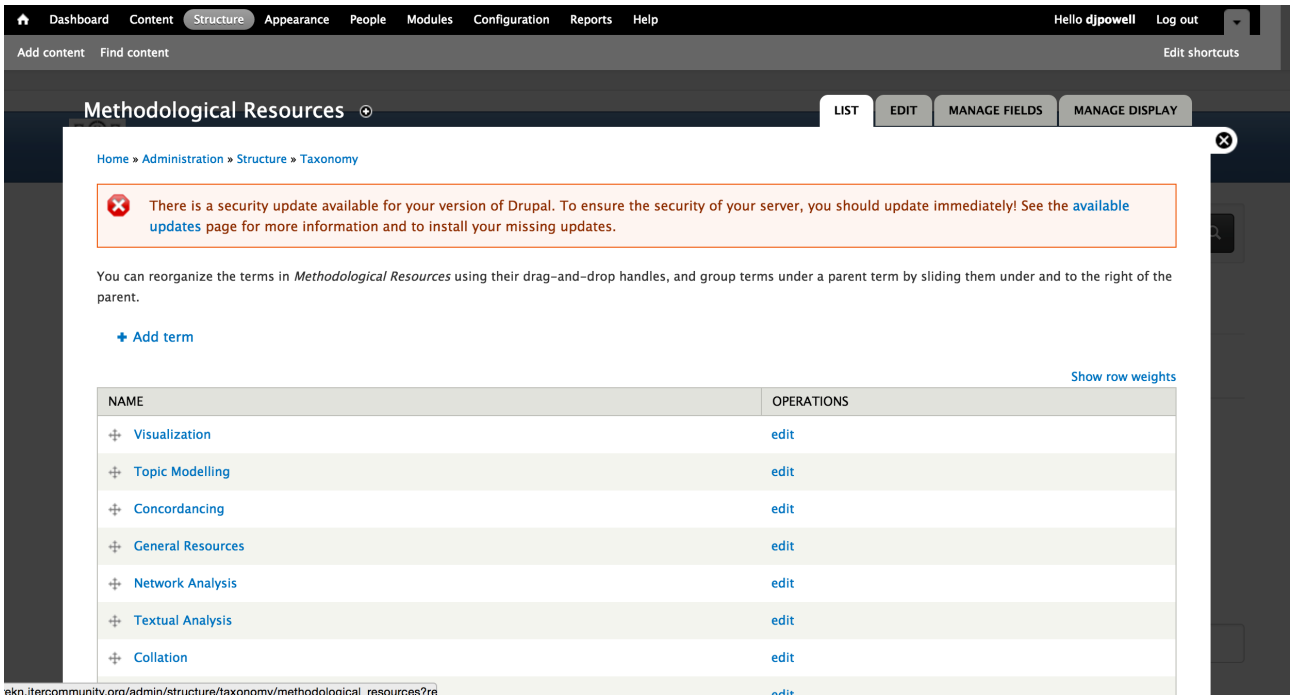


Figure 7 - 28: Drupal interface for viewing and adjusting the taxonomy of resources gathered on the public-facing Renaissance Knowledge Network site.

Conclusion

While cultural production and knowledge making practices have always been materialist, social activities, the emergence of online platforms and virtual communities for creating, sharing, and remixing information and ideas has begun to radically transform long stabilized patterns of popular and academic creation. Both *A Social Edition of the* Devonshire Manuscript (BL Add. 17,492) and the Renaissance Knowledge Network approach the social in three primary ways: they approach the social as a quality of material textuality, deriving from the editorial theories of D. F. McKenzie and Jerome McGann most prominently; as a type of knowledge work that digital technologies can facilitate; and as a function of consciously designed platforms and tools emerging from the digital humanities. In other words, digital humanities practitioners are uniquely placed to move what has until now been customarily an *analytical* category and enact or embed it in a *practical*, applied way. The social is simultaneously a theoretical orientation and a way of designing and making digital tools — an act which in turn embeds such a theoretical framework in the material conditions of knowledge production. Both the social edition discussed here and the Renaissance Knowledge Network are projects that grapple, in different ways, with the idea that knowledge making practices are being deeply influenced by digital technologies, especially as those technologies alter, continuously, social relationships. The included chapters elaborate on the connections between platforms and people, and between analysis and production.

