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Implementing a Social Knowledge Creation Environment

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Introduction

At the founding of the non-profit partnership in 1994, Iter interpreted its mandate to

support Medieval and Renaissance research and teaching in terms of the development of finding

tools and of infrastructure for the dissemination and publication of resources.[1] From its home at

the University of Toronto Libraries, Iter's first major project was to develop a comprehensive

online bibliographical database that today contains over 1.3 million unique items with more than

430 university libraries and scholarly institutions subscribed worldwide. 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 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, to be called "Iter Academic Press."[2] Also last year, Iter's Board of

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[1] For the early history of Iter, see Castell (1997); Bowen (2000); and Bowen (2008).
[2] 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 specialized 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

Directors approved the expansion of "Iter Community," an online social knowledge creation environment project, into a dedicated division of the organization.[3] This paper discusses how the original vision behind Iter Community is now being implemented to better accord with founding project principles, current trends in the digital humanities, and to address emerging challenges and opportunities for research and teaching of the Middle Ages and Renaissance.

History

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, that effect community facilitation 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

recently, e-books. Iter's e-book collections include The Other Voice in Early Modern Europe: The Toronto Series, co-published by Iter and the CRRS (to 2014) and by Iter and ACMRS (2015-), and New Technologies in Medieval and Renaissance Studies, co-published by Iter and ACMRS. "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.

[3] In Iter's reconstitution as a tripartite structure, Iter Gateway, the longstanding home of the Iter bibliography and its other resources and services, retains its "meta" focus on aggregating and classifying sources for the field.

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; specifically:

> from records production and service provision (though this lies at the core of Iter), to
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> facilitation of a community's 'scholarly primitives', its basic needs from the
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> perspective of professional/user interactions (these include bibliographic
>
> management, conference services, and publishing mechanisms), and concomitant
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> expansion of the data collected to include the full range of relevant data (e.g.,
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> scholars, institutions, events, research projects)[4]

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.[5]

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

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[4]Siemens, Ray. "Initial Steps, Following a Larger Vision: A Feature-Oriented Pilot Proposal," [archived document] March 20 2008.

[5] Bowen W., Miekle S., Siemens R., Letter to "All participants in the RSA New Technology and Renaissance Studies sessions, and in the ITER/MRTS NTMRS book series," March 24, 2011.

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 conceptualized.

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, scholarly articulation and technical development for the new Iter Community is being led by 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 progress made on Iter Community, and the expansion of organization that it involves, warranted the project becoming the independent division within Iter in late-2014. A formal advisory group was established, with Jason Boyd (Ryerson), Constance Crompton (UBC-O), Matthew Davis (NCSU), Laura Estill (Texas A&M), and Diane Jakacki (Bucknell) as its members.

Concepts

In early November of this year, Iter Community held a series of planning meetings in conjunction with the fiftieth Toronto Renaissance and Reformation Colloquium. In a classroom on the third floor of the Old Victoria College Building we chalked web site wireframes onto the multi wall-to-wall blackboards (the 3D wide-screen projector of the 19th century Romanesque Revival) and detailed the feature set for the new Iter Community platform. In an afternoon round-table chaired by Iter Director Bill Bowen "Building Communities for Renaissance Studies: Models and Strategies Using New Technologies," Ray Siemens, Director of the ETCL and Associate Director of Iter, interrelated a series of concepts that can be taken as underlying principles for the vision of Iter Community the new platform seeks to more fully instantiate.

The concept *community of practice* (CoP) arises out of the work of cognitive anthropologist Jean Lave and her student, information and computer scientist, Étienne Wenger. The concept has philosophical antecedents in the pragmatist thinking of C.S. Peirce (1955), who proposed the concept "the community of inquiry," and the work of John Dewey (2013), who proposed "educating through occupations" as a pedagogical principle. Lave and Wenger (1991), through research into apprenticeship practices, were able to conclude that most learning in fact does not originate from a master but takes place between peers within what they call communities of practice: groups of people who share a concern or passion for something they do and learn how to do it better as they interact regularly. Temporally, Iter's community of practice extends well before the first iteration of Iter Community the web site. The group of scholars who rely on Iter resources have been engaging with one another for years through their publication, informal modes of communication, and conference proceedings.   Bowen organized the first

New Technologies and Renaissance Studies (NTRS) Session at the Annual Meetings of the Renaissance Society of America already in 2001, recently issuing with Siemens the Call for Papers for the fifteenth installment. Iter Community, the platform, seeks to model in an online environment the professional activities that accompany such already existing community practices.

