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Implementing a Social Knowledge Creation Environment

Matthew Hiebert, Raymond Siemens, William R. Bowen

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Matthew Hiebert & Raymond Siemens

*University of Victoria*

William R. Bowen

*University of Toronto Scarborough*

ETCL & Iter Advisory Groups

INKE Research Group

### Abstract

“Social knowledge creation,” an emergent area of research interest for digital humanists, promotes experimental critical interventions into more traditional knowledge production processes. The Electronic Textual Cultures Lab at the University of Victoria with Iter: Gateway to the Middle Ages and Renaissance (University of Toronto Scarborough) have iteratively prototyped a Web-based platform for social knowledge creation called Iter Community. This article discusses the platform’s implementation as a critical intervention in scholarly production and publication, specifically how it provides new opportunities for research and serves as a model to allow for greater involvement of scholars and the public in knowledge creation.

### Keywords

Digital humanities; Social knowledge creation; Social media; Community of practice; Knowledge representation; Infrastructure; Prototyping

**Matthew Hiebert** is Assistant Professor and a postdoctoral fellow with the Electronic Textual Cultures Lab in the Department of English, University of Victoria. Email: hiebert8@uvic.ca .

**William R. Bowen** is Associate Professor and Chair of the Department of Humanities at the University of Toronto Scarborough. Email: william.bowen@utoronto.ca .

**Raymond Siemens** is Canada Research Chair in Humanities Computing and a Distinguished Professor in the Faculty of Humanities at the University of Victoria. Email: siemens@uvic.ca .

**Implementing New Knowledge Environments** (INKE) is a collaborative research intervention exploring electronic text, digital humanities, and scholarly communication. The international team involves over 42 researchers, 53 GRAs, 4 staff, 19 postdocs, and 30 partners. Website: inke.ca .

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## Introduction

The body of concepts, tools, and approaches associated with “social knowledge creation,” an emergent area of research interest for digital humanists, promotes experimental critical interventions into more traditional knowledge production processes. The concept of social knowledge creation emerged influentially in knowledge management theory of the 1990s, following developments in philosophy that had undermined Enlightenment conceptions of knowledge as reducible to clear-cut representations of reality. Knowledge management theory prescribed to businesses internal trust and care-building strategies through which executives might elicit tacit knowledge within worker communities to better enable an organization’s visionaries to respond advantageously to competitive markets (see Nonaka & Nishiguchi, 2000, and Von Krogh, Ichijo, & Nonaka, 2000).

The recent adoption of the term “social knowledge creation” within the humanities, however, has involved seeking out non-representational models of knowledge construction within its intellectual histories and scholarly activities for electronically modelling knowledge in ways that reflect and enhance participation and collaboration, ultimately to advance field-specific advanced research (see Arbuckle, Belojevic, Hiebert, Siemens, with Wong, Siemens, Christie, Saklofske, Sayers, & the INKE & ETCL Research Groups, 2014).

Far from promoting social disclosure of research and its production processes for select agents, social knowledge creation in the humanities is inherently aligned with the values of open science and open access. Informal modes of scholarly exchange – such as conversation, epistolary correspondence, and manuscript circulation – have been discovered at the fount of academic disciplines (Siemens, 2002). Through digitally modelling and integrating such informal modes of communications into open scholarly production and publication practices, a “social knowledge creation environment” may foster interdisciplinary research that better engages the publics it looks to serve. Building on its *Social Edition of the Devonshire Manuscript* research prototype and others (see Siemens, Timney, Leitch, Koolen, & Garnett, 2012), the Electronic Textual Cultures Lab (ETCL) at the University of Victoria, in coordination with Iter: Gateway to the Middle Ages and Renaissance (University of Toronto Scarborough), has iteratively prototyped a Web-based platform for social knowledge creation called Iter Community. This article discusses the implementation of Iter Community as a critical intervention in scholarly production and publication practices to advance research in the Middle Ages and Renaissance.