In this Web 2.0 world, Facebook and Twitter dominate the social media landscape, providing a range of affordances that are now seen as everyday and routine: status updates, instant messaging, threaded discussion, multimedia uploads, hashtags, and so on. Consultant and blogger Fred Cavazza has, since 2008, visualized and schematized what he refers to as the "social media landscape" of existing social platforms and their functions in an online ecosystem. For the 2015 version of this effort, he writes that "social media **is a vast ecosystem of online services structured around four main usages: publishing, sharing, discussing, and networking** . . . **At the center of this ecosystem, we find Facebook and Twitter**."[258] The simple reality of the modern internet is that social connectivity in

[258] Cavazza, "Social Media Landscape 2015," http://www.fredcavazza.net/2015/06/03/social-media-landscape-2015. Emphasis in original.

online spaces now inform multiple facets of information discover, creation, re-creation, and use. Web 2.0 represents a now taken for granted set of affordances that typify everyday use of the internet. The normalcy of social media connections stands in contrast to the relatively traditional community standards and practices that define academic knowledge work and scholarly communication; in effect, there is a profound disconnect between the social practices of the web and those that remain standard in the academic knowledge work domains of teaching, service, and research. The functionalities, to say nothing of the sociocultural ethos of movements like open source software or Wikimedia, are only now beginning to evolve within conservative spheres of formal scholarly activity. Scholars refer to these types of sites and platforms as "academic social networking sites" (ASNS), offering by a "combination of tools and capabilities to support research activities, communication, collaboration, and networking."[259] Writing in 2015, Fatima K. Espinoza Vasquez and Carlos E. Caicedo Bastidas identify five primary ASNS: ResearchGate, Impactstory, Academia.edu, Mendeley, and LinkedIn.[260] Compared with the plethora of social media cited by Cavazza in the above visualization, social media platforms optimized for scholarly work are in their infancy, if they exist at all.[261]

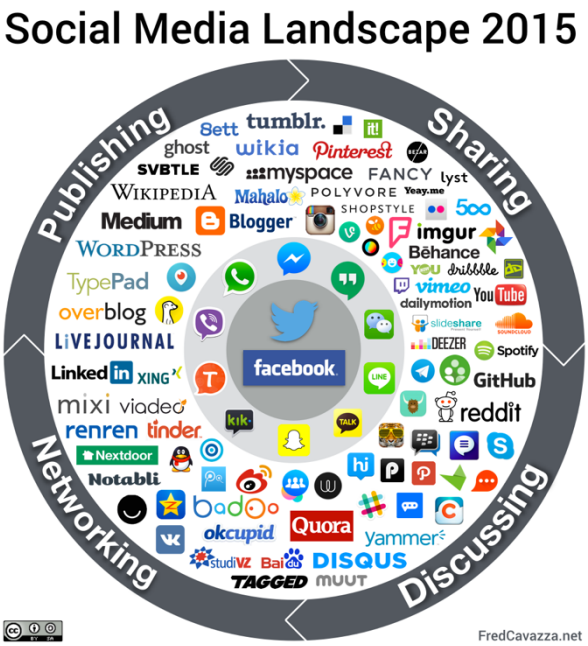


Figure 8 - 1: The Social Media Landscape. This image is drawn from Fred Cavazza, "Social Media Landscape 2015," FredCavazza.net,. http://www.fredcavazza.net/2015/06/03/social-media-landscape-2015. The image is CC-BY-SA, available here: http://creativecommons.org/licenses/by-nc-sa/3.0.

While I would not argue that academic practices and cultural norms should adopt the ethos of social media platforms without thinking, it is nevertheless remarkable how quickly popular practices

[259] Vasquez and Bastidas, "Academic Social Networking Sites," 1.
[260] Ibid., 2.
[261] This is not to downplay the very significant advances in scholarly communications made by institutional repositories, discipline-based commons, or innovative and open publication systems like Open Journal Systems, but to note that the prevalence of such platforms or sites lags far behind their counterparts in popular culture.

have outstripped academic ones. Wikipedia, the open and collaboratively written encyclopedia, is one of the most frequently visited resources on the internet. StackOverflow, the development and coding questions & answer site that operates on up or down votes, is an invaluable resource for those working in programming and technology and sees 40 million visitors per month.[262] Facebook, Twitter, YouTube, and Wikipedia are, according to Alexa, all within the top ten sites for global internet traffic (the remaining six are almost all search engine portals such as Google, Yahoo, or Baidu).[263] That academic users see academic social networking as a key part of their scholarly identity is indicated by the adoption, especially amongst digital humanists, of platforms like Twitter, Facebook, Academia.edu, and LinkedIn for scholarly use – even if such platforms are unsuitable for that role.