To make Iter Community a community of practice, the feature set of the platform must model the basic organic mechanisms seen to accompany the production of a CoP.[6] These include producing a shared understanding of what binds users together, which for Iter Community translates into inclusion of field-specific news feeds, for instance, and the integration of Iter Gateway finding tools and resources within the communal space.   Conference programs, another ephemeral mode of scholarly communication, are aggregated into a database linked to a public events calendar to provide a living record of events that bind the community together. To facilitate the requisite building of collaborative relationships, Iter Community individuates users into profile categories that assist in project-oriented "match making," while providing as well communication affordances such as research area discussion groups. Members also require means by which to produce shared communal resources, and the platform's included affordances in this respect are to span from the capacity to upload and share personal working documents, to deploying content management systems within collaborative sandbox development space for creation of digital humanities projects connected to and to be showcased by the Iter Community platform.[7]

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[6] See Wenger, Etienne (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.

[7] In providing these resources, we seek a high level of simplicity and clarity for the user, allowing for authentication through social media accounts, for instance, and insuring the system can be effectively navigated through a simplified interface.

What precludes an academic community of practice from becoming insular, and what allows its research outputs to reverberate beyond its own field and discipline, is captured in the concept of the *methodological commons*. Proposed 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 has implications for knowledge representation, an area of the digital humanities that draws upon artificial intelligence to generate models of human understanding tractable to computation (Unsworth, 2001; Schreibman, Siemens, & Unsworth, 2008). In its shifting points of convergence, the methodological commons inherently prescribes a collaborative problem-based model of knowledge creation that is tractable to computation. In the case of Iter Community then, the methodological commons and the problem-based model of knowledge representation it suggests, impel modelling the social processes through which Iter's community of scholars collaboratively work towards shared knowledge: their professional activities associated with conferencing, conversation, epistolary exchange, and review of peer publications. We term computationally tractable multi-user platforms iterated with CoP affordances for modelling problem-based knowledge representation *Social Knowledge Creation Environments* (SKCE). Iter Community is an instantiation of an SKCE (Bowen, Crompton, & Hiebert, 2015).[8]

Problem-based Modelling

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[8] For a general introduction to the concept of social knowledge creation see: Hiebert, M., Arbuckle A., Siemens R., and Belojevic N. (2014). "Introduction" in *Social Knowledge Creation: Three Annotated Bibliographies*. Scholarly and Research Communication, 5(2): 0502155, 120 pp. URL: http://src-online.ca/index.php/src/article/view/150/291 [November 22, 2014].

Siemens and Jentery Sayers have recently suggested a number of possible implications for the trajectory of the digital humanities towards such problem-based modelling, implications materialized in the unfolding development of Iter Community. The first implication Siemens and Sayers (2015) specify, that of increasing, direct engagement with public humanities, which entails community-based research and outreach, is evident in underlying protocols chosen for Iter Community and manifested by a number of our selected pilot projects. Methods by which we foster public-engaged research include the use of schema.org metadata for search engine discoverability, social login via Twitter and other popular platforms, encouraging users to share their contributions to external social media through provided links, and graphic modes of presentation, including the prominent use of video and visualizations.   In the case of one of our key pilot projects, the *Social Edition of the Devonshire Manuscript*, much of its critical content was generated by "citizen scholars" passionately knowledgeable about the original manuscript's period as fans of the 2007-2010 television series "The Tudors." The *Social Edition* originated as a Wikibooks edition of a verse miscellany of the 1530s and 1540s, modelling through new social media, the first sustained example of men and women writing together in the English tradition (Siemens et al., 2012). The Iter Community hosted project, which blurs the line between academic, alt-academic, and nonacademic knowledge-making, is as a static snap-shot of the *Social Edition*, with added affordances for inline community-based commenting.