## Foundations

In light of consultation-based prototyping of digital tools between 2004 and 2009, including the Renaissance English Knowledgebase and the Professional Reading Environment (see Siemens, Elkink, McColl, Armstrong, Dixon, Saby, Hirsh, & Leitch, 2010), Raymond Siemens in 2008 outlined a 10-year plan that re-situated Iter’s mandate in light of trends toward ubiquitous computing and the increasing comfort of researchers in using social media and Web 2.0 technologies to facilitate their personal and professional lives. At the founding of the non-profit partnership in 1994, Iter had interpreted its mandate to support Medieval and Renaissance research and teaching by

developing finding tools and infrastructure for the dissemination and publication of electronic resources. From its home at the University of Toronto Libraries, Iter's first major project was to develop a comprehensive online bibliographical database of secondary sources, today containing over 1.3 million records and having more than 430 library and institutional subscribers. The range of resources Iter would make available to scholars at itergateway.org would diversify to include specialized databases, full-text e-journals, and e-book scholarly editions.

By 2007, Bowen and Siemens would conceive Iter as a knowledgebase (as first articulated in Bowen & Siemens, 2007). In 2008, consultations with community members and Iter partners motivated a pilot project that would allow Iter to enhance its resources and develop new ones by relying on new forms of social networking and online interaction that Iter resource users were increasingly comfortable with. To best serve its community of users, Iter would seek to develop tools and online services to facilitate the professional needs of scholars at the group or social level (first articulated by Bowen & Siemens, 2010). Enabling individuals to amalgamate their digital content and research activities for sharing within an integrated environment would also allow Iter to better understand and reflect emerging needs of a community. Conceiving Iter as fundamentally serving its users in such ways would involve a shift in the organization's activity orientation, from records production and service provision to facilitating a community's "scholarly primitives" (Unsworth, 2000). An Iter Community prototype would address shared scholarly needs, such as bibliographic management, conference services, and publishing mechanisms. In modelling research activities as an inherently social, group-level process, Siemens (2008) proposed that relevant data for collection might expand beyond the traditional metadata of primary, secondary, and tertiary sources to include records pertaining to scholars, institutions, events, and research projects.

In 2010, Iter, in association with the Electronic Textual Cultures Lab and Information and Technology Services of the University of Toronto Libraries, released the first iteration of Iter Community as an early scholarly deployment of the open source Drupal Commons platform. The system gave Iter's users a collaboration resource for online discussions, document sharing, blogging, and wiki-based social writing. In 2013, Bowen would suggest moving beyond the Drupal Commons Iter Community platform to "develop an appropriate environment to support scholarly community engagement and knowledge building, leading to the creation of specialized collaboratories" (Bowen, 2013). Iter went on to conduct interviews with users of Iter Community to assess its success and relevance. On the basis of these consultations, groundwork was laid for a second iteration of Iter Community that would build upon the strengths of the first, while better addressing community needs that had emerged five years into the initiative. The 2013 consultations reflected trends toward an increasing familiarity not only with the use of online scholarly resources with social media affordances, but also with their design and development processes. Community members interviewed were all involved in the planning or construction of online scholarly projects. The first iteration of Iter Community modelled event organization, announcements, research-oriented discussion, and project collaboration. It was decided that enhancing these features in the next iteration would more tightly integrate these tools with existing Iter

resources and afford users connected knowledge production and publication tools. Late in 2013, agreements were made between Iter and Information and Instructional Technology Services at the University of Toronto Scarborough (UTSC) for servers to allow infrastructure to be developed for the implementation of this new iteration of Iter Community.<sup>1</sup>

### Concepts

In early November of 2014, Iter Community held a series of planning meetings in conjunction with the 50th Toronto Renaissance and Reformation Colloquium.<sup>2</sup> In an afternoon roundtable chaired by Iter director William Bowen, and titled “Building Communities for Renaissance Studies: Models and Strategies Using New Technologies,” Siemens presented principles that have guided the prototyping of Iter Community. Put forth by Willard McCarty and Harold Short (2002), the *methodological commons* can be understood as a series of evolving points of data and procedural convergence between disciplinary groups and broad knowledge areas. This concept accepts the impossibility of static knowledge representation.<sup>3</sup> In its shifting points of convergence, the methodological commons prescribes modelling knowledge representation as a collaborative and problem-oriented activity that is shared, rather than one that is primarily taxonomical, ontological, or otherwise reductive. The methodological commons and its procedural approach promote integrating the scholarly primitives of a community within a flexible environment that allows for the introduction of additional participants and new or improved methods. Iter Community, as a computationally tractable online environment with community-driven iterated tool-based methods for problem-based knowledge representation, is a social knowledge creation environment (Bowen, Crompton, & Hiebert, 2015).