During the last decade, internet users have turned in droves to social media sites facilitating connectivity; at the same time, in academic contexts, digital humanities has increasingly emerged as an attempt to bridge traditional avenues of humanistic inquiry and curation with rapid advances in digital technologies. Digital humanists often work in labs or centers, and have for the last decade or so been deeply engaged in the creation of online archives and resources for remediating cultural heritage materials.[264] Those of us in the digital humanities often undertake this work with faculty members from the humanities; for-profit content providers; libraries and archives; and cultural heritage institutions like theatres or museums. Together, digital humanists and collaborators build the foundational infrastructures for knowledge work in the humanities in a digital age. This being the case, digital humanists are often well-positioned to intervene critically in such processes, drawing on in-depth, detailed content area knowledge to directly affect how the conditions for humanistic research using digital tools take shape.

This dissertation explores two interrelated questions related to social connectivity in academia and the changing digital conditions for collaborative knowledge work in the digital humanities: what does this process of intervention look like in practice on a large-scale research infrastructure project, and what can we learn from reflecting on such processes in context of innovate ways of knowledge

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[262] StackOverflow, stackoverlow.com; About, http://stackoverflow.com/company/about.
[263] As of January 2016. See http://www.alexa.com/topsites.
[264] See Introduction, "Contemporary and Historical Patterns of Social Production."

work that are ever more social? In doing so it approaches digital humanities research processes in a way that is unusual and defamiliarizing; humanists customarily privilege theoretical discussions in a distant and abstract way rather than turning inward and focusing on everyday material practices. Put another way, humanists often acknowledge their debt to Foucault or Kuhn, but rarely note that they typed a manuscript on an 11-inch Macbook Pro using Microsoft Word. The conditions of the material production of knowledge are often elided and seen as invisible. In the manner of the laboratory studies that have emerged from science and technology studies over the last several decades, the chapters within this dissertation are very often focused on the spaces, technologies, and individuals involved in digital projects — with the present author being deeply involved in both *A Social Edition of the* Devonshire Manuscript (BL Add. 17,492) and the Renaissance Knowledge Network. Examined through these two projects — one in a steady state of 'done-ness' that bears sustained reflection and the other in active planning and revision — the social as a form of knowledge creation becomes a set of observed actions, leading to specific successes and failures that can inform the tools we build for scholars to use as much as it can serve as an analytical framework to understand the materiality of cultural production.

A Social Edition of the Devonshire Manuscript (BL Add. 17,492) attempts to replicate in a scholarly edition the type of interactions and ethos that underlie its original, 16th century genesis. The original document is a dense, complex poetic miscellany produced mostly within the court of Queen Anne Boleyn. Often highlighted only as a source for the poetry of Sir Thomas Wyatt, the miscellany is in fact on of the earliest examples of men and women writing together in a sustained fashion in the English language. Shared amongst a coterie of courtiers, female nobles, and anonymous hands, the volume includes roughly 190 works including Wyatt's original poetry, copied into the volume in a variety of hands; original poetry by Henry Howard, the Early of Surrey; original works by Mary Shelton, Margaret Douglas, Mary (Howard) Fitzroy and Thomas Howard; and a variety of selections from Chaucer, Hoccleve, and Roos copied into the document by a number of hands. More than simply acting as amanuenses, contributors to the volume also made the poetry their own by penning response poems; undertaking inline editing; substituting language in copied witnessed poems particular to their own

circumstance; or making inline comments. Several of these moments are detailed in chapters one and two.

Inspired by, on the one hand, developments in social media use and connectivity and, on the other, the bare fact of the collaborative production of this specific manuscript, the social edition, by publication on Wikibooks and by purposefully forming and nurturing an invested community, brought these dual emphases to digital scholarly editing. By virtue of publication on Wikibooks, the edition is open for alteration or change by anyone with an internet connection, within the bounds of the standards of the Wikimedia community itself and the platform's affordances. The core team, working in the ETCL, brought together content area experts to encourage social editing; although individuals did not contribute in the ways we expected (by directly changing the edition themselves) they often provided feedback on the core team's work, indicated one way in which such exchanges might take place in the future in digital humanities production environments. As chapter two elaborates on, this led us to conclude that the issues surrounding collaboratively produced scholarly editions were not in fact technological, but cultural — suggesting that it may be more effective for digital humanists to focus on changing disciplinary norms of behavior and altering incentives rather than building new technical systems for types of activities that academics themselves remain wary of.

