

Social Knowledge Creation: Three Annotated Bibliographies¹

Alyssa Arbuckle, Nina Belojevic, Matthew Hiebert, & Ray Siemens, working with Shaun Wong, Derek Siemens, Alex Christie, Jon Saklofske, Jentery Sayers, & the INKE and ETCL Research Groups

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Alyssa Arbuckle is Metadata Architect in the Electronics Textual Cultural Lab at the University of Victoria. Email: alysaarbuckle@gmail.com .

Nina Belojevic is an English Master's student at the University of Victoria. She works as a Graduate Research Assistant at the Electronics Textual Cultures Lab and the Maker Lab in the Humanities as part of the INKE and MVP research teams. Email: nbelojevic@gmail.com .

Matthew Hiebert is Postdoctoral Fellow at the Electronic Textual Cultures Lab and Visiting Assistant Professor of English at the University of Victoria. Email: hiebert8@uvic.ca .

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

Shaun Wong is a web developer and graphic designer. Email: shaun.kirk.wong@gmail.com .

Derek Siemens is Research Assistant with the Electronic Textual Cultures Lab at the University of Victoria.

Alex Christie is a doctoral research assistant with INKE and the Modernist Versions Project (MVP). He works across the ETCL and the Maker Lab in the Humanities, using new and built media to model the procedural nature of modernist texts. Email: achris@uvic.ca.

Jon Saklofske is Associate Professor at Acadia University, Wolfville, Nova Scotia, Canada. His interest in the ways that William Blake's composite art employs words and images has inspired his NewRadial digital environment. He co-leads INKE's Modelling and Prototyping group, and experiments with digital gamespaces in university-level research and learning. Email: jon.saklofske@acadiau.ca.

Jentery Sayers is Assistant Professor of English and Director of the Maker Lab in the Humanities at the University of Victoria. His work has appeared in *American Literature*; *e-Media Studies*, *Digital Studies / Le champ numérique*; the *International Journal of Learning and Media*; *Kairos: Rhetoric, Technology, and Pedagogy*; *The Information Society*; and *Computational Culture*, among others. Email: jentery@uvic.ca.

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Introduction

Matthew Hiebert with Alyssa Arbuckle, Ray Siemens, & Nina Belojevic

OVERVIEW

In 2012–2013, a team led by Ray Siemens at the Electronic Textual Cultures Lab (ETCL), in collaboration with Implementing New Knowledge Environments (INKE), developed three annotated bibliographies under the rubric of “social knowledge creation.” The items for the bibliographies were gathered and annotated by members of the Electric Textual Cultures Lab (ETCL) to form this tripartite document as a resource for students and researchers involved in the INKE team and well beyond, including at digital humanities seminars in Bern (June 2013) and Leipzig (July 2013). Gathered here, the result of this initiative might best be approached as an expeditious environmental scan, a necessarily partial snapshot of scholarship coalescing around an emerging area of critical interest. The project did not seek to establish a canon, but instead to provide a transient representation of interrelational research areas through a process of collaborative aggregation. The annotated bibliography is purposefully focused on the active, present, and future “social knowledge creation” instead of the passive and past “social construction of knowledge,” in which its roots lie. The difference in emphasis signals a newfound concern with (re)shaping processes that produce knowledge, and doing so in ways that productively reposition sociological and historical approaches. Taken together, the three parts of the bibliography connect contemporary thinking about new knowledge production with a range of Web 2.0 digital tools and game-design models for redesigning knowledge processes to better facilitate collaboration.

PRINCIPLES

The bibliography attends to the scholarly deformations that created the conditions for its emergence. Radically overhauling existing understandings of “the book” and print, D.F. McKenzie (1999) in book history and Marshall McLuhan (McLuhan, Gordon, & Lamberti, 2011) in media theory undermine modern era epistemologies to reveal knowledge as the product of localized social, material, and media forces. With knowledge increasingly mediated by software, “The Media” cannot be conceived as a single deterministic force, but rather as an ecosystem in which multiple mediums mutually shape one another in localized contexts (McLuhan & Fiore, 1967). There was no single “print culture” animating a world inaugurated by Gutenberg, but myriad localized print cultures (Johns, 1998). In our own time, there exists no unitary “digital culture” producing homogenous knowledge throughout the global realm of the Internet. New opportunities have emerged for the humanities – increasingly regarded at risk of irrelevance in an age of “technoculture” (Balsamo, 2011) – to actively integrate in its knowledge production and conveyance processes to access multiple non-academic publics through digital tools.

The remediation of culture through the interconnectedness of Web 2.0 software also illuminates that knowledges undergoing digital transformation were collaborative at origin. We now understand that knowledge production was and is inevitably plural, with multiple institutions, political and economic conditions, and cultural specificities affecting production in their own ways through unique agencies (Burke, 2000). Subjugated forms of communication from the history of knowledge production return

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The Implementing New Knowledge Environments (INKE) Research Group is directed by Raymond Siemens and consists of 35 researchers across 20 institutions and 21 partner agencies, with work involving some 19 postdoctoral research fellows and 53 graduate research assistants over the life of the project.

The Electronic Textual Cultures Lab (ETCL) Research Group is directed by Raymond Siemens and based at the University of Victoria, and through a series of collaborative relationships comprises an international community of over 300 researchers.

not merely as subjects of inquiry, but also to provide perspectives on how knowledge creation processes might be reimagined for digital environments. Conversation, epistolary correspondence, manuscript circulation, and other informal modes of scholarly exchange have been recovered at the fount of academic disciplines (Siemens, 2002). Electronic publication models entailing social knowledge creation vis-à-vis critical engagement with the history of scholarly communication are appearing. These publication models gain popularity as publishers' stakes in traditional journals and monographs are increasingly perceived to outweigh the interests of researchers who wish to actively engage publics in the sharing of academic work.

The interaction and collaboration afforded by the inherently social nature of Web 2.0 technologies contrast with more traditional, static websites modelled on the written page and with knowledge conveyance as the tacit design goal. In "Humanities 2.0," design focuses on how users may be empowered by applied social knowledge creation tools in order to contribute to knowledge production in socially enabled online environments. Methodological practices of scholarship in all disciplines are increasingly affected by common digital affordances (McCarty, 2003). The trend toward greater access to large data in widely usable formats, and the growing familiarity with analytical tools to process that data, dramatically accelerates workflows and allows researchers to pose questions that simply would have taken too long to answer without computation. The software-based modes that researchers increasingly communicate through can be seen to cultivate a "problem-based" approach to scholarship that locates focus and concern outside disciplinary boundaries. Problem-based scholarship implies greater attunement with the public that research intends to serve, suggesting further that accelerating and deepening discourse between experts and the communities existing around data sets is of scholarly value. Facilitating public involvement in scholarship through digital means might assist the humanities in asking the "right" questions, might provide better means of answering them, and might improve competency in reflecting on such answers in both expert communities and in larger societal discourses. This perspective on the transformation of scholarship at the level of the methodological commons invites renewed inquiry into theoretical approaches to the field of knowledge production from within the context of new media. Such inquiry, we believe, might inform digital humanities practitioners in their efforts to create critical interventions through producing forms of content modelling (data), critical processes (analytic tools), and communication and dissemination (discourse), to best facilitate increasing collaborative convergence of the scholarly and the social spheres while preserving commitments to humanities-based research.

The Electronic Textual Cultures Lab (ETCL) and INKE team have explored the study and practice of social knowledge creation through its public development of *A Social Edition of the Devonshire Manuscript* on Wikibooks (Crompton, Arbuckle, & Siemens, 2013). By prototyping an edition of an early modern text on the principles of open access and editorial transparency, the case study demonstrates that new media environments can effectively facilitate access to, contribution to, and discussion of scholarly knowledge for stakeholders both inside and outside the academy, without jettisoning the peer review process. The social edition engages discourses surrounding scholarly knowledge production, new media, and critical making to develop an argument about the nature of scholarly editing. Transferring knowledge creation

practices from outside the walls of the academy into the public social sphere involves a distribution of authority that recasts the universal inclusiveness associated with the humanities. In extending the dynamic relations inherent to textual production and reception, the social scholarly edition transforms the role of the editor from a didactic authority to that of a knowledge creation facilitator. “Humanities 2.0” environments, such as the online social edition, reactivate the open, community-based collaborative processes at the fount of scholarly knowledge by means of digital tools. In their digitally networked forms, basic scholarly activities – “scholarly primitives” as John Unsworth (2008) has termed them – extend into and embrace the public sphere. Using Web 2.0 design principles dramatically reconstitutes scholarly practices, unsettling conceptions of the researcher as a sovereign discoverer of knowledge in an objective world.

Humanities 2.0 projects, and their implicit shift toward knowledge practices designed for contribution and collaboration, embody the epistemological and institutional changes occurring within society. Social knowledge creation in Humanities 2.0 thus hinges on stakeholders, both inside and outside the academy, becoming technically capable of using and developing new methodologies and forms of communication. Its scholarly projects are often grassroots efforts rather than institutionally driven, growing out from among individual humanities researchers that seek traditional scholarly values of sharing and knowledge advancement by way of digital methods and design. The social knowledge creation products these projects facilitate benefit from the involvement of “citizen scholars” contributing from contexts external to the academy. Implicit to these scholarly design practices is the understanding that reintegration with the public social sphere by digital means offers the humanities reinvigoration and the continuation of its knowledge practices and its repositories, while reaffirming formational principles. A Humanities 2.0 trajectory along such lines might also be understood as a particularly effective response to the perennial call for universities to actively engage publics in their own environments. In contrast to the undermining effects of corporate-based funding, economic incentives, or the commodification of the humanities into training platforms, public involvement in scholarly knowledge creation productively bolsters the humanities through an integration with its traditional values.

TOOLS

Social knowledge creation frequently depends on unfixed collaborative electronic tools to model such processes as discovering, annotating, comparing, referring, sampling, illustrating, and representing. The *applied social knowledge creation tools* highlighted in the second section of the bibliography permit social scholarly editions to be constructed as flexible systems that can evolve alongside the knowledge creation they facilitate. An advantage of using specifically open-source tools to this end is that they are intrinsically participatory, allow arguments to be transparent at the level of code, and include adjustable, adaptable process modelling. Today, after the profound “changes in knowledge regimes” of recent decades (Burke, 2000), situated users are increasingly capable of redefining what media become, despite the publics they are constructed for and aim to construct (Gitelman, 2006). The open source community revolves around several collaborative code repositories in developing and distributing software. As Alan Galey and Stan Ruecker (2010) argue – adopting the perspective of thinking through making afforded by book history – every prototyped digital tool makes specific

arguments about the processes it intends to model. The applied social knowledge creation tools included with the annotated bibliography derive from areas of content provision, annotation, marking/tagging/bibliography, and text analysis. Collaborative tools for annotation democratically model a scholarly primitive that emerged with medieval manuscript culture to assist remembering, thinking, clarifying, sharing, and interpreting (Ovsiannikov, Arbib, & McNeill, 1999; Marshall, 1997; Wolfe, 2002). Blogs and content management systems facilitate user-derived content, implicitly contending that sharing, creativity, and dialogue are intrinsic to knowledge activity (Fitzpatrick, 2007; Kjellberg, 2010; Fernheimer, Litterio, & Hendler, 2011). Collaborative bibliography tools enhance the scholarly processes they model by heightening social involvement and reflecting the networked nature of thought and scholarship (Cohen, 2008; Hendry, Jenkins, & McCarthy, 2006). Community bibliography applications, which often incorporate folksonomy tagging, allow for the collaborative creation, organization, citation, enrichment, and publication of bibliographies. Applied social knowledge creation tools for textual analysis involve “the application of algorithmically facilitated search, retrieval, and critical processes” (Schreibman, Siemens, & Unsworth, 2008).

GAMIFICATION AND GAME-BASED APPROACHES

Another key area of concern is originally borne in and among earlier notions that the book is an inherently social technology – embodied in nascent efforts to digitally render the collaborative nature of its analysis in projects like *Ivanhoe*, an online environment for community-based literary analysis created by Johanna Drucker and Jerome McGann (Drucker, 1991). The very nature of such projects points to the potential for game-based design techniques to more broadly assist in modelling collaborative scholarly interpretation practices. Following this, the third section of the bibliography incorporates critical assessment of the current role of gaming in social knowledge creation, as is essential for moving forward in the scholarly development of game-design models for publication and communication. Foundational as a concept, the annotated bibliography explores both the benefits and hazards of these activities in the creation of knowledge, even though the *implementation* of “gamification” and other game-design models within digital humanities projects is currently limited. Game-design techniques that might effectively contribute to humanities-based knowledge practices were sought out, while analyses of gaming as a cultural phenomenon capable of constituting subjects in ways that perpetuate exploitive labour dynamics and rigidified knowledge regimes were also attended to.

Game elements such as badges and achievements have inspired alternative recognition systems within non-game scholarly contexts to increase participation. A number of critics from within the humanities have condemned such use of gamification for corroding the motivation knowledge activities produce intrinsically. It is also argued that the processes of gamification attenuate the inherent power of full games to convey knowledge, make arguments, and accomplish other meaningful things (Bogost, 2011). Theorists wishing to retain gamification as a sociological or media theory concept – to account, for instance, for the unique experiential phenomenon of “flickering” between game and non-game contexts (Deterding, Dixon, Khalad, & Nacke, 2011) – have developed terminology distinguished from “gamification.” Prescriptively, they may aim to limit its range of applicable techniques to the use of non-achievement related game elements within scholarly knowledge environments. The actual use of gamification

within the humanities is currently limited, with critique largely directed toward gamification as a general process, rather than emerging from the study of its use within existing or critically prototyped knowledge environments.

Inquiry into the relationship between play, games, and social epistemology took on a newfound relevance in the mid-twentieth century. Anthropologists had documented the ubiquity of play activities within human cultures, and theorists working out of various humanities disciplines explored the general philosophical and sociological implications. The echoes of prominent voices from that period are heard within the more recent literature we have collected here. In his landmark *Homo Ludens* (1970), the cultural historian Johan Huizinga proposes that play occurs within a “magic circle” outside of normal social conventions, yet serves a fundamental social role in innovating culture. Ludwig Wittgenstein (1958), in his later writings, famously conceives all social interaction as constituted by “language games,” with tacit knowledge of their implicit rules a necessary precondition for meaningful language and behaviour. Games and play were brought into dialectical polarity by the sociologist Roger Caillois (1961), who perceives social institution as rigid game-like structures, limiting through *ludus* (arbitrary, imperative, and purposely tedious conventions) the free individual play of *paidia* (spontaneous manifestations of the play instinct). McLuhan (1994) approaches the various games people play for enjoyment and spectacle as communication media, with their specific structures modelling and revealing fundamental aspects of how a society functions. The question of what constitutes a game was addressed through conceptual analysis by Bernard Suits (2005), who argues that the essential elements are a goal, a means of achieving that goal, rules that prohibit the most efficient means of attaining the goal, and the special attitude necessarily adopted by players in committing (or better, submitting) themselves to the rules of play. This array of twentieth-century theory continues to underpin much of the scholarly debate surrounding videogames, gamification, and play. Game design, however, with its prescriptive and aesthetic dimensions, was manifestly introduced into this ongoing discussion after electronic games were brought under the purview of the humanities.