The concept *community of practice* (CoP) arises from the work of cognitive anthropologist Jean Lave and Étienne Wenger (1998). CoP has philosophical antecedents in the pragmatist thinking of C.S. Peirce (1955), who approached research activities as occurring within a “community of inquiry;” and in the work of John Dewey (2013), who conceived pedagogy as fundamentally practice-based, a matter of “educating through occupations.” Lave and Wenger (1991), through their seminal research into apprenticeship practices, observed that rather than an impersonal process, most learning takes place between peers within goal-oriented communities. Members of informal networks who share a common set of practices attain most of their knowledge through interpersonal interactions. CoP has been a revolutionary concept within business, and its application has been credited for the success of many large companies. By actively reducing the proprietary knowledge of individual workers, corporations found themselves able to maximize the knowledge of the company as a whole to better react to its market. However, in adopting this humanities-derived concept in the humanities themselves, CoP must reflect the particular dialectics of research fields within humanistic traditions, which have independence from (and thereby relationships with) markets. In its design, Iter Community is to allow groups to freely create their own independent collaborative projects and micro-communities at the “grass roots,” with the option to provide open access or to federate with other Iter Community projects through various technical means.

## Iter Community Commons and pilot projects

The Iter Community Commons has involved development of several different iterations following the initial Drupal Commons site, with the current production version co-designed with the Iter Community advisory group on the basis of the Commons-in-a-Box platform. The Commons facilitates professional social scholarly primitives, such as field-specific news feeds, conference programs, blog posts, discussions, and a record of past and upcoming events. It also enables the creation of projects and teams. The trend toward problem-based models for knowledge representation involves more and more small-scale and often experimental “boutique” research projects within the “big tent” of the digital humanities (Fitzpatrick, 2010). Iter Community offers a long-term home for projects seeking collaborators, development support, a research community, and preservation. In the digital humanities, there is growing awareness of the need for humanities-specific infrastructure. Iter Community takes up the challenge of Geoffrey Rockwell (2010), who has called for further small-scale infrastructure experiments, arguing for their status as “valued research in humanities computing” (n.p.). As Rockwell indicates, infrastructure is opaque technology and open to critique: “[T]he turn to infrastructure is political....it involves redefining what is research” (n.p.). In keeping with the aims of social knowledge creation in the humanities, infrastructure must serve not only “professional researchers at universities, but the amateur researchers in the community” (p. 17).

Iter Community is oriented toward public-facing humanities research in ways that foster participation from those outside of traditional academic communities.<sup>4</sup> The infrastructure, developed across a number of Linux servers at UTSC, provides Web-accessible Git repositories (GitLab); indexing (Solr and Tika); a project management system and knowledgebase (Jira and Confluence); granular user authorizations; and a sandbox service for provisioning platforms to allow members to build archives, databases, editions, journals, and other scholarly projects. Member projects may be integrated technologically within a larger community of practice through single sign-on technology, federated search, common data API, and metadata policies. Socially, projects and their members are integrated through Iter Community Commons. An Iter Community project may be peer-reviewed by Iter Academic Press and receive its imprimatur. The peer review process – which will consider scholarly, technical, and community development aspects of a digital resource – provides new means for academics involved in digital scholarship to receive credit for their work.

The diverse range of Iter Community pilot projects reflects a number of observed current trends in digital humanities research, including social knowledge creation, large-scale collaboration, linked data, and non-empirical modes of inquiry (Siemens & Sayers, 2015). Editorial content of Iter Community’s pilot project, the *Social Edition of the Devonshire Manuscript* (led by Constance Crompton), was generated in large part by “citizen scholars” in the earlier Wikibooks prototype (see Siemens, Armstrong, & Bond, 2008). The Iter Community version of the project, which blurs the line between academic, alt-academic, and non-academic knowledge-making, provides a snapshot of the earlier *Social Edition*, adding social post-publication affordances, including inline social commenting and support for RDF. Iter Community has also facilitated, for the Renaissance Knowledge Network (ReKN), development of a co-created annotated

bibliography and communities site (led by Matthew Hiebert, Daniel Powell, and Lindsey Seatter) that serves as an environmental scan of resources sitting at the intersection of Early Modern studies and the digital humanities.<sup>5</sup>

