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Introduction

The Renaissance Knowledge Network (ReKN) is a major scholarly initiative designed to develop digital capacity within early modern studies. As presented and discussed at Implementing New Knowledge Environments (INKE) 2013 in New York,[1] ReKN is based at the Electronic Textual Cultures Lab (ETCL) at the University of Victoria and is being developed in partnership with Iter: Gateway to the Middle Ages and Renaissance (based at the University of Toronto-Scarborough); INKE (a Social Sciences and Humanities Research Council Major Collaborative Research Initiative); and the Advanced Research Consortium (ARC, based at Texas A&M University). In the broadest strokes, ReKN hopes to centralize and integrate research, analysis, and production in the field of early modern studies into a single online scholarly environment.

As we have imagined and designed, this environment will integrate three usually discrete activities integral to scholarly work: research, analysis, and publication.

- Research: This environment will make centrally accessible secondary 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

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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, export, and middle-state publication.

In thinking through this holistic scholarly environment, the ReKN team is inspired in part by John Unsworth's influential articulation of the scholarly primitive. Speaking at a Humanities Computing symposium in 2000 at King's College London, Unsworth outlined a number of "recursive functions" that unify the activities of humanities scholars: discovering, annotating, comparing, referring, sampling, illustrating, and representing (2000). We have not chosen, though, to map these functions directly; instead, we hope to refine and synthesize this list into a few core functionalities of the ReKN environment. With due consideration to the practices of many scholars working in the early modern period, our initial focus is thus on working with text and producing academic content roughly in line with expected types of publication (i.e., articles, chapters, notes, editions, etc.). In addition, and crucial to our project goals, ReKN will not be oriented towards the humanities as a whole set of disciplines, but rather will specifically attempt to address the needs of Renaissance digital projects, analytical tools, and scholars who would most benefit from such a limited-scope professional research and production environment. In scholarly tool development and community formation, one size does not fit all.

We envision this project proceeding in four phases, with an academic year devoted to each. Phase I will be structured around the production of a comprehensive white paper on the state of existing scholarly research, analysis, and production environments devoted to Renaissance studies. In essence a "roundup" of live tools and projects, this document will assess usability, interoperability, and scholarly merit. At the same time, Phase I will also involve gauging the scholarly community's awareness and usage of existing tools. As last summer's Early Modern Digital Agendas Institute for Advanced Topics in the Digital Humanities (funded by the National Endowment for the Humanitis (NEH) and hosted by the Folger Shakespeare Library) indicates, there is a lively interest in the intersections between Renaissance studies and the digital methodologies.[2]

Phase II will centre on the development and launch of a prototype scholarly environment devoted to research. We have already carried out informal correspondence with a number of Renaissance projects, many of which have responded enthusiastically to the idea of developing ReKN as an integrated workspace. The Andrew W. Mellon-funded Early Modern OCR Project (eMOP), Women Writers Online, and the University of Oxford Text Archive, among others, have signalled a willingness to move forward with ReKN, thus providing a core set of "startup" materials for aggregation and discovery.

Phase III will leverage existing ties with tool suites, possibly Voyant and TAPoR, to refine them for use with specific sets of digital resources. Integrating analytical tools into ReKN is a vital step in ensuring that the "big data" often available from the Early

English Books Online Text Creation Partnership (EEBO-TCP), the Iter Bibliography, and others, can be productively used in scholarly publication. The research done in Phase I will directly impact what tools and individuals we approach for integration into ReKN.

Phase IV, much like Phase III, builds on the initial research document produced in Phase I to integrate production and publication tools into ReKN. Scholarly editors, especially those working in Renaissance studies, bring specific assumptions about tools, processes, and intellectual rigour into their relationships with digital publication platforms. Research on what tools are commonly used by individual scholars, combined with focused user and advisory feedback, will heavily impact tool development and integration at this stage.

The implementation of Phases II-IV depend heavily on the research undertaken in Phase I, as well as on the willingness of developers to work with ReKN, on the input of the existing community of Renaissance scholars, and on the technological feasibility of multi-platform, project, and tool integration. Indeed, parsing the feasibility of such an integrated working environment is a primary objective of Phase I of the project.

In this effort, ReKN will build on the scholarly work done by, among others, Project Director Ray Siemens on the nature of professional reading and the use of large textual data sets for scholarly work (Siemens et al, 2010). This research, alongside the efforts undertaken by NINES, 18th Connect, and MESA,[3] as well as the ongoing efforts of Iter, work by the Folger Shakespeare Library,[4] and numerous others, provide a fertile intellectual framework in which to begin work on integrating the many existing digital resources available to scholars of the Renaissance.