Game design became a point of contention for literary scholars who first sought to assess electronic games and hypertext-based literature as artistic forms. By the late 1990s, discourse had largely polarized into a camp of narratologists, who followed Janet Murray (1997) in evaluating videogame design as a type of storytelling, and ludologists, allied with Jesper Juul (1999), who considered interactivity the principal hallmark of the new art. Bridging this divide, Espen Aarseth (1997) examined electronic hypertexts and virtual games taxonomically, as a novel computational branch of “ergodic literature” – texts demanding non-trivial effort from the reader to construct meaningfulness. How we analyze and understand past and present knowledge environments may be reconstituted through game design and implementation, thus fostering the dialectical relationship between the critical and creative aspects of social knowledge production in digital environments.

INTENT

The bibliography provides critical contexts and resources for students and researchers to develop new tools and modes of scholarship in order to productively engage with

each other and other members of the public. Answers may arrive perpetually in the form of iterative processes, while the exciting questions the bibliography prompts are immediate: How should we model scholarly activity in online environments for greater public engagement? What can we learn from past and existing knowledge creation practices in modelling new ones? Will the humanities continue to play a role in assuring the “quality” of knowledge within transforming social landscapes? How are we to theorize the ongoing changes in knowledge conditions in ways that might account for our critical design-based interventions? What existing humanities processes should our new knowledge environments seek to redesign? How can we integrate our own academic and scholarly practices with the tools and techniques that are currently reshaping society as a whole? Social knowledge creation does not heed traditional disciplinary boundaries in what is both a critical and creative practice. The theoretical shift entailed by creation – processing, designing, making – entails a problem-based, interdisciplinary, communicative, and iterative approach to inquiry and knowledge. As a research area, social knowledge creation integrates, among other research areas, the history of knowledge production (e.g., book history, media studies, discipline formation); studies in contemporary culture and methods of analyses (e.g., text encoding, big data modelling, Web 2.0, new media); and digital humanities making practices (e.g., interface design, online edition creation, prototyping, digital tools, game-based techniques, scholarly communication). The humanities, in response, have the potential to be reinvigorated by this reconfiguration for collaboration afforded by the digital turn.

NOTE

1. The development of these bibliographies was led in the Electronic Textual Cultures Lab (ETCL, University of Victoria).

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1. Social Knowledge Creation and Conveyance: A Selected Annotated Bibliography

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INTRODUCTION

The following selected annotated bibliography reviews scholarly work on social knowledge creation and conveyance. The intention in developing this document is to provide an environmental scan of the current state of social knowledge production in its many nodes and manifestations. Additionally, this annotated bibliography exposes the relevance of social knowledge creation for current scholarly endeavours and, importantly, institutions. Many of the books, articles, collections, blog posts, tools, and projects cited inevitably call for institutional transformation and herald a predicted sea change of academic structures in terms of pedagogy, publishing, and production. Notably, these calls for reform rely on inherently social structures and forms of knowledge creation. Widespread institutional change is notoriously slow and can be opposed by many; the shift, however, from models of single authorship and hoarded knowledge to acknowledging networks of shared knowledge creation may indicate a deconstruction of the real or perceived boundary between academic and non-academic communities. The utopic ideal of digital technology democratizing knowledge – and thereby notions of authority and even resources – signals a unique opportunity for social knowledge creation. As such, this annotated bibliography aims to synopsise beneficial resources and trends for individuals invested in digital scholarship, academic reform, and cross-community collaboration.

Although certain resources included in this annotated bibliography do derive from science and technology studies or library studies, the entries as a whole reveal a significant bias toward the humanities (and often the digital humanities). Furthermore, this annotated bibliography primarily focuses on scholarly praxis concerns, as evidenced by the substantial amount of resources relevant to, for instance, academic publishing or developing digital humanities projects. This bias does not suggest that social knowledge creation practices are limited to humanities scholars, researchers, and practitioners; fascinating and relevant scholarship has been executed in other academic and non-academic fields, perhaps especially by social scientists and citizen scholars. Rather, the distinct angle speaks to a more specific underlying purpose of this annotated bibliography: to supplement the research of humanities scholars whose interests lie in studying or developing electronic projects and initiatives within the framework of socially made knowledge. In keeping with the overarching social theme, this annotated bibliography would likely benefit from a comprehensive expansion into other disciplines.

The term “social knowledge creation” can easily become a muddled or catchall phrase. In order to more clearly delineate a research scope, the following annotated bibliography has been catalogued by specific topoi. The document contains 98 individual entries and 9 distinct categories:

1. History of Social Knowledge Production
2. Society, Governance, and Knowledge Construction and Constriction

3. Designing Knowledge Spaces through Critical Making: Theories and Practices
4. Social Media Communities, Content, and Collaboration
5. Discipline Formation in the Academic Context
6. The Shifting Future of Scholarly Communication and Digital Scholarship
7. Social Knowledge Creation in Electronic Journals and Monographs
8. Social Knowledge Creation in Electronic Scholarly Editions and e-Books
9. Exemplary Instances of Social Knowledge Construction
10. Complete Alphabetical List of Selections

Approximately 85% of the 98 entries reflect scholarship generated after 2000. The remaining 15% include seminal resources like Michel Foucault's 1977 *Discipline and Punish* and Jerome McGann's 1991 *The Textual Condition*. Each section contains from 11 to 22 entries, and entries have been cross-posted between categories when appropriate. As well, a complete alphabetical list of all 98 individual entries follows the final section.

The sections have been arranged in a trajectory that moves from the foundational to the abstract to the contemporary, and eventually settles on pertinent instantiations. The first section, "History of Social Knowledge Production," reflects on the narratological basis of contemporary social knowledge creation practices. The second section, "Society, Governance, and Knowledge Construction and Constriction," represents the political and ideological implications of socially creating (or, more often, compressing) knowledge. "Designing Knowledge Spaces through Critical Making: Theories and Practices" surveys scholarship regarding cognizant design, especially in the emergent digital humanities-oriented field of critical making. "Social Media Communities, Content, and Collaboration," the fourth section, includes scholarship on the rise of Web 2.0 practices and the resulting opportunities for social knowledge creation. The fifth section, "Discipline Formation in the Academic Context," focuses on how academic disciplines form socially. The sixth, seventh, and eighth sections ("The Shifting Future of Scholarly Communication and Digital Scholarship"; "Social Knowledge Creation in Electronic Journals and Monographs"; "Social Knowledge Creation in Electronic Scholarly Editions and e-Books") more explicitly centre on academic concerns of social knowledge creation in the digital realm. The last section, "Exemplary Instances of Social Knowledge Construction," includes annotations of social knowledge creation tools as well as literature about said tools.

This annotated bibliography consciously ranges between what may at first appear to be disparate schools of thought within the humanities. With purposefully broad strokes, the document comments on the productive or beneficial qualities of social knowledge production and should be considered a supplemental resource for those interested in studying, inciting, or participating in social knowledge creation. More specifically, readers can expect to gain a nuanced sense of the history, stakes, opportunities, and conversation surrounding contemporary social knowledge practices, especially in the digital realm.

HISTORY OF SOCIAL KNOWLEDGE PRODUCTION

Various studies have been done in the vein of analyzing the history of knowledge production. This annotated bibliography primarily focuses on three major fields within

this line of inquiry: textual studies, historical scholarly practices, and media history. The former focuses largely on the advent of print and the consequences thereof. The second category encompasses the history of scholarly communication, specifically concerning academic journals and peer review. The latter more directly concentrates on the social context of various media and mediums. The conception of knowledge production as plural represents the point of contact between these fields – knowledge reflects a composite of various people as well as networks of historical, political, and social contexts. The following 14 selected works analyze past practices and instances of social knowledge production in order to more comprehensively understand those of the present.

Bazerman, C. (1991). How natural philosophers can cooperate: The literary technology of coordination in Joseph Priestly's *History and present state of electricity* (1767). In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities*. Madison, WI: University of Wisconsin Press.

Charles Bazerman studies the role of early literature reviews through a thorough recounting of Joseph Priestly's *History and Present State of Electricity* (1767). According to Bazerman, literature reviews represent potent sites of knowledge sharing and dissemination. Bazerman claims that Priestly's volume represents the first literature review as it details the history of electricity research and experiments. Priestly created a comprehensive, open-ended document that summarized the accepted state of the field as well as anomalies, discrepancies, and failures. Bazerman applauds Priestly for his active service in the name of the democratization and dissemination of knowledge.

Biagioli, M. (2002). From book censorship to academic peer review. *Emergences*, 12(1), 11–45.

Mario Biagioli details the historical and epistemological shifts that have led to today's academic peer review system. Contrary to its contemporary role, peer review began as an early modern disciplinary technique that was closely related to book censorship and was required for social and scholarly certification of institutions and individuals alike. The rise of academic journals shifted this constrained and royally mandated position. No longer a self-sustaining system of judgment and reputation dictated by a small group of identified and accredited professionals, peer review (which is often blind) now focuses on disseminating knowledge and scholarship to the wider community. Biagioli also states that journals have moved from officially representing specific academic institutions to being community owned and operated, as responsibilities, duties, and readership are now dispersed among a community of like-minded scholars.

Burke, P. (2000). *A social history of knowledge: From Gutenberg to Diderot*. Cambridge: Polity Press.

Peter Burke expands on the various agents and elements of social knowledge production, with a specific focus on intellectuals and Europe in the early modern period (until c. 1750). He argues that knowledge is always plural and that various knowledges concurrently develop, surface, intersect, and play.

Burke relies on sociology, including the work of Emile Durkheim, and critical theory, including the work of Michel Foucault, as a basis to develop his own notions of social knowledge production. He acknowledges that the church, scholarly institutions, government, and the printing press have all significantly affected knowledge production and dissemination – often affirmatively, but occasionally through restriction or containment. Furthermore, Burke explores how both “heretics,” or humanist revolutionaries, and more traditional academic structures developed the university as a knowledge institution.

Burke, P. (2012). *A social history of knowledge II: From the Encyclopédie to Wikipedia*. Cambridge: Polity Press.

Burke builds on his research from the first volume, *A Social History of Knowledge: From Gutenberg to Diderot*, by expanding his scope from the early modern period into the twentieth century. He continues to rely on certain foundational notions for this volume: knowledge is plural and varied; knowledge is produced by various institutions and conditions instead of solely by individuals; the social production of knowledge is intrinsically connected to the economic and political environments in which it develops. As with the first volume, Burke focuses mainly on academic knowledge, with brief forays into other forms or sites of knowledge.

Eagleton, T. (2010). *The rise of English*. In V.B. Leitch (Ed.), *Norton anthology of theory and criticism* (pp. 2140–2146). New York, NY: W.W. Norton.

Terry Eagleton charts the development of English literature as an ideological tactic beginning in the mid-nineteenth century. English literature was used as a form of suppression and control, he argues, to educate lower classes “enough” to keep them subservient. Moreover, English literature was scorned and primarily directed at women when first introduced into the university as a field of study. Eagleton concludes that literature “is an ideology” (p. 2140), due to its historical role in social development and nation building in England and elsewhere.

Fjällbrant, N. (1997). Scholarly communication—Historical development and new possibilities. In *Proceedings of the IATUL Conference*. Lafayette, IN: Purdue University Library.

In order to study the widespread transition into electronic scholarly communication, **Nancy Fjällbrant** details the history of the scientific journal. Academic journals emerged in seventeenth-century Europe, and the first journal, *Journal des Sçavans*, was published in 1665 in Paris. According to Fjällbrant, the scholarly journal initially developed out of a desire for researchers to share their findings with others in a cooperative forum. As such, the journal had significant ties with the concurrent birth of learned societies (e.g., the Royal Society of London and the Académie des Sciences in Paris). As their primary concern was the dissemination of knowledge, learned societies began seriously experimenting with journals. Fjällbrant lists other contemporaneous forms of scholarly communication, including the letter, the scientific book, the newspaper, and the anagram system. The journal, however, emerged as a primary source of scholarly communication because it met the needs of various stakeholders: the general public; booksellers and libraries;

authors who wished to make their work public and claim ownership; the scientific community invested in reading and applying the findings of other scientists; publishers who wished to capitalize off of production; and academic institutions that required metrics for evaluating faculty.

Gitelman, L. (2006). *Always already new: Media, history, and the data of culture*. Cambridge, MA: MIT Press.

Lisa Gitelman relates media history, with a focus on contextual social processes, in order to examine human experience, communication, and cultural history. She argues that media are plural, socially recognized communication structures that evolve with surrounding publics. Gitelman defeats contemporary notions of media as a singular, ubiquitous force: The Media. Rather, Gitelman focuses her examination by contrasting the Internet and the invention of the phonograph. Consequently, she envisions media as active, multiple, historical subjects. Gitelman briefly extends her argument into the materiality of media subjects, digital versus non-digital textual materiality, and the necessary omnipresence of both form and content.

Jagodzinski, C.M. (2008). The university press in North America: A brief history. *Journal of Scholarly Publishing*, 40(1), 1–20.

Cecile M. Jagodzinski describes the history of the North American university press. She notes that the first North American university presses – at Cornell and Johns Hopkins universities – debuted in the nineteenth century. From the beginning, university presses were considered to be primarily for the dissemination of knowledge. The number of university presses grew with the increase of liberal arts colleges over the twentieth century, and the Association of American University Presses was formally established in the mid-1930s. As is well known, the last quarter of the twentieth century heralded large, systematic changes and obstacles, and the university press was not immune to these challenges. As such, the institution of the university press has creatively addressed the (largely financial) issues burdening contemporary scholarly communication as a whole.

Johns, A. (1998). *The nature of the book: Print and knowledge in the making*. Chicago, IL: University of Chicago Press.

Adrian Johns, a self-professed historian of printing, seeks to reveal a social history of print: a new, more accurate exploration of how print and thereby knowledge developed. Johns' account of print includes acknowledging the labours of those actually involved with printing, as well as their contemporary understandings and anxieties surrounding print and publication. With a distinct focus on the history of science, he explores the social apparatus and construction of print as well as how print has been used socially. Notably, Johns constructs his argument in firm opposition to Elizabeth Eisenstein's earlier work on print culture (he argues that there is no "print culture," as such; rather, there are various print *cultures* that are all local in character). For Johns, the wide-ranging influence of print is manifold, multiple, and not implicit in a deterministic cause-and-effect relationship with any single historical factor or cause.

Liu, A. (2013). From reading to social computing. In K.M. Price and R. Siemens (Eds.), *Literary studies in the digital age: An evolving anthology*. URL: <http://dlsanthology.commons.mla.org>.

Alan Liu performs an impressive short history of both social computing and literary theory. He develops the consensus that literary scholars must take social computing seriously, as it is the current mode of cultural and personal expression. Liu suggests that literary scholars engage with social computing through two distinct methodologies: that of the social sciences, on one hand, and that of the digital humanities, on the other. Further to considering social computing as an *object* of literary study, Liu argues that social computing must also be considered as a *practice* of literary study.

Manovich, L. (2001). *The language of new media*. Cambridge, MA: MIT Press.

Lev Manovich distills both abstract and assumed theories concerning the history and present state of computing and media. In doing so, he attempts to contextualize, categorize, and develop a relevant vocabulary of new media. Concurrently, Manovich explains the technical development of new media, and situates new media in the twentieth century trajectory, with one eye to cinema and the other to print. His contextualization reveals how new media and previous media mutually define and inform each other. Manovich discusses the transformations that cause the digital computer to act as a cultural processor and a “universal media machine” (p. 4). He further defines new media by enumerating five principles: automation, numerical code, access, variability, and transcoding. Of note, Manovich proposes the opposition of database and narrative due to differences in form and linearity.