Other pilot projects include the Newberry Library's *Humanism for Sale: Making and Marketing Schoolbooks in Italy, 1450-1650* (led by Paul F. Gehl), an experimental scholarly monograph affording open paragraph-level annotation. Iter Community is also home to the Institute for Research in Classical Philosophy and Science (led by Alan C. Bowen), which includes among its resources the journal and PDF archives of *Aestimatio: Critical Reviews in the History of Science*. Another project, Monacus, brings to the Web for the first time the 50,000-record index of the *Mediceo Avanti il Principato* fonds of the State Archives of Florence. The Monacus database was hand-compiled by a "citizen scholar" (Daniel Guimond), who also co-designed the online interface with ETCL developers. A searchable database of the complete FICINO listserv archive is another project under development within Iter Community.<sup>6</sup> The online home of the Canadian Society for Renaissance Studies resides in Iter Community, where its membership resources will undergo further development. Iter Community is also contributing to the development of collaboration tools for a Mellon-funded project of the Newberry Library to create a site (led by Carla Zecher) for the teaching of paleography. This early collection of diverse pilot projects showcases the range of research activities Iter Community facilitates and supports.

### **Conclusion**

In its modelling of knowledge as a social creation process, and in its implementation as a platform for public-facing, community-driven collaborative research, Iter Community is a critical intervention in knowledge production and publication practices. The environment challenges more traditional approaches to reconsider the role of ephemeral and tacit forms of scholarly communication and knowing in the construction of knowledge. It also suggests ways in which emerging technologies might enable scholarly teams to more actively contribute to the dissemination and reception of their own work. Our research suggests as well that through praxis and implementation, concepts of humanistic traditions that have undergone successful application in corporate society might be recovered and revitalized for the advancement of scholarship. In using digital methods to facilitate online production and publication in ways that reflect and enhance the professional activities of scholars, adapt peer review and academic credit to new forms, and expand publics' engagement with research, we hope to model the implementation of a new knowledge environment applicable to other scholarly fields.

### **Notes**

1. In 2014, Iter's board of directors approved establishing Iter Community, hitherto an experimental social knowledge creation environment experiment, as a dedicated division of the organization. In Iter's reconstitution as a tripartite structure, Iter Gateway, the long-standing home of the Iter Bibliography and its other resources and services, retains its "meta" focus on aggregating and classifying sources for the field. The steady growth of Iter's activities to support other forms of scholarly communication came to warrant a dedicated division of its own, to be called Iter

2. Thanks to the Iter Advisory Group for their ongoing input, including Jason Boyd, Constance Crompton, Matthew Davis, Laura Estill, and Diane Jakacki.
3. Knowledge representation is the area of artificial intelligence devoted to generating models of human understanding tractable to computation (see Schreibman, Siemens, & Unsworth, 2008; Unsworth, 2001).
4. Three general modes of facilitating “citizen science” have been identified by the Center for Advancement of Informal Science Education. In adapting this framework to the humanities, we can differentiate between “contributory,” “collaborative,” and “co-created” digital humanities projects on the basis of “citizen” or “lay” scholar involvement. Contributory projects have been designed by scholars, with members of the public able to contribute data through crowdsourcing. Collaborative projects are those designed by scholars and for which members of the public contribute data but also may help to refine project design, analyze data, or disseminate findings. Finally, co-created projects are those designed by scholars and members of the public working together and for which at least some of the public participants are actively involved in most or all steps of the research process. See CAISE, 2009.
5. ReKN, one of the core nodes of the Advanced Research Consortium (ARC), is a major initiative to integrate a growing diversity of digital resources, tools, and modes of online dissemination.
6. FICINO was founded in 1990 as an international electronic seminar and bulletin board for the circulation and exchange of information about the Renaissance and Reformation.

## **Websites**

Humanism for Sale, [www.humanismforsale.org/text](http://www.humanismforsale.org/text)

Institute for Research in Classical Philosophy and Science, [www.ircps.org](http://www.ircps.org)

Iter Community, [www.itercommunity.org](http://www.itercommunity.org)

Iter Community Edition of the Devonshire Manuscript, [dms.itercommunity.org](http://dms.itercommunity.org)

Monacus, [monacus.itercommunity.org](http://monacus.itercommunity.org)

Renaissance Knowledge Network Communities, [rekn.itercommunity.org](http://rekn.itercommunity.org)

A Social Edition of the Devonshire MS (BL Add 17,492 ), [https://en.wikibooks.org/wiki/The\\_Devonshire\\_Manuscript](https://en.wikibooks.org/wiki/The_Devonshire_Manuscript)

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