Digital scholarly production in ReKN

ENVIRONMENTAL SCAN

ReKN will centralize resource discovery, codify peer review practices for digital projects, encourage digital pedagogical practices, and allow for coordinated tool building. As a project similar to NINES, 18th Connect, and MESA, ReKN will deeply affect the way scholarship is produced using early modern online materials in both print and digital form. Although part of ReKN is devoted to aggregating metadata for purposes of discovery, the development or integration of editing, analysis, and pedagogical tools is a vital component of the project and directly related to questions of both form and content in scholarly publishing. Partially, this article is an exercise in searching, cataloguing, and critiquing existing platforms and technologies. Numerous tools for the production of scholarly editions, TEI encoded XML, transcription, secondary source citation, and scholarly composition exist, although they are rarely considered alongside one another or in concert with specific area research goals (in this case early modern studies).

GOALS AND FRAMEWORK

The goals of Phase IV of ReKN could best be described as 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 (2011)

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terms "middle-state publication." Referring particularly to the MediaCommons publication of *The New Everyday*, middle-state publication is exactly that, a middle state

> between a blog and a journal. Rather than adhere to a more traditional structure of publishing only a small 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. (n.p.)

In current scholarly environments, this can be a radical suggestion. In addition, *The New Everyday* explicitly encourages "embedded multimedia works (YouTube and Vimeo videos, Slideshare and Scribd presentations, etc.)" ("How It Works", n.d.). 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, et cetera, and following/friending will be available, helping to build an 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.[5] 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.

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, to compile and preserve archives of multiple documents, to 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.[6] 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).[7] 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. In addition to developing a robust manuscript transcription environment as part of the Early Modern Manuscripts Online (EMMO) Project, the Folger Shakespeare Library 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 digitized texts (LUNA), this pilot 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 scholars to access otherwise paywalled page images and (quite poor) OCR output.[8] 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 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 sufficiently 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 have helped academics to post published (or unpublished work), to follow other scholars as they post work, and to 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, networking, open discussion, and project brainstorming, IC (as it is known) is intended to provide an environment for sharing calls for proposals, promoting scholarly work, and so on.[9] 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 examples 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 that is then itself integrated with electronic archives, textual analysis platforms, and existing bibliographies.

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Conclusion

As this brief overview suggests, much of this work is currently being undertaken in various projects, centres, and universities. What is lacking, however, is the integration of existing platforms and affordances into a centralized space that is itself enmeshed with primary and secondary source repositories. With such integration as an overarching objective, however, we might begin to distill some core aims for this aspect of the larger ReKN project:

1. Allow & facilitate the formation of communities of interest, collaboration on projects, and the sharing of individual work.
2. Provide space for middle-state publication in the form of white papers, blogs, collaboratively authored articles, new media pieces, and so on.
3. Integrate access to primary source and secondary materials for the creation of scholarly content in the sense of editions and of critical publication.
4. Host an environment for a wide range of scholars to create textual content, ranging from simple textual transcription to embedded semantic markup. This content must also be exportable in a format chosen by the user.

Moving forward on this project, we are particularly interested in gauging how those with experience with these various platforms – whether as users or builders – found their experiences. The Iter Community, for example, has faced challenges in engaging users consistently, as their redesign is attempting to correct. CWRC Writer, as implemented in EMiC's Modernist Commons, has faced technical issues with regard to saving and sharing content. Typewright, although adroitly co-opting existing OCR by ProQuest and facilitating access to otherwise paywalled materials, may not be exportable to other models due to copyright restrictions on the early modern corpus of page images. Despite these issues, the future of ReKN as a digital production hub is brighter than ever. Considering what others have done, and assessing their successes, failures, portability, and implementations, ReKN can move forward productively in beginning to construct this hub.

Notes / Websites

1. See the New York City Gathering 2013 page on the INKE site at http://inke.ca /projects/new-york-city-gathering-2013/ .

2. See the Early Modern Digital Agendas site for more information at http://emdigitalagendas.folger.edu/ .

3. See NINES at www.nines.org ; 18th Connect at www.18thconnect.org ; and MESA at http://www.mesa-medieval.org/ .

4. See The Folger Digital Folio of Renaissance Drama for the 21st Century at http://ora.ox.ac.uk/objects/uuid%3A63b4006c-ca54-47e4-9ce7-77315f7ce1ff .

5. See the following examples: EEBO at http://eebo.chadwyck.com/home ; Perdita Manuscripts at http://www.perditamanuscripts.amdigital.co.uk/Default.aspx ; BL Digitised Manuscripts at http://www.bl.uk/manuscripts/Default.aspx ; Broadside Ballad Online at http://ballads.bodleian.ox.ac.uk/ . Further examples of digital

archives can be found at *Early Modern Resources* in the category "Primary Sources" at http://earlymodernweb.org/resources/category/primary-sources/ .

6. See http://t-pen.org/TPEN/ .

7. For further information, see the abstract for "CWRC-Writer: An In-Browser XML Editor," presented at DH 2012 in Hamburg. URL: http://www.dh2012.uni-hamburg .de/conference/programme/abstracts/cwrc-writer-an-in-browser-xml-editor/ .

8. See Typewright on 18th Connect at http://www.18thconnect.org/typewright /documents .

9. See Iter Community. URL: http://community.itergateway.org/ .

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