Siemens, R. (2002). Scholarly publishing at its source, and at present. In R. Siemens, M. Best, E. Grove-White, A. Burk, J. Kerr, A. Pope, J-C. Guédon, G. Rockwell, & L. Siemens (Comps.), *The credibility of electronic publishing: A report to the humanities and social sciences federation of Canada*. *Text Technology*, 11(1), 1–128.

Raymond Siemens' introduction to this report focuses on rethinking scholarly communication practices in light of new digital forms. He meditates on this topic through the framework of *ad fontes* – the act, or conception, of going to the source. Siemens argues that scholars should look at the source or genesis of scholarly communication; the source, for Siemens, includes more than the seventeenth-century inception of the academic print journal. The source also includes less formal ways of communicating and disseminating knowledge (e.g., verbal exchanges, epistolary correspondence, and manuscript circulation). In this way, scholars can look past the popular, standard academic journal and into a future of scholarly communication that productively involves varied scholarly traditions and social knowledge practices.

Streeter, T. (2010). Introduction. In *The net effect: Romanticism, capitalism, and the Internet* (pp. 1–17). New York, NY: New York University Press.

Through a distinctly sociological method, **Thomas Streeter** analyzes the connections between computing, the rise of the Internet, capitalism, and social life. Instead of framing his examination through the Internet's effect on society, Streeter looks at how the Internet has been socially constructed and its role in

myriad complex historical, personal, and political networks. Rather than prophesying its speculative future, he questions why and how the Internet was built. Moreover, Streeter discredits essentialist conceptions of technology and the Internet; he articulates that various historical and cultural contexts have fostered the openness of the Internet's networked state.

Turner, F. (2006). *From counterculture to cyberculture: Stewart Brand, the Whole Earth Network, and the rise of digital utopianism*. Chicago, IL: University of Chicago Press.

Fred Turner details a sociohistorical narrative of the development of the Internet. In Turner's conception, the counterculture movements of the 1960s – specifically, those under the stewardship of Stewart Brand and the Whole Earth Network – played an integral role in the development of both the principles and practices of contemporary personal computing. He argues that the New Communalists' (those who flocked to communes in the late 1960s and early 1970s) embrace of cybernetics and a technology-based ideology assisted and influenced the widespread network of computing as it is now. Turner elaborates on the social construction of modern computing, as well as how computing – both abstractly and tangibly – influenced numerous American social groups, movements, and citizens.

SOCIETY, GOVERNANCE, AND KNOWLEDGE CONSTRUCTION AND CONSTRUCTION

Insofar as it proves rewarding to analyze productive social knowledge construction practices and theories, it remains equally interesting to analyze where social knowledge construction is restricted, limited, or ideologically ordered. The following annotated bibliography spans from critical theory to sociotechnology studies and surveys the field of knowledge production from a more theoretical standpoint. Many of the 21 selections directly engage with the digital environment and computational culture. Pertinent questions raised by the selections in this annotated bibliography include: Who constrains knowledge and how? Through which channels does knowledge flow? And perhaps most pressing: How does acknowledging the constriction of knowledge influence our present and future decisions regarding policy, law, and society?

Althusser, L. (1971). Ideology and ideological state apparatuses (notes towards an investigation). In *Lenin and philosophy and other essays* (pp. 127–186). (B. Brewster, Trans.). New York, NY: Monthly Review Press.

Louis Althusser describes the form and function of ideology and how it dictates experience and knowledge via Ideological State Apparatuses (ISAs). ISAs include the church (the “religious ISA”), family, school, union, law, culture, political system, and communication infrastructure. Repressive State Apparatuses (RSAs), on the other hand, include more overtly violent institutions like the police and the army. ISAs constitute subjects, and thus experience, through ritual and practice. As they are omnipresent institutions, ISAs dictate knowledge production: subjects both constitute and are constituted by ISAs. Althusser contends that the school is the prime contemporary instantiation of the ISA; the school maintains an ideological infrastructure through training children into ideological subjectivity and thereby reproducing the conditions of production.

Ang, I. (2005). Who needs cultural research? In P. Leystina (Ed.), *Cultural studies and practical politics: Theory, coalition building, and social activism* (pp. 477–483). New York, NY: Blackwell.

Ien Ang ruminates on the current relationship between cultural studies, the university, the public, and society at large. She argues that individuals not only benefit from cultural studies work, but that they in fact rely on it to navigate, comprehend, and meaningfully contribute to an increasingly complex world. Ang advocates for the detachment of cultural studies from corporate-based funding, as she worries that these sorts of partnerships will, by catering to popular will and interest, falsely skew and inadequately represent the field of cultural research. Ang asserts that social knowledge production must be supported by a knowledge infrastructure that holistically approaches the study and creation of culture.

Balsamo, A. (2011). Taking culture seriously in the age of innovation. In A. Balsamo (Ed.), *Designing culture: The technological imagination at work* (pp. 2–25). Durham, NC: Duke University Press.

Anne Balsamo studies the intersections of culture and innovation, and acknowledges the unity between the two modes (“technoculture”). She argues that technological innovation should seriously recognize culture as both its inherent context and as a space of evolving, emergent possibility – as innovation necessarily alters culture and social knowledge creation practices. Balsamo introduces the concept of the “technological imagination”: the innovative, actualizing mindset. She also details a comprehensive list of truisms about technological innovation, ranging from considering innovation as performative, historically constituted, and multidisciplinary, to acknowledging design as a major player in cultural reproduction, social negotiation, and meaning making. Currently, innovation is firmly bound up with economic incentives, and the profit-driven mentality often obscures the social and cultural consequences and implications of technological advancement. As such, Balsamo calls for more conscientious design, education, and development of technology, and a broader vision of the widespread influence and agency of innovation.

Benkler, Y. (2003). Freedom in the commons: Towards a political economy of information. *Duke Law Journal*, 52(6), 1245–1276.

Yochai Benkler analyzes the pervasive social influence of the Internet, with a focus on the economic and political changes affected by the rise and ubiquity of digital spaces, networks, and action. He argues that the Internet has provoked two new social phenomena: “nonmarket production” – production by an individual without intention to generate profit – and “decentralized production” – production that occurs outside of the sanctioned centres of industry. In turn, these phenomena facilitate new opportunities to pursue democracy, individual freedom, and social justice. The forms of production incited by the Internet permit individuals and communities to gain control over their work, means of production, and network of relations, and to consequently garner more influence. Benkler concludes with a rally to take

advantage of the opportunities the digital environment boasts in order to build more just and democratic social, economic, and political systems.

Berry, D.M. (2012). The social epistemologies of software. *Social Epistemology: A Journal of Knowledge, Culture and Policy*, 26(3-4), 379-398.

David M. Berry analyzes how code and software increasingly develop, influence, and depend on social epistemology or social knowledge creation. He discusses the highly mediated “computational ecologies” (p. 379) that individuals and nonhuman actors inhabit, and argues that we need to become more aware of the role these computational ecologies play in daily social knowledge production. Berry analyzes two case studies to support his argument: the existence of web bugs or user activity trackers and the development of lifestreams, real-time streams, and the quantified self. For Berry, the increasing embrace of and compliance with potentially insidious data collecting via the Internet and social media needs to be addressed.

Biagioli, M. (2002). From book censorship to academic peer review. *Emergences*, 12(1), 11-45.

Mario Biagioli details the historical and epistemological shifts that have led to today’s academic peer review system. Contrary to its contemporary role, peer review began as an early modern disciplinary technique that was closely related to book censorship and was required for social and scholarly certification of institutions and individuals alike. The rise of academic journals shifted this constrained and royally mandated position. No longer a self-sustaining system of judgment and reputation dictated by a small group of identified and accredited professionals, peer review (which is often blind) now focuses on disseminating knowledge and scholarship to the wider community. Biagioli also states that journals have moved from officially representing specific academic institutions to being community owned and operated, as responsibilities, duties, and readership are now dispersed among a community of like-minded scholars.

Bijker, W.E., & Law, J. (1992). Introduction. In W.E. Bijker & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change* (pp. 1-14). Cambridge, MA: MIT Press.

In the introduction to this collection, **Wiebe E. Bijker** and **John Law** develop the overarching theme of the included essays: the social construction, context, and relations of technology, especially concerning design and inception. They argue that technologies are never isolated or prefabricated, but that technologies generate out of a set of varying circumstances and actors. Bijker and Law acknowledge various relevant theories, from sociotechnology, to constructivism, to the social history of technology. Notably, the authors focus on the idea that “it might have been otherwise” (p. 4), and employ the phrase as a guiding mantra for both their inquiry and the collection at large.

Bourdieu, P. (1993). The field of cultural production, or: The economic world reversed. In R. Johnson (Ed. & Trans.), *The field of cultural production: Essays on art and literature* (pp. 29–73). New York, NY: Columbia University Press.

Pierre Bourdieu dictates his vision of the field of cultural production as inherently socially mediated, from production to reception. Bourdieu concedes that since all cultural artifacts exist as symbolic objects – “*manifestation[s]* of the field as a whole” (p. 38) – one cannot study a cultural artifact without acknowledging the material and symbolic production of the work. Furthermore, the field of cultural production, although in some ways autonomous, is contained both within the field of power and the field of class relations. In fact, in a seeming reverse-logic, the more autonomous a field of cultural production becomes, the less power the field has in regards to the fields of power and class relations; autonomy, for Bourdieu, represents an increased reliance on an internal system of logic and success, and therefore a further distancing from other fields.

Caidi, N., & Ross, A. (2005). Action and reaction: Libraries in the post 9/11 environment. *Library and Information Science Research*, 27(1), 97–114.

Nadia Caidi and **Anthony Ross** study the significantly shifting roles and responsibilities of North American libraries post-9/11 and the subsequent legislation (e.g., the USA PATRIOT Act). Traditionally public information institutions, libraries have become increasingly regulated regarding confidentiality, patron privacy, and intellectual freedom, as well as access to and handling of government information. Further, Caidi and Ross explore reactions to the substantial change in legislation. These reactions reveal libraries’ willingness and ability to effect political change over the intrusive restriction of certain traditional tenets of the library: namely, sharing and promoting knowledge practices.

Chun, W.H.K. (2004). On software, or the persistence of visual knowledge. *Grey Room*, 19, 27–51.

Wendy Hui-Kyong Chun re-evaluates the supposed transparency of software and instead focuses on the black boxing, abstraction, and causal pleasure that define contemporary computing and programming. She re-inscribes software as akin to ideology: intangible but present, persuasive, subject/user-producing, and capable of rendering the visible invisible and vice versa. Concurrently, Chun thoroughly studies the gendered history of computation and programming. She observes how contemporary accounts of this history mask some major female players and early entrepreneurs. Furthermore, Chun argues, the mechanization of computers shifted power relations and ostensibly wrote women out of the computing and programming narrative. Chun concludes that we must acknowledge, interrogate, and criticize the obscuring tendencies of software in order to avoid submitting to its ideological nuances.

Eagleton, T. (2010). The rise of English. In V.B. Leitch (Ed.), *Norton anthology of theory and criticism* (pp. 2140–2146). New York, NY: W.W. Norton.

Terry Eagleton charts the development of English literature as an ideological tactic beginning in the mid-nineteenth century. English literature was used as

a form of suppression and control, he argues, to educate lower classes “enough” to keep them subservient. Moreover, English literature was scorned and primarily directed at women when first introduced into the university as a field of study. Eagleton concludes that literature “*is an ideology*” (p. 2140), due to its historical role in social development and nation building in England and elsewhere.

Foucault, M. (1977). *Discipline and punish: The birth of the prison*. (A. Sheridan, Trans.). London: Penguin Books & Allen Lane.

Michel Foucault details the complex history of contemporary discipline and punishment structures and networks. He maintains that various forces of normalization, along with a pervasive carceral system, are responsible for knowledge formation, the social body, and modern notions of punishment, justice, legality, and delinquency. Of note, in the penultimate section, “Discipline,” Foucault identifies specific elements utilized in order to maintain docile subjects through disciplinary methods: place (via enclosure, partitioning, and delineating space based on rank); time (via timetables, notions of efficiency, and the temporal mechanization of the body); mechanic efficiency (via command, chronological series, and reducing the body to a part of a larger machine); normalization (via differentiation, hierarchy, homogenization, and exclusion); examination (via objectification, documentation, and making an individual a “case”); and surveillance (via spacial partitioning, panoptic structures, and the intertwining of surveillance and economy). Foucault concludes that no individual is outside of the system; the carceral network everyone resides within creates so-called “delinquents.”

Graff, G. (1987). *Professing literature: An institutional history*. Chicago, IL: University of Chicago Press.

Gerald Graff thoroughly details the history of twentieth century English literature studies in America. He argues that many of the issues in contemporary academia can be traced to an overall method of patterned isolationism in a department. Due to intellectual or discipline-based conflicts, various isolated fields of thought and practitioners prevail. A general attitude of inclusion and comprehensiveness creates an environment where conflicts are overlooked instead of acknowledged or attended to. Moreover, practitioners in divergent schools of thought are endowed with a silo where they can effectively ignore their intellectual opponents. The self-perpetuating lack of interconnectedness and collaboration in English departments has negatively affected its overall scholarship and success. Furthermore, Graff contends that the conflict between schools of thought (classicism, New Criticism, critical theory, and now, perhaps, digital humanities) should be taught to students in order to contextualize and lend meaning to their literary education. Graff presents the above arguments alongside a comprehensive historical explanation of how literary studies evolved as a discipline, for better or worse.

Haraway, D. (1990). A cyborg manifesto: Science, technology, and socialist feminism in the 1980s. In *Simians, cyborgs, and women: The reinvention of nature* (pp. 149–182). New York, NY: Routledge.

Donna Haraway advocates for the new social relations of science and technology through simultaneously criticizing essentialist feminism, Marxism, and anti-science and technology politics. Haraway argues that by embodying the form of the nebulous, ungendered, unboundaried cyborg figure, science and technology can be harnessed for productive political means. She contends that ideological opposition to technology only reinforces the futility of movements that follow notions of hierarchies and origin stories. The fluid, hybrid cyborg represents an opportunity for the marginalized to constitute knowledge production by participating in the new forms of social relations that technology affords.

Heidegger, M. (1982). *The question concerning technology*. In *The question concerning technology and other essays* (pp. 3–35). New York, NY: Harper Perennial.

Martin Heidegger contends that we must consider both the “essence” of technology and our role as humans concerning technology: we do not control technology, nor are we technology, nor does technology control us. Rather, technology is better understood as a revealer, a mediator, or an enframer. Enframing denotes a calling into being (or else a contextualizing) by technology. Recognizing technology’s true essence as an enframer – not solely as a tool, an oppressive other, or as fate – increases our awareness of existence.

Introna, L.D., & Nissenbaum, H. (2000). Shaping the Web: Why the politics of search engines matters. *The Information Society*, 16, 169–185.