The Renaissance Knowledge Network is an attempt to do both of these at once. As a platform, ReKN is devoted to three goals: the first is aggregating the metadata of standalone digital projects devoted to early modern studies with canonical resources in the field; the second is to provide guidelines for peer review of innovative digital humanities projects, which will take place prior to their inclusion in an aggregated dataset; and three, to use the framework developed by the Iter Community project to tie data, people, and processes together in a new form of community for Renaissance scholars. In this effort, ReKN builds on a holistic understanding of what humanists do deriving from, in part, John Unsworth's ideas of the scholarly primitives, a set of basic functions: discovering, annotating, comparing, referring, sampling, illustrating, and representing. ReKN is imagined as a site of activity where these discrete functions might come together as more complex moments of social knowledge creation. Thus, as chapters four, five, and six discuss, the focus on ReKN as a portal for

discovery, analysis, and publication. The ReKN team understands these, at least potentially, as social activities, meaning that social functionalities — sharing, annotation, online server space — are fundamental affordances of ReKN around which other capabilities might be built. Three of the four chapters discussing ReKN illustrate how the project has progressed from a tool for aggregation information into a knowledgebase (chapter four) to an integrated resource rooted in aggregation, analysis, and publication (chapter five) to a full research environment that facilitates multiple types of research tasks and community building around shared resources, digital projects, and scholarly activity.

The shifts in ReKN's focus have often come through intensive consultation with our prospective user communities. As the white paper included as chapter five outlines, from 2014 to present the core ReKN team has communicated extensively with digital humanities specialists working in Renaissance studies to refine ideas of what type of resource would best serve the community; such consultations have taken place at Implementing New Knowledge Environments gatherings; conferences such as the Modern Language Association Convention, Sixteenth Century Society and Conference, and the Renaissance Society of American; and in dedicated planning meetings for ReKN, held in 2015 and 2016 in conjunction with the Arizona Center for Medieval and Renaissance Studies conference. Based on feedback from these consultations and subsequent discussions, ReKN has gradually seen a shift in priorities. While a research environment that integrates search, analysis, and publication of scholarship is still a long term goal, short and medium term goals have shifted since the chapters in section two were written. Most crucially, driven by strong feedback, ReKN will prioritize peer review of standalone digital projects, aggregation of project metadata, and community engagement and formation rather than textual analytics or innovative publication models. This brings ReKN in much closer alignment with Iter, which already maintains an extensive bibliography of relevant secondary sources (the Iter bibliography), operates a peer-reviewed academic press (Iter Academic Press) and has prototyped a social knowledge creation portal from 2013 - 2016 (Iter Community). By providing a space for the normalization of digital work in this content area, ReKN can pursue its long term goal of helping scholars find answers for the questions they already have more efficiently and prompt new questions in an exploratory fashion using digital methods.

Stated in another way, this work argues that digital practice is a way to think through the culture and technology of social knowledge creation through retrospective examination and exploratory building. Rather than a monograph-like argument consisting of an introduction, literature review, core chapters, and conclusion, this dissertation is a portfolio document that puts forward as a cohesive argument a digital edition; an early digital prototype for a larger project; published, peer reviewed articles on those projects; a project-centric white paper; and materials presented at conferences throughout the period 2012 - 2016. It is a snapshot of practice that models how credentialing within the digital humanities might operate at the doctoral level, while at the same time approaching digital humanities projects with a reflexive sensibility. Existing as such a collection of materials unified by a central theme (social knowledge creation in early modern studies) and methodology (the digital humanities ethos of making, testing, reflecting, and iteration), the dissertation is inherently a social construct, the result of and a constituent artifact within the social and material relationships that typify disciplinary practice in the digital humanities. It is also an interrogation of process rather than product, although *A Social Edition of the* Devonshire Manuscript is included as a chapter, as is the public-facing, openly accessible set of resources developed for initial planning work on ReKN. The chapters discussing these projects are moments of research in practice; together, they form a larger document that may illuminate what social knowledge creation in action might look like.

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