A second and related implication of a problem-based approach to knowledge modelling is extension of the online environment into offline public forms of life and physical spaces in which those occur (Siemens & Sayers, 2015). Within this register, Iter Community will be providing an open video stream of the NTRS Sessions to be held at the 2016 meetings of the RSA in Boston. We are also endeavoring to bring Iter Community online to public events

outside traditional academic venues.   Following the release of the wet alpha version of Iter Community in March 2015, we look to present the new platform at global *THATCamp* (The Humanities And Technology Camp) events and at the Digital Humanities Summer Institute (DHSI) in Victoria. Connected here too is a third implication of problem-based modelling, the rise of "hybrid pedagogies" for problem-based learning that may involve productively bringing online and offline spaces into correspondence with exciting results (Siemens & Sayers, 2015).

Trends

More generally, the Iter Community project reflects a number of current trends in digital humanities research, including large-scale collaboration, linked data, and nonempirical modes of inquiry (Siemens & Sayers, 2015). Particularly through its innovative digital project creation and archival affordances, Iter Community will bring multiple user working groups into its shared community of practice. Already in the first year of development, we have scheduled creation or sustainable hosting of over a dozen notable digital projects, each representing the work of teams typically spanning multiple institutions and geographies, bringing with them unique users. Seven of these projects will be ready for showcasing at our March 1, 2015 release. Iter Community is also involved in collaborative relationships with several large organizations, including the Advanced Research Consortium (ARC), by way of Iter Gateway and Iter Academic Press. Opportunities for connection with the Medieval Electronic Scholarly Alliance (MESA) also significantly contribute to Iter Community's appealing collaborative horizon.

Among current Iter Community pilot projects is the research and prototyping arm of the Mellon-funded Renaissance Knowledge Network (ReKN) during its initial year-one planning phase. ReKN, like MESA, is a member of ARC, and involves Iter Community contributing to

the second aforementioned research trend in DH, linked data. At present, ReKN is using Iter Community as a collaborative play space for critically investigating metadata schemas and controlled vocabularies for electronic records; to build up in-house electronic object description expertise; and as a database-driven document creation framework for producing a bibliography that will provide a comprehensive overview of scholarly electronic resources and pertinent publications in Early Modern studies. Through the peer review of Iter Academic Press, a project maintained within the Iter Community cloud may come to receive Iter's imprimatur and, via ReKN, a record in Iter's Bibliography. The research of ReKN is very much in keeping with the interests in metadata upheld by Iter Gateway since its origins, which extended towards critical research practice over the years. In keeping with the imperative of Alan Liu (2013) for digital humanists to approach metadata and its institutionalization critically, in 2006 Iter began contributing to ETCL-based research that investigated the challenges of including burgeoning electronic resources into existing metadata standards that had been designed to describe print publications for library syndication.

Ultimately, ReKN will be looked to by Iter Community in establishing Resource Description Framework (RDF) aware metadata policies. ReKN will help establish metadata best practices for Iter Community electronic resources and beyond, so that our numerous and various projects speak to one another, to the Iter Bibliography, to the ARC nodes, and to the semantic web. Its place within Iter Community is also of value to ReKN. As Pattuelli has shown (2012), linked data projects are as much problems of human negotiation as they are a problem of computation; data commensurability requires mutually agreed upon practices. The CoP affordances of Iter Community will assist ReKN in its efforts with ARC to encourage scholars to share their data in interoperable ways via deliberative processes of consensus attainment and

iteration. Plans for ReKN currently include the possible design of scholarly edition templates for the Iter Community sandbox project generator, based on a number of different open source platforms, integrating into each a common set of curated analysis tools and a common ontology for data interoperability.