Lucas D. Introna and **Helen Nissenbaum** purport that search engines are frequently biased in their findings and thus their representation of what is available on the Internet at large. The authors argue that this tendency bears serious implications, as the digital realm is often perceived and promoted as a democratic, empowering space. Introna and Nissenbaum detail the various processes that promote “findability” on the Internet. Furthermore, they caution against the commercialization of search engines, lest they become authoritative arbiters of the digital divide. Introna and Nissenbaum conclude by reminding their readers that public digital acts are more than simply technical matters – they often bear political implications as well, especially concerning issues of access and capital.

Lessig, L. (2004). *Free culture: How big media uses technology and the law to lock down culture and control creativity*. New York, NY: Penguin.

Lawrence Lessig argues that the interests of a select (corporate) few have increasingly regulated contemporary American society by legislating the Internet with intellectual property and piracy laws. According to Lessig, this regulation defeats traditional American ideals of democracy and free culture, and constrains social knowledge creation and important cultural and intellectual advances. Lessig respects the concept of copyright and intellectual property, as such – he takes issue with the hyper-regulation and restriction of the Internet and, consequently, individuals. Moreover, Lessig demonstrates

how all culture industries have “stolen” from previous individuals, art forms, and media. Paradoxically, the same industries persecute individuals for practicing intellectual or creative theft.

Liu, A. (2004). *The laws of cool: Knowledge work and the culture of information*. Chicago, IL: University of Chicago Press.

Alan Liu interweaves two distinct threads in *The Laws of Cool*. He traces the history and ethos of cool (culture, trends, popularity, etc.) as well as postindustrial cool: the flux of cool knowledge work. Liu examines how the humanities can contribute and survive in the new postindustrial, cool corporate landscape. Liu’s sources and interests are widespread, he cites modernist design theory, Lev Manovich’s database narrative, and everything from the Guayaki tribe to William Gibson’s *Agrippa*. He concludes that the humanities are necessary to keep the corporation humane and informed of the history of its own practices. The humanities, in turn, must learn to negotiate the current cool cultural climate in order to remain relevant and effective.

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Through a distinctly sociological method, **Thomas Streeter** analyzes the connections between computing, the rise of the Internet, capitalism, and social life. Instead of framing his examination through the Internet’s effect on society, Streeter looks at how the Internet has been socially constructed and its role in myriad complex historical, personal, and political networks. Rather than prophesying its speculative future, he questions why and how the Internet was built. Moreover, Streeter discredits essentialist conceptions of technology and the Internet; he articulates that various historical and cultural contexts have fostered the openness of the Internet’s networked state.

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Fred Turner details a sociohistorical narrative of the development of the Internet. In Turner’s conception, the counterculture movements of the 1960s – specifically, those under the stewardship of Stewart Brand and the Whole Earth Network – played an integral role in the development of both the principles and practices of contemporary personal computing. He argues that the New Communalists’ (those who flocked to communes in the late 1960s and early 1970s) embrace of cybernetics and a technology-based ideology assisted and influenced the widespread network of computing as it is now. Turner elaborates on the social construction of modern computing, as well as how computing – both abstractly and tangibly – influenced numerous American social groups, movements, and citizens.

Vaidhyathan, S. (2002). The content-provider paradox: Universities in the information ecosystem. *Academe*, 88(5). URL: <http://www.jstor.org.ezproxy.library.uvic.ca/stable/40252219> .

Siva Vaidhyathan warns against the increasing corporatization of American universities and other knowledge institutions. He argues that universities have begun to commodify knowledge, and that this tactic will eventually lead to the dissolution of the university as a credible source of education. Unfortunately, Vaidhyathan does not offer an alternative model for universities to address widespread funding and budget cuts. Nevertheless, in a similar vein as Willard McCarty's claims in *Humanities Computing*, Vaidhyathan reminds his readers that education is not simply information, and should not be treated (or sold) as such.

DESIGNING KNOWLEDGE SPACES THROUGH CRITICAL MAKING: THEORIES AND PRACTICES

Critical making integrates the previously disparate fields of more abstract, conceptual critical theory and a sustained commitment to design and building. The 14 selections in this annotated bibliography represent an underlying consensus that, since knowledge is frequently created through the collaboration of various individuals, methodologies, and tools, the design of these interactions (or the space where the interactions occur) needs to be critically examined and implemented. As such, many of the selections focus on how to design digital projects and spaces that stimulate social knowledge creation while maintaining certain ethical or discipline-based standards. Articulated through ideas of "learning by doing" and hands-on collaboration, critical making often focuses on social knowledge production with a more literal interpretation of the term production.

Balsamo, A. (2011). Taking culture seriously in the age of innovation. In A. Balsamo (Ed.), *Designing culture: The technological imagination at work* (pp. 2–25). Durham, NC: Duke University Press.

Anne Balsamo studies the intersections of culture and innovation, and acknowledges the unity between the two modes ("technoculture"). She argues that technological innovation should seriously recognize culture as both its inherent context and as a space of evolving, emergent possibility – as innovation necessarily alters culture and social knowledge creation practices. Balsamo introduces the concept of the "technological imagination": the innovative, actualizing mindset. She also details a comprehensive list of truisms about technological innovation, ranging from considering innovation as performative, historically constituted, and multidisciplinary, to acknowledging design as a major player in cultural reproduction, social negotiation, and meaning making. Currently, innovation is firmly bound up with economic incentives, and the profit-driven mentality often obscures the social and cultural consequences and implications of technological advancement. As such, Balsamo calls for more conscientious design, education, and development of technology, and a broader vision of the widespread influence and agency of innovation.

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Dix, A., Hart, J., Ridley, C., Sas, C., & Taher, F. (2008). Exploring the Facebook experience: A new approach to usability. In *Proceedings of the Association for Computing Machinery (ACM) International Conference* (pp. 471–474). New York, NY: Association for Computing Machinery.

In the framework of user experience design, **Alan Dix, Jennefer Hart, Charlene Ridley, Corina Sas, and Faisal Taher** examine a selection of users’ reactions to the popular social networking site Facebook. The authors put forth the idea that previous standards of evaluating digital environments need to be reimaged for our current technological moment to privilege user experience. Their findings indicate an overall positive reaction to Facebook despite the site’s only meeting two out of the ten traditional usability guidelines. The authors call for a more holistic approach to design that pays heed to the pleasurable social knowledge creation many individuals embark on via social networking sites like Facebook.

Drucker, J. (2009). From digital humanities to speculative computing. In *SpecLab: Digital aesthetics and projects in speculative computing* (pp. 3–18). Chicago, IL: University of Chicago Press.

Johanna Drucker locates speculative computing as a more critical extension and reflection of digital humanities practices. Knowledge is interpretive and fluid, and thereby conflicts with many computational principles (discrete objects, interoperability, objectivity) that form the basis for the application side of digital humanities. Thus, Drucker situates herself, and speculative computing at large, as the interrogator of digital humanities standards and normalized practices – based on concepts of knowledge as complex experience versus knowledge as mere information. Notably, Drucker calls for an increased awareness of design as a purposeful mediator instead of as an objective deliverer of information. She concludes by ruminating on models as dynamic, interpretive interventions invaluable for speculative computing at large.

Drucker, J. (2011). Humanities approaches to interface theory. *Culture Machine*, 12, 1–20.

In this article, **Drucker** develops a humanities theory of interface. She argues that the interface is the predominant site of cognition in digital spaces and requires cognizant, intellectual design. Drucker’s theory is predicated on

interface design that considers the constitution of a subject, not the expected activities of a user; on graphical reading practices and frame theory; on constructivist approaches to cognition, and on integrating multiple modes of humanities interpretation. Furthermore, while avoiding a descent into screen essentialism, Drucker insists that studying electronic reading practices must be focalized through studying graphical user interfaces (GUIs), as GUIs constitute reading – and thus the reading subject, or “subject of interface” (p. 3).

Drucker, J. (2012). Humanistic theory and digital scholarship. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 85–95). Minneapolis, MN: University of Minnesota Press.

Drucker argues that humanities intervention is pertinent at the level of design for digital projects and incentives. Without humanistic theories, Drucker argues, knowledge, events, experience, and data are at the risk of being flattened and reified. Frequently, humanities theory is not integrated into digital scholarship and development because computer science techniques and theories (mechanization, automation, independent/isolated items) remain at odds with those of the humanities (namely, fluidity, interpretation, and interconnectedness). These barriers must be overcome in order to comprehensively and reflexively create and share knowledge.

Jessop, M. (2008). Digital visualization as a scholarly activity. *Literary and Linguistic Computing*, 23(3), 281–293.

Martyn Jessop expresses that digital visualization deserves to be taken seriously as scholarly work by fellow academics. Digital visualization bears an opportunity for new knowledge production, as well as increased visual literacy and diverse intellectual practices. Jessop thoroughly comments on the form and function of digital visualization and its role in relation to the humanities at large. He reflects that from an academic standpoint, digital visualization is frequently criticized as not scholarly, or not scholarly enough. To overcome these limiting assumptions, Jessop advocates adherence to a set of standards – in this article, he promotes the London Charter – in order to validate digital visualization and to ensure a lasting debate shapes and maintains the practice and its concurrent knowledge creation.

Latour, B. (2008). A cautious Prometheus? A few steps towards a philosophy of design (with special attention to Peter Sloterdijk). *Networks of Design Meeting of the Design History Society*. Cornwall. URL: <http://www.bruno-latour.fr/sites/default/files/112-DESIGN-CORNWALL-GB.pdf>.

Bruno Latour meditates on the form and function of the term design, and proposes a more comprehensive vision for the practice. Latour suggests that design practitioners focus more fully on drawing together, modelling, or simulating *complexity* – more inclusive visions that incorporate contradiction and controversy. He argues that we are living in an age of design (or redesign) instead of a revolutionary modernist era of breaking with the past and making everything new. Increasingly, design encapsulates various other acts, from arrangement to definition, and from projecting to coding. Consequently, the possibilities and instances for design grow exponentially. For Latour, the

concept of an age of design predicates an advantageous condition defined by humility and modesty (because it is not foundational or construction-based); a necessary attentiveness to detail and skillfulness; a focus on purposeful development (or on the meaning of what is being designed); thoughtful remediation; and an ethical dimension (exemplified through the good design versus bad design binary).

Liu, A. (2012). Where is cultural criticism in digital humanities? In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 409–509). Minneapolis, MN: University of Minnesota Press.

Alan Liu surveys the state of the digital humanities in relation to the humanities at large. He argues that, thus far, digital humanities projects often lack the self-reflexivity and cultural criticism necessary for the ethical development of humanistic projects. Furthermore, he argues, this lack denies the digital humanities a real or full position in the humanities. Because the digital humanities avoid cultural criticism, they frequently become subservient or merely instrumental to the humanities as a whole – as either a money maker or tech support. Liu claims that the digital humanities could deconstruct the hierarchy by becoming both self-reflexive and invaluable, thereby leading the humanities into the academic future.

McCarty, W. (2005). *Humanities computing*. New York, NY: Palgrave Macmillan.

Willard McCarty examines the field of humanities computing and explores both its limitations and potential. He frames much of his exploration through the mantra that digital humanities can be much more than merely “convenient vending machines for knowledge” (p. 6). The focus must be shifted from automation and delivery to the possibilities for new knowledge creation through digital humanities practices. To this end, McCarty celebrates the tendency toward modelling and manipulation. Drawing heavily on Clifford Geertz’s model of/model for theory (and privileging the “model for” concept), McCarty explores how models and unfinished prototypes can be productive spaces of work, knowledge, and play. Models provide invaluable information when they dysfunction, either through inexplicable successes or failures. Of note, he incorporates Martin Heidegger’s concept of manipulating the world through technology.

Ramsay, S., & Rockwell, G. (2012). Developing things: Notes toward an epistemology of building in the digital humanities. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 75–84). Minneapolis, MN: University of Minnesota Press.

Stephen Ramsay and **Geoffrey Rockwell** take up the “your database/prototype is an argument” conversation (notably championed by Lev Manovich and Willard McCarty). They assert that taking building seriously as scholarly work could productively dismantle or realign the focus of the humanities from its predominantly textual bent. Ramsay and Rockwell advocate installing the user, reader, or subject at the level of building. Through this socially minded conceptual and physical shift, some of the abstractions and black boxing that render digital humanities tools theoretically insufficient could be avoided or amended.

Ratto, M. (2011). Critical making: Conceptual and material studies in technology and social life. *The Information Society*, 27(4), 252–260.

Matt Ratto briefly but effectively describes his engagement with critical making as a scholarly practice. For Ratto, critical making integrates conceptual critical theory and practical, hands-on material work, with the aim of furthering comprehension of the role of technology in social life. Ratto reflects on his own experiences and varying degrees of success in practicing critical making with different groups of scholars. Of note, Ratto concludes that personal investment significantly influences the connection between lived experience (making) and developing critical perspectives on social issues.

Ratto, M. (2011). Open design and critical making. In P. Atkinson, M. Avital, B. Mau, R. Ramakers, & C. Hummels (Eds.), *Open design now: Why design cannot remain exclusive*. Amsterdam: BIS Publishers. URL: <http://opendesignnow.org>.

Ratto situates his conception and practice of critical making within the context of open design. He argues that critical making encapsulates one of the major tenets of open design: reconnecting morality and materiality. Ratto addresses sociotechnological issues through a constructivist engagement with scholarly research and pedagogy. He contends that open design is necessary – both practically and theoretically – for the continued success of the critical making movement. Critical making substantially relies on the ethos, as well as the support, of the open design community. Open design, in turn, should embrace critical making as a scholarly pursuit aimed at studying (as well as criticizing) accepted social practices.

Vetch, P. (2010). From edition to experience: Feeling the way towards user-focussed interfaces. In G. Egan (Ed.), *Electronic publishing: Politics and pragmatics* (pp. 171–184). Tempe, AZ: Iter. New Technologies in Medieval and Renaissance Studies.

Paul Vetch explores the nuances of a user-focused approach to scholarly digital projects. He contends that the prevalence of Web 2.0 practices and standards requires scholars to rethink the design of scholarly digital editions. For Vetch, editorial teams need to shift their focus to questions concerning the user. For instance, how will the user customize their experience of the digital edition? What new forms of knowledge can develop from these interactions? Moreover, how can rethinking interface design of scholarly digital editions promote more user engagement and interest? Vetch concludes that a user-focused approach is necessary for the success of scholarly publication in a constantly shifting digital world.

SOCIAL MEDIA COMMUNITIES, CONTENT, AND COLLABORATION

The rise of social media has encouraged a unique mecca of transnational, national, and local communication and social knowledge creation. The polyvocal and democratic undertones of social media present a formidable opportunity for engagement between various groups of people and movements. Although the depth of social media's influence on creating knowledge and culture necessarily remains unclear at this time, many scholars speculate on, encourage, study, and employ social media. The 16 selections in this annotated bibliography range from introducing scholarly social

knowledge creation tools to analyzing the inner workings of social knowledge production in current popular networks like Facebook and Wikipedia.

Berry, D.M. (2012). The social epistemologies of software. *Social Epistemology: A Journal of Knowledge, Culture and Policy*, 26(3-4), 379-398.

David M. Berry analyzes how code and software increasingly develop, influence, and depend on social epistemology or social knowledge creation. He discusses the highly mediated “computational ecologies” (p. 379) that individuals and nonhuman actors inhabit, and argues that we need to become more aware of the role these computational ecologies play in daily social knowledge production. Berry analyzes two case studies to support his argument: the existence of web bugs or user activity trackers and the development of lifestreams, real-time streams, and the quantified self. For Berry, the increasing embrace of and compliance with potentially insidious data collecting via the Internet and social media needs to be addressed.

Bolter, J.D. (2007). Digital media and art: Always already complicit? *Criticism*, 49(1), 107-119.

Jay Bolter examines the contemporary theoretical conversation surrounding new media and identifies a blind spot with regards to social media and computing. Bolter argues that although many contemporary scholars and artists study, discuss, or create digital media, none of them take into account the cultural significance of social media and computing. He explicitly focuses his study on the work of Lisa Gitelman, Marie-Laure Ryan, and Johanna Drucker, but further engages with other theorists, including N. Katherine Hayles and Lev Manovich. For Bolter, the transgressive identity and group formation that characterizes social media and computing enacts the historical goal of the avant-garde: to disrupt the boundaries between art, creation, and everyday life.

Clement, T. (2011). Knowledge representation and digital scholarly editions in theory and practice. *Journal of the Text Encoding Initiative*, 1. URL: <http://jtei.revues.org/203>.

Tanya Clement reflects on scholarly digital editions as sites of textual performance, wherein the editor lays and privileges various narrative threads for the reader to pick up and interpret. She underscores this theoretical discussion with examples from her own work with the digital edition *In Transition: Selected Poems by the Baroness Elsa von Freytag-Loringhoven* as well as TEI and XML encoding and the Versioning Machine. Clement details how editorial decisions shape the social experience of an edition. By applying John Bryant’s theory of the fluid text to her own editorial practice, she focuses on concepts of various textual performances and meaning-making events. Notably, Clement also explores the idea of the social text network. She concludes that the concept of the network is not new to digital editions; nevertheless, conceiving of a digital edition as a network of various players, temporal spaces, and instantiations promotes fruitful scholarly exploration.

Cohen, D.J. (2008). Creating scholarly tools and resources for the digital ecosystem: Building connections in the Zotero project. *First Monday*, 13(8). URL: <http://firstmonday.org/ojs/index.php/fm/article/view/2233/2017> .

Daniel Cohen details how the Zotero project exemplifies both Web 2.0 and traditional scholarly ethos. Zotero is a widely used, open source, community-based bibliography tool. It exists on top of the browser as an extension, has maintained an API since its inception, and boasts comprehensive user features. Cohen conceptualizes Zotero as a node in an interconnected digital ecosystem that builds bridges instead of hordes information. As an easy-to-use collaborative tool, Zotero acts as both an effective scholarly resource and a facilitator of social knowledge creation.

Dix, A., Hart, J., Ridley, C., Sas, C., & Taher, F. (2008). Exploring the Facebook experience: A new approach to usability. In *Proceedings of the Association for Computing Machinery (ACM) International Conference* (pp. 471–474). New York, NY: Association for Computing Machinery.

In the framework of user experience design, **A. Dix, Jennefer Hart, C. Ridley, Corina Sas, and Faisal Taher** examine a selection of users' reactions to the popular social networking site Facebook. The authors put forth the idea that previous standards of evaluating digital environments need to be reimagined for our current technological moment to privilege user experience. Their findings indicate an overall positive reaction to Facebook despite the site's only meeting two out of the ten traditional usability guidelines. The authors call for a more holistic approach to design that pays heed to the pleasurable social knowledge creation many individuals embark on via social networking sites like Facebook.

Flanders, J. (2009). The productive unease of 21st century digital scholarship. *Digital Humanities Quarterly*, 3(3). URL: <http://www.digitalhumanities.org/dhq/vol/3/3/000055/000055.html> .

Julia Flanders discusses the role of the digital humanities in relation to the more conventional humanities, and characterizes the digital humanities as possessing a sort of "productive unease": anxiety concerning medium, institutional structures of scholarly communication, and representation. This anxiety is productive insofar as it brings into clearer focus biases previously unremarked on in the traditional humanities. Moreover, digital tools and practices present more and different challenges. Of note, Flanders recognizes social software and media as tackling some of these anxiety-provoking issues, and acknowledges digital humanities projects that also aim to do so.

Kirschenbaum, M. (2012). Digital humanities as/is a tactical term. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 415–428). Minneapolis, MN: University of Minnesota Press.

For **Matthew Kirschenbaum**, digital humanities should be considered a tactical term because of its notable role as a means instead of simply as an end. He argues that social media environments and interactions highlight this tactical nature. For instance, social networks and blogs (particularly Twitter) offer a space for digital humanists to engage in alternative professional

interaction and dialogue. Kirschenbaum indicates, however, that Twitter's significance exceeds the sheer presence of digital humanist users. The digital humanities community is in fact established through social media's tendency to build reputations and status, metrically indicate influence, and aggregate information and like-minded individuals. Thus, while accepted scholarly channels and institutions continue to represent the digital humanities in a more traditional sense, the community's tactical, online existence promotes constant change and alternative forms of professional clout.

Kittur, A., & Kraut, R.E. (2008). Harnessing the wisdom of the crowds in Wikipedia: Quality through coordination. In *Proceedings of Computer Supported Cooperative Work, San Diego, 8–12 November 2008* (pp. 37–46). New York, NY: Association for Computing Machinery.

Aniket Kittur and **Robert Kraut** study the correlation between the number of editors on a Wikipedia page and the quality of said page's content. Significantly, they argue that an increased number of editors on a given page only proves productive if some sort of coordination apparatus is in place. Articles are even more successful, content-wise, if a small group of experts manage the majority of the work. Kittur and Kraut's argument runs counter to the crowdsourcing ethos of Wikipedia; generally, the Wikipedia ethos dictates that engaging more editors always produces better quality articles. The authors argue that, overall, a smaller group of editors working under a semi-authoritative organizational system is in fact more productive than including multitudes of uncoordinated individual editors, as peer-to-peer communication often becomes ineffective with large groups of individuals.

Liu, A. (2011). Friending the past: The sense of history and social computing. *New Literary History: A Journal of Theory and Interpretation*, 42(1), 1–30.

Alan Liu identifies media-induced sociality in oral, written, and digital culture. He proceeds to analyze Web 2.0 and social computing practices and concludes that Web 2.0 lacks a sense of history, despite its intricately interconnected state. Liu attributes this state to two concurrent historical shifts: a social move from one-to-many to many-to-many knowledge sharing, and a temporal shift from straightforward conceptions of time into the contemporary conception of instantaneous and simultaneous temporality. Reflexively, Liu argues that conceiving of time in this new instantaneous/simultaneous framework may ideologically proprietize the Internet and allow for ownership of social practices by organizations like Facebook, Twitter, and Google. As such, Liu opts for a more traditional sense of temporality and history characterized by narratological linear time. He cites the social network system of his Research-oriented Social Environment (RoSE) project as a platform that integrates history with Web 2.0 infrastructure and allowances.

Liu, A. (2013). From reading to social computing. In K.M. Price and R. Siemens (Eds.), *Literary studies in the digital age: An evolving anthology*. URL: <http://dlsanthology.commons.mla.org>.

Liu performs an impressive short history of both social computing and literary theory. He develops the consensus that literary scholars must take

social computing seriously, as it is the current mode of cultural and personal expression. Liu suggests that literary scholars engage with social computing through two distinct methodologies: that of the social sciences, on one hand, and that of the digital humanities, on the other. Further to considering social computing as an *object* of literary study, Liu argues that social computing must also be considered as a *practice* of literary study.

Manovich, L. (2012). Trending: The promises and the challenges of big social data. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 460–475). Minneapolis, MN: University of Minnesota Press.

Lev Manovich elaborates on the possibilities and limitations of performing humanities research with Big Data. He asserts that although Big Data can be incredibly instructive and useful for humanities work, certain significant roadblocks impede this project. These roadblocks include the fact that only social media companies have access to relevant Big Data; user-generated content is not necessarily authentic, objective, or representative; certain analysis of Big Data requires a level of computer science expertise that humanities researchers do not typically possess; and Big Data is not synonymous with “deep data,” the type of data procured through intense, long-term study of subjects. Nevertheless, Manovich looks forward to a future where humanists can overcome these boundaries and integrate Big Data with their research aspirations and projects.

Mrva-Montoya, A. (2012). Social media: New editing tools or weapons of mass distraction? *Journal of Electronic Publishing*, 15(1), 1–24. URL: <http://quod.lib.umich.edu/j/jep/3336451.0015.103/—social-media-new-editing-tools-or-weapons-of-mass?rgn=main;view=fulltext> .

Agata Mrva-Montoya discusses the effect and usages of social media in the editorial profession. She claims that, when used appropriately, social media incite various positive actions for editors, including sustaining professional relationships, quickly and easily garnering information and responses, and building reputation and status. Contrarily, social media also wane in usefulness when usage becomes overly time-consuming, distracting, revealing, or overbearing. By harnessing the productive effects of social media, editorial professionals can proactively manage their own careers and success.

Pfister, D.S. (2011). Networked expertise in the era of many-to-many communication: On Wikipedia and invention. *Social Epistemology: A Journal of Knowledge, Culture and Policy*, 25(3), 217–231.

Damien S. Pfister argues that Wikipedia is a prime example and facilitator of contemporary many-to-many communication structures and the resultant changing nature of knowledge production. Pfister advocates for many-to-many communication as it disrupts traditional knowledge practices that depend on specialized experts to disseminate knowledge through carefully regulated channels and institutions. Furthermore, social knowledge creation spaces like Wikipedia induce productive epistemic turbulence through multivocal authorship, arguments, and collaboration. Pfister champions this

networked or participatory expertise as a more democratic, representative, and therefore less hierarchical model of communication.

Rosenzweig, R. (2006). Can history be open source? Wikipedia and the future of the past. *The Journal of American History*, 93(1), 117–146.

Roy Rosenzweig envisions a model for history scholarship based on the open access, multi-author Wikipedia framework. He concedes that Wikipedia represents an exciting – and perhaps even more ethical – structure of sharing and creating knowledge. Although Rosenzweig thoroughly and comprehensively acknowledges all of the criticisms of Wikipedia from an academic standpoint, he nonetheless proposes that history scholars become more open to incorporating Wikipedia in their scholarly practice. Rosenzweig heralds the many benefits of wiki-based learning and projects for both research and teaching purposes.

Siemens, R., with Garnett, A., Koolen, C., Leitch, C., Timney, M., & the ETCL, INKE, and PKP Research Groups. (2012). Toward modeling the social edition: An approach to understanding the electronic scholarly edition in the context of new and emerging social media. *Literary and Linguistic Computing*, 27(4), 445–461.

Raymond Siemens, Alex Garnett, Corina Koolen, Cara Leitch, and Meagan Timney formulate a vision of an emerging manifestation of the scholarly digital edition: the social edition. The authors ruminate on both the potential and already realized intersections between scholarly digital editing and social media. For Siemens et al., many scholarly digital editions do not readily employ the collaborative electronic tools available for use in a scholarly context. The authors seek to remedy this lack of engagement, especially concerning opportunities to integrate collaborative annotation, user-derived content, folksonomy tagging, community bibliography, and text analysis capabilities within a digital edition. Furthermore, Siemens et al. conceptually alter the role of the editor – traditionally a single, authoritative individual – to reflect facilitation rather than didactic authority. A social edition predicated on these shifts and amendments would allow for increased social knowledge creation by a community of readers and scholars, academic and citizen alike.

Wasik, B. (2009). *And then there's this: How stories live and die in viral culture*. New York, NY: Penguin.

Bill Wasik explores the stakes and contours of viral culture and social networking, and celebrates the community-generated culture the Internet provokes. He argues that the proliferation of short-lived sensations common to the Internet has altered the way contemporary society creates knowledge and culture. Wasik details his experiences as creator of the first flash mob in Manhattan in 2003. He also explores various memes or “nanostories” – brief moments of celebrity facilitated by digital culture. Wasik concludes by urging responsible information processing in order to resist getting lost spiritually or creatively in the deluge of temporally minute gasps of popular culture.

DISCIPLINE FORMATION IN THE ACADEMIC CONTEXT

Ideally, academic practices and institutions perpetually evolve in order to better serve students, communities, and scholarly practitioners alike. As such, it remains pertinent to assess the history and current state of the academy through its scholarly communication and discipline formation habits. The following section encompasses resources relevant to academic discipline formation, with a particular interest in the intersections between discipline formation and social knowledge creation. In keeping with an underlying historical bent, the 22 selected texts span the last three decades of academic writing. The more contemporary resources frequently tend toward graduate training in humanities programs. The entries range from particular studies of specific areas, like first year English composition requirements in Canada and the development of ballooning as a field, to wider-lens views of contemporary scholarly institutions at large. Certain selections draw from other disciplines and are intended to reflect on similarities and differences between disciplines. Overall, the entries aim to provide a sense of the varied practices involved in contemporary discipline formation, with an eye to humanities methods.

Ackerman, J., Berkenkotter, C., & Huckin, T.N. (1991). Social context and socially constructed texts: The initiation of a graduate student into a writing research community. In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities* (pp. 191–215). Madison, WI: University of Wisconsin Press.

John Ackerman, Carol Berkenkotter, and Thomas N. Huckin develop a case study of a first year graduate student's writing experience in order to discuss discipline formation via introduction to a discourse community. They argue that every shift into a new discursive, professional, or scholarly community requires learning and the application of discipline-specific rhetorical structures. Perhaps predictably, the authors conclude that relevant experience in a field better prepares a graduate student for rhetorical success. Although this conclusion initially appears obvious, it is pertinent when one considers current conversations surrounding graduate training reform. Overall, the authors present a unique study of graduate training and discipline formation through the lens of writing and rhetoric practices.

Ball, J.C. (2010). Definite article: Graduate student publishing, pedagogy, and the journal as training ground. *Canadian Literature*, 204, 160–162.

John C. Ball speaks from his position as editor of the journal *Studies in Canadian Literature* on the social and pedagogical role of journals in graduate training and, thus, discipline formation. He suggests that academics view themselves as a part of a three-way pedagogical continuum that includes journals and graduate students. Although journals should not replace supervisors, they can play a significant role in the professionalization of graduate students by reviewing, critiquing, and disseminating graduate work. In this way, graduate students are better prepared to face the post-convocation job market.

Bazerman, C. (1991). How natural philosophers can cooperate: The literary technology of coordination in Joseph Priestly's *History and present state of electricity* (1767). In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities*. Madison, WI: University of Wisconsin Press.

Charles Bazerman studies the role of early literature reviews through a thorough recounting of Joseph Priestly's *History and Present State of Electricity* (1767). According to Bazerman, literature reviews represent potent sites of knowledge sharing and dissemination. Bazerman claims that Priestly's volume represents the first literature review as it details the history of electricity research and experiments. Priestly created a comprehensive, open-ended document that summarized the accepted state of the field, as well as anomalies, discrepancies, and failures. Bazerman applauds Priestly for his active service in the name of the democratization and dissemination of knowledge.

Berry, D.M. (2011). The computational turn: Thinking about the digital humanities. *Culture Machine*, 12. URL: <http://www.culturemachine.net/index.php/cm/article/view/440/470>.