Prototyping Experimental Infrastructure for Digital Humanities

In its unique contribution to nonempirical modes of inquiry Iter Community reflects an additional implication of the trajectory towards problem-based models of knowledge representation: the increasing number of small-team or individually generated and often experimental, boutique digital humanities research projects. A sandbox space for digital project creation was among the features most requested by the advisory group within their 2013 assessments. The proliferation of small-scale digital projects can be seen to arise from the same forces that continue to sustain the general trend of what Kathleen Fitzpatrick has called "big tent" digital humanities (2010). The international expansion of hybridized problem-based pedagogical models that adopt successful models developed by such organizations as the DHSI, HASTAC, and THATCamp contribute especially to the manifestation of grassroots DH projects. These training models, often developing student skills through experimental play in small-scale project-creation, have only recently begun to foster reflection upon requirements for shared humanities-specific infrastructure to support and sustain the digital outputs associated with such learning activities, and to allow their further iteration and dissemination post-training. This early awareness towards the recognition of iterative humanities-oriented infrastructure design as a scholarly activity (alongside tool and metadata prototyping which have already partially won

such status) is perhaps typified by the recent inclusion of an infrastructure creation course at the DHSI.

Iter Community offers a long-term home for boutique projects created by emerging scholars seeking to find collaborators, support, and a community of practice; in addition, to larger, established projects requiring development, production, and/or archival resources. The site *Humanism for Sale: Making and Marketing Schoolbooks in Italy, 1450-1650* is an experimental scholarly monograph that allows for public paragraph-level commenting. Iter Community is the home for the Institute for Research in Classical Philosophy and Science, which includes amongst its resources the journal "*Aestimatio:* Critical Reviews in the History of Science," the PDF files of which we have indexed and made searchable as a collection. Another project currently being developed in-lab is Monacus, which brings to the web a meticulous 50,000 record index, hand-compiled by two lay scholars, of the online *Mediceo Avanti il Principato* fonds of the State Archives of Florence. Iter Community is also developing a searchable database of the complete FICINO listserv archive. Celebrating its 25th year anniversary in 2015, FICINO was founded as an international electronic seminar and bulletin board for the circulation and exchange of information about the Renaissance and Reformation. Our ongoing study of FICINO has revealed that an effective SKCE does not require the use of Web 2.0 technologies for modelling problem-based knowledge representation. The list remains active, with over 800 members hailing from 29 different countries. We recently migrated the site of the Canadian Society for Renaissance Studies into the Iter Community cloud for further development of its membership resources. Iter Community is also currently involved in the development of a Mellon-funded project of the Newberry Library to create an online resource for the teaching of Paleography.

Academic institutions do not readily offer cloud services to humanities researchers, while corporate-based models for the cloud are ill suited for collaborative digital humanities projects. The Iter Community cloud, provisioned by Information and Instructional Technology Services at the University of Toronto Scarborough, has been experimentally and iteratively designed by us to include and connect technologies particularly geared for humanities-based project iteration. This 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. In prototyping our backend for heightened humanities-oriented collaboration, we have taken up the challenge of Geoffrey Rockwell, who has called for greater support for small-scale infrastructure experiments in arguing for their status as "valued research in humanities computing" (2010). Rockwell assesses infrastructure as opaque technology open to critique, not transparent as generally assumed: "the turn to infrastructure is political….it involves redefining what is research" and must serve not only "professional researchers at universities, but the amateur researchers in the community." Our experimental infrastructure serves to integrate projects with a larger community of practice through the Iter Community commons space, single sign-on technologies, federated search, and common data API and metadata policies. Multi-tiered support, development services, and help desk facilities, based on successful digital humanities organizational models, are in the planning phases.

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. Towards a determination, 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 customized Drupal-based environment; the second, a highly customized 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 initial release. Importantly, the development cycle itself continues to closely involve the community of users Iter serves.

Concluding Remarks

With a first iteration of our infrastructure established and a year of experimental making-oriented research behind us, we are delivering an early alpha version of the Iter Community platform to select users March 1, 2015. This initial release will include versions of the core CoP oriented features discussed above. Communal resource creation affordances will involve an archive space to preserve and make selectively available the personal electronic documents of scholars, and a single installation profile for our sandbox generator to allow users to begin prototyping their own DH projects. We will be presenting further technical details of the platform and the infrastructure behind it at the joint conference between the Canadian Society of Digital Humanities/Société canadienne des humanités numériques and the Association for Computers and the Humanities in June. By that time, core features will have undergone further

iteration and testing, we expect to have ten pilot projects realized, and three installation profiles available in our sandbox generator. In June, we plan to make this alpha version of the platform publically accessible.

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