David M. Berry narrates the formation of postsecondary education, traced back to Immanuel Kant's notion of reason as the guiding force of the ideal university. Berry maintains that the digital should now be considered the unifying idea of the contemporary university. He argues that the disparate, multiple knowledges produced in the university can unify via digital practice and context; by taking up the digital as form and content for educational institutions, we can move toward a more networked and decentralized "digital intellect" (p. 7). This new ethos need not rely on traditional academic ideals of learning an entire literary canon or memorizing multiple equations. The focus would thus shift from the individual student or researcher to the collective, from the sharply delineated university to the post-disciplinary university.

Biagioli, M. (2002). From book censorship to academic peer review. *Emergences*, 12(1), 11–45.

Mario Biagioli details the historical and epistemological shifts that have led to today's academic peer review system. Contrary to its contemporary role, peer review began as an early modern disciplinary technique that was closely related to book censorship and was required for social and scholarly certification of institutions and individuals alike. The rise of academic journals shifted this constrained and royally mandated position. No longer a self-sustaining system of judgment and reputation dictated by a small group of identified and accredited professionals, peer review (which is often blind) now focuses on disseminating knowledge and scholarship to the wider community. Biagioli also states that journals have moved from officially representing specific academic institutions to being community owned and operated, as responsibilities, duties, and readership are now dispersed among a community of like-minded scholars.

Brant, C. (2011). The progress of knowledge in the regions of air?: Divisions and disciplines in early ballooning. *Eighteenth-Century Studies*, 45(1), 71–86.

Clare Brant studies discipline formation through the development and reception of balloons in the eighteenth century. She argues that, contrary to standard narratives about scientific discoveries and technological advances, discipline formation is in fact unruly and disorderly. In the case of balloons, it was this very disorder that drew a substantial amount of criticism from the “more serious” scientific community. Chaotic development also led to various Eureka! moments and a thorough consideration of the possibilities and limitations of flight.

Brooks, K. (2002). National culture and the first-year English curriculum: A historical study of “composition” in Canadian universities. *American Review of Canadian Studies*, 32(4), 673–694.

Kevin Brooks details the institutional, political, and economic history of required first-year composition courses in the English departments of Canadian universities. He considers Canadian composition classes – or the lack thereof – as representative of larger mid-twentieth-century fears concerning national identity and anti-Americanism. Moreover, Brooks concedes that studying Canadian English requirements (in contrast to American requirements) incites significant cultural study of Canadian universities at large.

Buehl, J., Chute, T., & Fields, A. (2012). Training in the archives: Archival research as professional development. *College Composition and Communication*, 64(2), 274–305.

John Buehl, Tamar Chute, and Anne Fields discuss the possibilities for graduate training via archival research. The authors suggest that archival research is an appropriate avenue for professionalization, as it trains students to think and research methodically as well as practice information literacy and management skills. Furthermore, archival research provokes a more nuanced understanding of historiography, preservation, and research practices. Through a case study, the authors prove the efficacy and benefits of training humanities scholars through archival methods.

Carlton, S.B. (1995). Composition as a postdisciplinary formation. *Rhetoric Review*, 14(1), 78–87.

Susan B. Carlton focuses on a specific moment of disciplinary formation in the field of composition. She outlines the arguments for and against composition becoming formally and nationally established as an academic discipline. Although many abhor the tenure-based credential system implicit in contemporary academic discipline formation, others argue that composition will not be taken seriously as a field until it is legitimized as a discipline. Carlton concludes in favour of composition as a discipline, but with a caveat of maintaining an enlightened, “postdiscipline” attitude.

Eagleton, T. (2010). The rise of English. In V.B. Leitch (Ed.), *Norton anthology of theory and criticism* (pp. 2140–2146). New York, NY: W.W. Norton.

Terry Eagleton charts the development of English literature as an ideological tactic beginning in the mid-nineteenth century. English literature was used as a form of suppression and control, he argues, to educate lower classes “enough” to keep them subservient. Moreover, English literature was scorned and primarily directed at women when first introduced into the university as a field of study. Eagleton concludes that literature “is an ideology” (p. 2140) due to its historical role in social development and nation building in England and elsewhere.

Fjällbrant, N. (1997). Scholarly communication—Historical development and new possibilities. In *Proceedings of the IATUL Conference*. Lafayette, IN: Purdue University Library.

In order to study the widespread transition into electronic scholarly communication, **Nancy Fjällbrant** details the history of the scientific journal. Academic journals emerged in seventeenth-century Europe, and the first journal, *Journal des Sçavans*, was published in 1665 in Paris. According to Fjällbrant, the scholarly journal initially developed out of a desire for researchers to share their findings with others in a cooperative forum. As such, the journal had significant ties with the concurrent birth of learned societies (e.g., the Royal Society of London and the Académie des Sciences in Paris). As their primary concern was the dissemination of knowledge, learned societies began seriously experimenting with journals. Fjällbrant lists other contemporaneous forms of scholarly communication, including the letter, the scientific book, the newspaper, and the anagram system. The journal, however, emerged as a primary source of scholarly communication because it met the needs of various stakeholders: the general public; booksellers and libraries; authors who wished to make their work public and claim ownership; the scientific community invested in reading and applying the findings of other scientists; publishers who wished to capitalize off of production; and academic institutions that required metrics for evaluating faculty.

Garson, M. (2008). ACUTE: The first twenty-five years, 1957–1982. *English Studies in Canada*, 34(4), 21–43.

In this reprint of a pamphlet originally published in 1982, **Marjorie Garson** relays the first two and a half decades of ACUTE, now known as ACCUTE: the Association of Canadian College and University Teachers in English. While Garson comprehensively details the history of the association – the first conference, the development of the member base, the initial aims – she simultaneously notes the political and economic status of postsecondary English departments in Canada. Needless to say, this status has been tenuous and fraught almost from the inception of humanities departments in Canada. Overall, Garson provides an informative view of how the study of English literature has developed institutionally and socially, as well as a more specific glimpse into the trajectory of one of the major learned societies in Canada.

Graff, G. (1987). *Professing literature: An institutional history*. Chicago, IL: University of Chicago Press.

Gerald Graff thoroughly details the history of twentieth century English literature studies in America. He argues that many of the issues in contemporary academia can be traced to an overall method of patterned isolationism in a department. Due to intellectual or discipline-based conflicts, various isolated fields of thought and practitioners prevail. A general attitude of inclusion and comprehensiveness creates an environment where conflicts are overlooked instead of acknowledged or attended to. Moreover, practitioners in divergent schools of thought are endowed with a silo where they can effectively ignore their intellectual opponents. The self-perpetuating lack of interconnectedness and collaboration in English departments has negatively affected its overall scholarship and success. Furthermore, Graff contests that the conflict between schools of thought (classicism, New Criticism, critical theory, and now, perhaps, digital humanities) should be taught to students in order to contextualize and lend meaning to their literary education. Graff presents the above arguments alongside a comprehensive historical explanation of how literary studies evolved as a discipline, for better or worse.

Graff, G. (2003). In the dark all eggheads are gray. In *Clueless in academe: How schooling obscures the life of the mind* (pp. 1–16). New Haven, CT: Yale University Press.

Graff argues that contemporary mores in academia constrict social knowledge creation rather than foster it. A false intellectual divide exists that is heavily predicated on purposeful incomprehensibility in academic writing and practice. For Graff, academics render their communication more obscure than necessary because of underlying anxieties concerning irrelevancy, or worse, so-called vulgarity. Graff argues that academics, and perhaps especially teachers, must avoid the trap of pretentious hyperintellectual rhetoric in order to actually inspire knowledge and to work together with students in the realm of higher education.

Jagodzinski, C.M. (2008). The university press in North America: A brief history. *Journal of Scholarly Publishing*, 40(1), 1–20.

Cecile M. Jagodzinski describes the history of the North American university press. She notes that the first North American university presses – at Cornell and Johns Hopkins universities – debuted in the nineteenth century. From the beginning, university presses were considered to be primarily for the dissemination of knowledge. The number of university presses grew with the increase of liberal arts colleges over the twentieth century, and the Association of American University Presses was formally established in the mid-1930s. As is well known, the last quarter of the twentieth century heralded large, systematic changes and obstacles, and the university press was not immune to these challenges. As such, the institution of the university press has creatively addressed the (largely financial) issues burdening contemporary scholarly communication as a whole.

Kaufer, D.S., & Carley, K.M. (1993). Academia. In *Communication at a distance: The influence of print on sociocultural organization and change* (pp. 341–393). Hillsdale, NJ: Lawrence Erlbaum Associates.

Through sociological methods, **David S. Kaufer** and **Kathleen M. Carley** explore the relationship between academia and print culture. The authors concede that shared, participatory textual conventions enforce stability in academic professions, as one of the significant and most obvious effects of print is to enhance the speed and efficiency whereby information travels to and through communities. Kaufer and Carley run a set of simulations in order to explore the dissemination of ideas in an academic discipline; they concur that rapid advances, social knowledge creation, and a growing community all depend on the efficacy of print dissemination. As such, a disciplinary familiarity with the form and allowances of print proves desirable for academic writers. Notably, the authors briefly touch on the interrelations between the Royal Societies, scientific journals, and print.

Lightman, H., & Reingold, R.N. (2005). A collaborative model for teaching e-resources: Northwestern University's graduate training day. *Libraries and the Academy*, 5(1), 23–32.

Harriet Lightman and **Ruth Reingold** expand on the annual Graduate Training Day held by the library at Northwestern University. The program aims to increase the information literacy of incoming graduate students. Ideally, Graduate Training Day will better prepare students for their upcoming scholarly practices as well as their professional lives after graduate school. Lightman and Reingold argue that information literacy is necessary training for graduate students, as it introduces bibliographic, research, digital humanities, and project management tools students may not be familiar with prior to their graduate education. (At the time of writing, it is unclear whether Graduate Training Day continues.)

Lorimer, R. (2013). Libraries, scholars, and publishers in digital journal and monograph publishing. *Scholarly and Research Communication*, 4(1). URL: <http://src-online.ca/index.php/src/article/view/43/118>.

Rowland Lorimer briefly details the last forty years of scholarly publishing to explicate the current state of affairs. He asserts that a reorganization of the academic publishing infrastructure would greatly encourage forthright contributions to knowledge, especially concerning academic journals and monographs. The splitting of the university press from the university (except in name), coupled with funding cuts and consequent entrepreneurial publishing projects, has hampered the possibilities of academic publishing. By integrating all of the actors of digital scholarly communication in an inclusive collaboration – libraries, librarians, scholars on editorial boards, technologically inclined researchers, programmers, digital humanists, and publishing professionals – digital technology could bear significant benefits for the future of scholarship and knowledge creation.

Nowviskie, B. (2012). A digital boot camp for graduate students in the humanities. *The Chronicle of Higher Education*. URL: <http://chronicle.com/article/A-Digital-Boot-Camp-for-Grad/131665> .

Bethany Nowviskie details the Praxis Program she directs out of the Scholar's Lab at the University of Virginia. She demonstrates how commitments to interdisciplinarity, collaboration, and tacit knowledge are combined to effectively train graduate students in contemporary humanities (and especially digital humanities) work. Nowviskie acknowledges the challenges and benefits of blending radically new methods for graduate training with traditional humanities practices and credit systems. Overall, she reiterates the value of training graduate students in an open-ended, community-minded way; in this way, humanities programs can facilitate both graduate and postgraduate school careers.

Siemens, R. (2002). Scholarly publishing at its source, and at present. In R. Siemens, M. Best, E. Grove-White, A. Burk, J. Kerr, A. Pope, J-C. Guédon, G. Rockwell, & L. Siemens (Comps.), *The credibility of electronic publishing: A report to the humanities and social sciences federation of Canada*. *Text Technology*, 11(1), 1–128.

Raymond Siemens' introduction to this report focuses on rethinking scholarly communication practices in light of new digital forms. He meditates on this topic through the framework of *ad fontes* – the act, or conception, of going to the source. Siemens argues that scholars should look at the source or genesis of scholarly communication; the source, for Siemens, includes more than the seventeenth-century inception of the academic print journal. The source also includes less formal ways of communicating and disseminating knowledge (e.g., verbal exchanges, epistolary correspondence, and manuscript circulation). In this way, scholars can look past the popular, standard academic journal and into a future of scholarly communication that productively involves varied scholarly traditions and social knowledge practices.

van Ittersum, M.J. (2011). Knowledge production in the Dutch Republic: The household academy of Hugo Grotius. *Journal of the History of Ideas*, 72(4), 523–444.

Martine Julia van Ittersum approaches early modern knowledge production through the lens of seventeenth-century Dutch scholar Hugo Grotius and his family. Van Ittersum argues that in the early modern period scholarly families prevailed as units of knowledge production or *household academies*. Household academies were built on a familial infrastructure of research, support, editing, and promotion. Significantly, van Ittersum asserts that Grotius' success, in particular, depended largely on the diligent writerly and readerly efforts of his family.

Zacharias, R. (2011). The death of the graduate student (and the birth of the HQP). *English Studies in Canada*, 37(1), 4–8.

Robert Zacharias calls for increased attention to the changing role of humanities graduate students to that of “highly qualified personnel” (HQP). For the author, the shift represents a widespread aversion toward the humanities and graduate studies (and students) in particular. Zacharias suggests that this reconsideration (and, in his view, corporatization) of

graduate students be quelled, and that graduate education be considered just that: education, not training. He advocates for a more effective systematic introduction to the academic field by refocusing on comprehensive mentorship and humanities-based professionalization.

THE SHIFTING FUTURE OF SCHOLARLY COMMUNICATION AND DIGITAL SCHOLARSHIP

What is the role of the humanities in social knowledge production? How can academics harness new tools and modes of scholarship to productively engage with each other, as well as with other members of the public? How can the humanities actively reflect on and proactively repurpose the history of scholarly communication? How can the digital realm foster social knowledge creation from within the academy? The following annotated bibliography of 22 selections attends to these questions and branches out in various areas: from rethinking literary criticism, to imagining future digital libraries, to politicizing the digital humanities. The most stimulating and notable intersections occur when the social and the scholarly overlap.

Berry, D.M. (2011). The computational turn: Thinking about the digital humanities. *Culture Machine*, 12. URL: <http://www.culturemachine.net/index.php/cm/article/view/440/470> .

David M. Berry narrates the formation of postsecondary education, traced back to Immanuel Kant's notion of reason as the guiding force of the ideal university. Berry maintains that the digital should now be considered the unifying idea of the contemporary university. He argues that the disparate, multiple forms of knowledge produced in the university can unify via digital practice and context; by taking up the digital as form and content for educational institutions, we can move toward a more networked and decentralized "digital intellect" (p. 7). This new ethos need not rely on traditional academic ideals of learning an entire literary canon or memorizing multiple equations. The focus would thus shift from the individual student or researcher to the collective, from the sharply delineated university to the post-disciplinary university.

Besser, H. (2004). The past, present, and future of digital libraries. In S. Schriebman, R. Siemens, & J. Unsworth (Eds.), *A companion to digital humanities* (pp. 557–575). Oxford: Blackwell Publishing.

Howard Besser examines the state and trajectory of digital libraries and confers that further considerations must be made in order for digital libraries to uphold both the tenets and roles of traditional libraries. By briefly surveying the position, history, and standards of the library, Besser concludes that libraries have certain key components that must be acknowledged and upheld in digital substantiations. These components include interoperability, stewardship, service, privacy, and equal access to a diversity of information. Besser argues that these components reflect the ethical side of the library, and need to be considered alongside more obvious priorities, like the dissemination of information and the preservation of artifacts.

Biagioli, M. (2002). From book censorship to academic peer review. *Emergences*, 12(1), 11–45.

Mario Biagioli details the historical and epistemological shifts that have led to today's academic peer review system. Contrary to its contemporary role, peer review began as an early modern disciplinary technique that was closely related to book censorship and was required for social and scholarly certification of institutions and individuals alike. The rise of academic journals shifted this constrained and royally mandated position. No longer a self-sustaining system of judgment and reputation dictated by a small group of identified and accredited professionals, peer review (which is often blind) now focuses on disseminating knowledge and scholarship to the wider community. Biagioli also states that journals have moved from officially representing specific academic institutions to being community owned and operated, as responsibilities, duties, and readership are now dispersed among a community of like-minded scholars.

Borgman, C. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. Cambridge, MA: MIT Press.

Christine Borgman lays out research questions and hypotheses concerning the evolving scholarly infrastructure and modes of communication in the digital environment. She deduces that the inherent social elements of scholarship endure, despite new technologies that alter significantly the way scholarship is performed, disseminated, and archived. Scholarship and scholarly activities continue to exist in a social network of varying actors and priorities. Notably, Borgman focuses on the “data deluge” – the increasing amount of data generated and data accessed for research purposes. Meditating on the influences of large data sets, as well as how these data sets will be preserved in keeping with library and archival conventions, forms a significant node in the book. Overall, Borgman synthesizes the various aspects of contemporary scholarship and reflects on the increasingly pervasive digital environment.

Cohen, D.J. (2008). Creating scholarly tools and resources for the digital ecosystem: Building connections in the Zotero project. *First Monday*, 13(8). URL: <http://firstmonday.org/ojs/index.php/fm/article/view/2233/2017> .

Daniel Cohen details how the Zotero project exemplifies both Web 2.0 and traditional scholarly ethos. Zotero is a widely used, open source, community-based bibliography tool. It exists on top of the browser as an extension, has maintained an API since its inception, and boasts comprehensive user features. Cohen conceptualizes Zotero as a node in an interconnected digital ecosystem that builds bridges instead of hordes information. As an easy-to-use collaborative tool, Zotero acts as both an effective scholarly resource and a facilitator of social knowledge creation.

Cohen, D.J., & Scheinfeldt, T. (2013). Preface. In D.J. Cohen & T. Scheinfeldt (Eds.), *Hacking the academy, the edited volume*. Ann Arbor, MI: University of Michigan Press.

Daniel J. Cohen and **Tom Scheinfeldt** introduce *Hacking the Academy*, a digital publishing experiment and attempt to reform academic institutions and practices by crowdsourcing content. Cohen and Scheinfeldt called for

submissions to their project with the caveat that participants had one week to submit. Cohen and Scheinfeldt pitched their project with the following questions: “Can an algorithm edit a journal? Can a library exist without books? Can students build and manage their own learning management platforms? Can a conference be held without a program? Can Twitter replace a scholarly society?” (n.p.). Roughly one sixth of the 329 submissions received were included in the consequent publication. The intent of the project was to reveal the desire and possibility for large institutional change via digital means.

Davidson, C.N., & Goldberg, D.T. (2004). Engaging the humanities. *Profession*, 42–62. URL: <http://www.jstor.org.ezproxy.library.uvic.ca/stable/25595777> .

Cathy Davidson and **David Goldberg** argue that despite marginalization, humanistic approaches and perspectives remain significant for successful, holistic university environments. Rather than taking a field-specific approach, Davidson and Goldberg propose a problem- or issue-based humanities model that allows for a more interdisciplinary approach. In this way, the comprehensive interpretive tools and complex models of cultural interaction integral to humanities work may resolve varied and continuous issues. The authors suggest that a conceptual and physical shift toward interdisciplinarity within institutions (rather than interdisciplinary institutions, models, or methods) offers a realistic and flexible approach to transforming academia and education.

Erickson, J., Lagoze, C., Payette, S., Van de Sompel, H., & Warner, S. (2004). Rethinking scholarly communication: Building the system that scholars deserve. *D-Lib Magazine*, 10(9). URL: <http://webdoc.sub.gwdg.de/edoc/aw/d-lib/dlib/september04/vandesompel/09vandesompel.html> .

John Erickson, **Carl Lagoze**, **Sandy Payette**, **Herbert Van de Sompel**, and **Simeon Warner** ruminate on transforming scholarly communication to better serve and facilitate knowledge creation. They primarily target the current academic journal system. In the authors’ view, this system constrains scholarly work, as it is expensive, difficult to access, and print biased. Erickson et al. propose a digital system for scholarly communication that more accurately incorporates ideals of interoperability, adaptability, innovation, documentation, and democratization. Furthermore, the proposed system would be implemented as a concurrent knowledge production environment instead of a mere stage, annex, or afterthought for scholarly work.

Fitzpatrick, K. (2011). *Planned obsolescence: Publishing, technology, and the future of the academy*. New York, NY: New York University Press.

Kathleen Fitzpatrick duly surveys academic publishing and calls for reform. She argues for more interactivity, communication, peer-to-peer review, and a significant move toward digital scholarly publishing. Fitzpatrick demonstrates how the current mode of scholarly publishing is unviable economically. Moreover, tenure and promotion practices based primarily on traditional modes of scholarly publishing also need to be reformed. Fitzpatrick acknowledges certain touchstones of the academy (peer review, scholarship, sharing ideas) and how these tenets have been overshadowed by priorities

shaped, in part, by mainstream academic publishing practices and concepts. She details her own work with CommentPress and the benefits of publishing online in an infrastructure that enables widespread dissemination as well as concurrent reader participation via open peer review.

Fitzpatrick, K. (2012). Beyond metrics: Community authorization and open peer review. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 452–459). Minneapolis, MN: University of Minnesota Press.

Fitzpatrick calls for a reform of scholarly communication via open peer review. She argues that the Internet has provoked a conceptual shift wherein (textual) authority is no longer measured by a respected publisher's stamp; rather, she contends, the community now locates authority. As concepts of authority change and evolve in the digital sphere, so should methods. Peer review should be opened to various scholars in a field as well as to non-experts from other fields and citizen scholars. Fitzpatrick claims that this sort of crowdsourcing of peer review could more accurately represent scholarly and non-scholarly reaction, contribution, and understanding. Digital humanities and new media scholars already have the tools to measure digital engagement with a work; now, a better model of peer review should be implemented to take advantage of the myriad, social, networked ways scholarship is (or could be) produced.

Fjällbrant, N. (1997). Scholarly communication—Historical development and new possibilities. In *Proceedings of the IATUL Conference*. Lafayette, IN: Purdue University Library.

In order to study the widespread transition into electronic scholarly communication, **Nancy Fjällbrant** details the history of the scientific journal. Academic journals emerged in seventeenth-century Europe, and the first journal, *Journal des Sçavans*, was published in 1665 in Paris. According to Fjällbrant, the scholarly journal initially developed out of a desire for researchers to share their findings with others in a cooperative forum. As such, the journal had significant ties with the concurrent birth of learned societies (e.g., the Royal Society of London and the Académie des Sciences in Paris). As their primary concern was the dissemination of knowledge, learned societies began seriously experimenting with journals. Fjällbrant lists other contemporaneous forms of scholarly communication, including the letter, the scientific book, the newspaper, and the anagram system. The journal, however, emerged as a primary source of scholarly communication because it met the needs of various stakeholders: the general public; booksellers and libraries; authors who wished to make their work public and claim ownership; the scientific community invested in reading and applying the findings of other scientists; publishers who wished to capitalize off of production; and academic institutions that required metrics for evaluating faculty.

Flanders, J. (2009). The productive unease of 21st century digital scholarship. *Digital Humanities Quarterly*, 3(3). URL: <http://www.digitalhumanities.org/dhq/vol/3/3/000055/000055.html> .

Julia Flanders discusses the role of the digital humanities in relation to the more conventional humanities, and characterizes the digital humanities as possessing a sort of “productive unease”: anxiety concerning medium, institutional structures of scholarly communication, and representation. This anxiety is productive insofar as it brings into clearer focus biases previously unremarked on in the traditional humanities. Moreover, digital tools and practices present more and different challenges. Of note, Flanders recognizes social software and media as tackling some of these anxiety-provoking issues, and acknowledges digital humanities projects that also aim to do so.

Guédon, J-C. (2008). Digitizing and the meaning of knowledge. *Academic Matters*, 23–26.

Jean-Claude Guédon briefly sketches the recent history of scholarly communication and publishing, and meditates on alternatives to the current state of affairs. He concludes that although open source publishing is a relatively recent phenomenon, it adroitly embodies the ethos and traditional practices of scholarship (especially in the sciences). For Guédon, open source publishing represents the open, endless appropriation of knowledge and the discipline-wide conversation that has traditionally defined academic work. Guédon champions this move toward open, shared knowledge versus the continued exploitation of academics, librarians, and universities by the large corporate publishing companies currently relied upon for scholarly communication and accreditation.

Liu, A. (2004). *The laws of cool: Knowledge work and the culture of information*. Chicago, IL: University of Chicago Press.

Alan Liu interweaves two distinct threads in *The Laws of Cool*. He traces the history and ethos of cool (culture, trends, popularity, etc.) as well as postindustrial cool: the flux of cool knowledge work. Liu examines how the humanities can contribute and survive in the new postindustrial, cool corporate landscape. Liu’s sources and interests are widespread: he cites modernist design theory, Lev Manovich’s database narrative, and everything from the Guayaki tribe to William Gibson’s *Agrippa*. He concludes that the humanities are necessary to keep the corporation humane and informed of the history of its own practices. The humanities, in turn, must learn to negotiate the current cool cultural climate in order to remain relevant and effective.

Liu, A. (2012). Where is cultural criticism in digital humanities? In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 409–509). Minneapolis, MN: University of Minnesota Press.

Liu surveys the state of the digital humanities in relation to the humanities at large. He argues that, thus far, digital humanities projects often lack the self-reflexivity and cultural criticism necessary for the ethical development of humanistic projects. Furthermore, he argues, this lack denies the digital humanities a real or full position in the humanities. Because the digital

humanities avoid cultural criticism, they frequently become subservient or merely instrumental to the humanities as a whole – as either a moneymaker or tech support. Liu claims that the digital humanities could deconstruct the hierarchy by becoming both self-reflexive and invaluable, thereby leading the humanities into the academic future.

Lorimer, R. (2013). Libraries, scholars, and publishers in digital journal and monograph publishing. *Scholarly and Research Communication*, 4(1). URL: <http://src-online.ca/index.php/src/article/view/43/118> .

Rowland Lorimer briefly details the last forty years of scholarly publishing to explicate the current state of affairs. He asserts that a reorganization of the academic publishing infrastructure would greatly encourage forthright contributions to knowledge, especially concerning academic journals and monographs. The splitting of the university press from the university (except in name), coupled with funding cuts and consequent entrepreneurial publishing projects, has hampered the possibilities of academic publishing. By integrating all of the actors of digital scholarly communication in an inclusive collaboration – libraries, librarians, scholars on editorial boards, technologically inclined researchers, programmers, digital humanists, and publishing professionals – digital technology could bear significant benefits for the future of scholarship and knowledge creation.

Losh, E. (2012). Hactivism and the humanities: Programming protest in the era of the digital university. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 161–186). Minneapolis, MN: University of Minnesota Press.

Elizabeth Losh scans the instantiations of, and relations between, hactivism and the humanities. She contends, along with scholar Alan Liu, that through an increased self-awareness, the digital humanities can actually affect real political, social, public, and institutional change. Losh examines the hacking rhetoric and actions of scholar Cathy Davidson, via the HASTAC collaboratory; the Radical Software Group and its director, Alexander Galloway; and the Critical Art Ensemble, with a focus on CAE member and professor Ricardo Dominguez. Losh concludes by acknowledging criticism of the digital humanities and suggests a solution: digital humanists should engage in more public, political collaborations and conversations.

Manovich, L. (2012). Trending: The promises and the challenges of big social data. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 460–475). Minneapolis, MN: University of Minnesota Press.

Lev Manovich elaborates on the possibilities and limitations of performing humanities research with Big Data. He asserts that although Big Data can be incredibly instructive and useful for humanities work, certain significant roadblocks impede this project. These roadblocks include the fact that only social media companies have access to relevant Big Data; user-generated content is not necessarily authentic, objective, or representative; certain analysis of Big Data requires a level of computer science expertise that humanities researchers do not typically possess; and Big Data is not synonymous with “deep data,” the type of data procured through intense, long-

term study of subjects. Nevertheless, Manovich looks forward to a future where humanists can overcome these boundaries and integrate Big Data with their research aspirations and projects.

McCarty, W. (2005). *Humanities computing*. New York, NY: Palgrave Macmillan.

Willard McCarty examines the field of humanities computing and explores both its limitations and potential. He frames much of his exploration through the mantra that digital humanities can be much more than merely “convenient vending machines for knowledge” (p. 6). The focus must be shifted from automation and delivery to the possibilities for new knowledge creation through digital humanities practices. To this end, McCarty celebrates the tendency toward modelling and manipulation. Drawing heavily on Clifford Geertz’s model of/model for theory (and privileging the “model for” concept), McCarty explores how models and unfinished prototypes can be productive spaces of work, knowledge, and play. Models provide invaluable information when they dysfunction, either through inexplicable successes or failures. Of note, he incorporates Martin Heidegger’s concept of manipulating the world through technology.

Rosenzweig, R. (2006). Can history be open source? Wikipedia and the future of the past. *The Journal of American History*, 93(1), 117–146.

Roy Rosenzweig envisions a model for history scholarship based on the open access, multi-author Wikipedia framework. He concedes that Wikipedia represents an exciting – and perhaps even more ethical – structure of sharing and creating knowledge. Although Rosenzweig thoroughly and comprehensively acknowledges all of the criticisms of Wikipedia from an academic standpoint, he nonetheless proposes that history scholars become more open to incorporating Wikipedia in their scholarly practice. Rosenzweig heralds the many benefits of wiki-based learning and projects for both research and teaching purposes.

Siemens, R. (2002). Scholarly publishing at its source, and at present. In R. Siemens, M. Best, E. Grove-White, A. Burk, J. Kerr, A. Pope, J-C. Guédon, G. Rockwell, & L. Siemens (Comps.), *The credibility of electronic publishing: A report to the humanities and social sciences federation of Canada*. *Text Technology*, 11(1), 1–128.

Raymond Siemens’ introduction to this report focuses on rethinking scholarly communication practices in light of new digital forms. He meditates on this topic through the framework of *ad fontes* – the act, or conception, of going to the source. Siemens argues that scholars should look at the source or genesis of scholarly communication; the source, for Siemens, includes more than the seventeenth-century inception of the academic print journal. The source also includes less formal ways of communicating and disseminating knowledge (e.g., verbal exchanges, epistolary correspondence, and manuscript circulation). In this way, scholars can look past the popular, standard academic journal and into a future of scholarly communication that productively involves varied scholarly traditions and social knowledge practices.

Vaidhyanathan, S. (2002). The content-provider paradox: Universities in the information ecosystem. *Academe*, 88(5). URL: <http://www.jstor.org.ezproxy.library.uvic.ca/stable/40252219>.

Siva Vaidhyanathan warns against the increasing corporatization of American universities and other knowledge institutions. He argues that universities have begun to commodify knowledge, and that this tactic will eventually lead to the dissolution of the university as a credible source of education. Unfortunately, Vaidhyanathan does not offer an alternative model for universities to address widespread funding and budget cuts. Nevertheless, in a similar vein as Willard McCarty's claims in *Humanities Computing*, Vaidhyanathan reminds his readers that education is not simply information, and should not be treated (or sold) as such.

Van House, N. (2003). Digital libraries and collaborative knowledge construction. In A.P. Bishop, B. Battenfield, & N. Van House (Eds.), *Digital library use: Social practice in design and evaluation* (pp. 271–296). Cambridge, MA: MIT Press.

Nancy Van House reminds her readers that libraries are more than just storehouses; libraries comprehensively support and foster knowledge creation. Consequently, Van House claims, designing and building effective digital libraries depends on a thorough understanding of knowledge work. For Van House, the emergence of digital libraries represents a significant shift in how individuals and communities create knowledge. Digital libraries often foster transgressive, situated, distributed, and social networks of research and knowledge production. Notably, she reinforces the concept that artifacts are not knowledge in and of themselves; knowledge is a complex social phenomenon rooted in contact, daily practice, and partial mediation by artifacts. As such, digital libraries function differently than as mere conduits – digital libraries are boundary objects, and they significantly affect knowledge work by introducing variation in terms of manipulability, credibility, inscription, access, and organization.

SOCIAL KNOWLEDGE CREATION IN ELECTRONIC JOURNALS AND MONOGRAPHS

The increasingly digital inclination of scholarly communication has provoked individual scholars and editorial teams to thoughtfully develop digital scholarly publications. This section acknowledges social knowledge creation in theory and practice concerning electronic journals and monographs. In various modes, the 12 selections question how journals and monographs can enable and enact social knowledge practices in the online sphere. In many instances, authors meditate on how these actions can benefit scholarship and scholars both within the academy and outside of it. In other cases, authors advocate for further integration of the democratic, user-based interactions and productions encouraged by the rise and popularity of Web 2.0 practices. In still other entries, authors ruminate on the history of the academic journal and apply this knowledge to the current state of scholarly communication. Taken as whole, the selections introduce the nuanced and multifaceted conversation surrounding contemporary journal and monograph production.

Biagioli, M. (2002). From book censorship to academic peer review. *Emergences*, 12(1), 11–45.

Mario Biagioli details the historical and epistemological shifts that have led to today's academic peer review system. Contrary to its contemporary role, peer review began as an early modern disciplinary technique that was closely related to book censorship and was required for social and scholarly certification of institutions and individuals alike. The rise of academic journals shifted this constrained and royally mandated position. No longer a self-sustaining system of judgment and reputation dictated by a small group of identified and accredited professionals, peer review (which is often blind) now focuses on disseminating knowledge and scholarship to the wider community. Biagioli also states that journals have moved from officially representing specific academic institutions to being community owned and operated, as responsibilities, duties, and readership are now dispersed among a community of like-minded scholars.

Borgman, C. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. Cambridge, MA: MIT Press.

Christine Borgman lays out research questions and hypotheses concerning the evolving scholarly infrastructure and modes of communication in the digital environment. She deduces that the inherent social elements of scholarship endure, despite new technologies that alter significantly the way scholarship is performed, disseminated, and archived. Scholarship and scholarly activities continue to exist in a social network of varying actors and priorities. Notably, Borgman focuses on the “data deluge” – the increasing amount of data generated and data accessed for research purposes. Meditating on the influences of large data sets, as well as how these data sets will be preserved in keeping with library and archival conventions, forms a significant node in the book. Overall, Borgman synthesizes the various aspects of contemporary scholarship and reflects on the increasingly pervasive digital environment.

Cohen, D.J. (2012). The social contract of scholarly publishing. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 319–321). Minneapolis, MN: University of Minnesota Press.

Daniel Cohen remarks on the social contract of scholarly publishing – the contract between the producers (authors, editors, publishers) and the consumers (readers), or the “supply side” and the “demand side.” According to Cohen, individuals on the supply side have become increasingly experimental in recent years. There has not, however, been enough attention paid to the demand side. Cohen asserts that a thorough consideration of the demand side is necessary for the social contract to endure into the digital age. To accomplish this, academics must think more socially and become increasingly cognizant of the design, packaging, and outreach of their publishing ventures.

Erickson, J., Lagoze, C., Payette, S., Van de Sompel, H., & Warner, S. (2004). Rethinking scholarly communication: Building the system that scholars deserve. *D-Lib Magazine*, 10(9). URL: <http://webdoc.sub.gwdg.de/edoc/aw/d-lib/dlib/september04/vandesompel/09vandesompel.html>.

John Erickson, Carl Lagoze, Sandy Payette, Herbert Van de Sompel, and Simeon Warner ruminate on transforming scholarly communication to better serve and facilitate knowledge creation. They primarily target the current academic journal system. In the authors' view, this system constrains scholarly work, as it is expensive, difficult to access, and print biased. Erickson et al. propose a digital system for scholarly communication that more accurately incorporates ideals of interoperability, adaptability, innovation, documentation, and democratization. Furthermore, the proposed system would be implemented as a concurrent knowledge production environment instead of a mere stage, annex, or afterthought for scholarly work.

Fitzpatrick, K. (2011). *Planned obsolescence: Publishing, technology, and the future of the academy*. New York, NY: New York University Press.

Kathleen Fitzpatrick duly surveys academic publishing and calls for reform. She argues for more interactivity, communication, peer-to-peer review, and a significant move toward digital scholarly publishing. Fitzpatrick demonstrates how the current mode of scholarly publishing is unviable economically. Moreover, tenure and promotion practices based primarily on traditional modes of scholarly publishing also need to be reformed. Fitzpatrick acknowledges certain touchstones of the academy (peer review, scholarship, sharing ideas), and how these tenets have been overshadowed by priorities shaped, in part, by mainstream academic publishing practices and concepts. She details her own work with CommentPress and the benefits of publishing online in an infrastructure that enables widespread dissemination as well as concurrent reader participation via open peer review.

Fitzpatrick, K. (2012). Beyond metrics: Community authorization and open peer review. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 452–459). Minneapolis, MN: University of Minnesota Press.

Fitzpatrick calls for a reform of scholarly communication via open peer review. She argues that the Internet has provoked a conceptual shift wherein (textual) authority is no longer measured by a respected publisher's stamp; rather, she contends, the community now locates authority. As concepts of authority change and evolve in the digital sphere, so should methods. Peer review should be opened to various scholars in a field, as well as to non-experts from other fields and citizen scholars. Fitzpatrick claims that this sort of crowdsourcing of peer review could more accurately represent scholarly and non-scholarly reaction, contribution, and understanding. Digital humanities and new media scholars already have the tools to measure digital engagement with a work; now, a better model of peer review should be implemented to take advantage of the myriad, social, networked ways scholarship is (or could be) produced.

Fjällbrant, N. (1997). Scholarly communication—Historical development and new possibilities. In *Proceedings of the IATUL Conference*. Lafayette, IN: Purdue University Library.

In order to study the widespread transition into electronic scholarly communication, **Nancy Fjällbrant** details the history of the scientific journal. Academic journals emerged in seventeenth-century Europe, and the first journal, *Journal des Sçavans*, was published in 1665 in Paris. According to Fjällbrant, the scholarly journal initially developed out of a desire for researchers to share their findings with others in a cooperative forum. As such, the journal had significant ties with the concurrent birth of learned societies (e.g., the Royal Society of London and the Académie des Sciences in Paris). As their primary concern was the dissemination of knowledge, learned societies began seriously experimenting with journals. Fjällbrant lists other contemporaneous forms of scholarly communication, including the letter, the scientific book, the newspaper, and the anagram system. The journal, however, emerged as a primary source of scholarly communication because it met the needs of various stakeholders: the general public; booksellers and libraries; authors who wished to make their work public and claim ownership; the scientific community invested in reading and applying the findings of other scientists; publishers who wished to capitalize off of production; and academic institutions that required metrics for evaluating faculty.

Guédon, J-C. (2008). Digitizing and the meaning of knowledge. *Academic Matters*, 23–26.

Jean-Claude Guédon briefly sketches the recent history of scholarly communication and publishing, and meditates on alternatives to the current state of affairs. He concludes that although open source publishing is a relatively recent phenomenon, it adroitly embodies the ethos and traditional practices of scholarship (especially in the sciences). For Guédon, open source publishing represents the open, endless appropriation of knowledge and the discipline-wide conversation that has traditionally defined academic work. Guédon champions this move toward open, shared knowledge versus the continued exploitation of academics, librarians, and universities by the large corporate publishing companies currently relied upon for scholarly communication and accreditation.

Guldi, J. (2013). Reinventing the academic journal. In D.J. Cohen & T. Scheinfeldt (Eds.), *Hacking the academy: The edited volume*. Ann Arbor, MI: University of Michigan Press.

Jo Guldi calls for rethinking scholarly journal practices in light of the emergence and allowances of Web 2.0. She argues that journals can reestablish themselves as forthright facilitators of knowledge creation if they adopt notions of interoperability, curation, multimodal scholarship, open access, networked expertise, and transparency regarding review and timelines. For Guldi, the success of the academic journal depends on incorporating social bookmarking tools and wiki formats. Journals should assume a progressive attitude predicated on sharing and advancing knowledge, instead of a limiting view based on exclusivity, profit, and intellectual authority.

Liu, A. (2009). The end of the end of the book: Lively margins, and social computing. *Michigan Quarterly Review*, 48(4), 499–520.

Alan Liu argues that books have always, in a sense, been social media. He acknowledges the increase in bibliographic and material textual studies, and the correspondences between new digital reading environments and the book, with a focus on paratextual materials and marginality. In this way, Liu contests apocalyptic claims of the death of the book. Notably, Liu channels his assertions through an analysis of humanities-based digital research projects: Collex, Open Journal Systems, and PreE. He suggests that these environments allow for more thoughtful online engagement and user operability (the capacity to effectively and easily manipulate and tailor research practices) than their mainstream counterparts. The trend toward reading, researching, and writing in digital spaces does not herald the end of the book; rather, certain digital humanities projects are synthesizing integral reading practices in order to improve and facilitate more widespread knowledge production, with an eye to the inherent sociality of texts.

Lorimer, R. (2013). Libraries, scholars, and publishers in digital journal and monograph publishing. *Scholarly and Research Communication*, 4(1). URL: <http://src-online.ca/index.php/src/article/view/43/118>.

Rowland Lorimer briefly details the last forty years of scholarly publishing to explicate the current state of affairs. He asserts that a reorganization of the academic publishing infrastructure would greatly encourage forthright contributions to knowledge, especially concerning academic journals and monographs. The splitting of the university press from the university (except in name), coupled with funding cuts and consequent entrepreneurial publishing projects, has hampered the possibilities of academic publishing. By integrating all of the actors of digital scholarly communication in an inclusive collaboration – libraries, librarians, scholars on editorial boards, technologically inclined researchers, programmers, digital humanists, and publishing professionals – digital technology could bear significant benefits for the future of scholarship and knowledge creation.

Siemens, R. (2002). Scholarly publishing at its source, and at present. In R. Siemens, M. Best, E. Grove-White, A. Burk, J. Kerr, A. Pope, J-C. Guédon, G. Rockwell, & L. Siemens (Comps.), *The credibility of electronic publishing: A report to the humanities and social sciences federation of Canada*. *Text Technology*, 11(1), 1–128.

Raymond Siemens' introduction to this report focuses on rethinking scholarly communication practices in light of new digital forms. He meditates on this topic through the framework of *ad fontes* – the act, or conception, of going to the source. Siemens argues that scholars should look at the source or genesis of scholarly communication; the source, for Siemens, includes more than the seventeenth-century inception of the academic print journal. The source also includes less formal ways of communicating and disseminating knowledge (e.g., verbal exchanges, epistolary correspondence, and manuscript circulation). In this way, scholars can look past the popular, standard academic journal and into a future of scholarly communication that productively involves varied scholarly traditions and social knowledge practices.

SOCIAL KNOWLEDGE CREATION IN ELECTRONIC SCHOLARLY EDITIONS
AND E-BOOKS

The form and function of digital scholarly editions and e-books have evolved parallel to the Internet itself. Simultaneously, digital scholarly editions and e-books carry forth and reflect bibliographic theories, often concerning the inherent sociality of texts. The 15 selections in this annotated bibliography put forth many sprawling questions, including: How can editors harness the allowances of the digital realm to best represent the social text? How can authors and editors facilitate social knowledge creation via electronic publication? How can authors and editors integrate already-existent social knowledge production practices within their projects? And, perhaps most dramatically, what is wrong with digital editions and how can they be improved?

Aarseth, E. (1997). Introduction. In *Cybertext: Perspectives on ergodic literature* (pp. 1–23). Baltimore, MD: Johns Hopkins University Press.

Espen Aarseth attempts to develop a theory of cybertext works, with a focus on “ergodic texts.” Aarseth’s scholarly interest lies in texts that are purposefully shaped by the reader’s tangible and visible actions and decisions. He bases his speculation on the concept that cybertexts are labyrinthine, user dependent, and that they contain feedback loops. Aarseth criticizes the counterarguments that many texts can be read as cybertexts; he does not, however, concede that this distinction derives from cybertexts’ necessarily electronic mode. The inherent performativity involved in reading cybertexts occurs in a network of various parts and participants, compared with the more conventional reading model of reader/author/text. Further, Aarseth argues, ergodic texts (primarily virtual games and multi-user domains [MUDs]) are defined by the agency and authority of the human subject (reader) whose decisions affect the outcome of the text as a whole.

Clement, T. (2011). Knowledge representation and digital scholarly editions in theory and practice. *Journal of the Text Encoding Initiative*, 1. URL: <http://jtei.revues.org/203>.

Tanya Clement reflects on scholarly digital editions as sites of textual performance, wherein the editor lays and privileges various narrative threads for the reader to pick up and interpret. She underscores this theoretical discussion with examples from her own work with the digital edition *In Transition: Selected Poems by the Baroness Elsa von Freytag-Loringhoven*, as well as TEI and XML encoding and the Versioning Machine. Clement details how editorial decisions shape the social experience of an edition. By applying John Bryant’s theory of the fluid text to her own editorial practice, she focuses on concepts of various textual performances and meaning-making events. Notably, Clement also explores the idea of the social text network. She concludes that the concept of the network is not new to digital editions; nevertheless, conceiving of a digital edition as a network of various players, temporal spaces, and instantiations promotes fruitful scholarly exploration.

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Fitzpatrick, K. (2007). CommentPress: New (social) structures for new (networked) texts. *Journal of Electronic Publishing*, 10(3). URL: <http://quod.lib.umich.edu/j/jep/3336451.0010.305?rgn=main;view=fulltext> .

Kathleen Fitzpatrick meditates on the current state and future possibilities of electronic scholarly publishing. She focuses her meditation through a study of CommentPress, a digital scholarly publishing venue that combines hosting long texts with social network features. Fitzpatrick argues that community and collaboration are at the heart of scholarly knowledge creation – or at least, they should be. Platforms like CommentPress acknowledge the productive capabilities of scholarly collaboration and promote this fruitful interaction between academics. Although Fitzpatrick admits that CommentPress is not the only or best answer to the questions of shifting scholarly communication, she celebrates its emergence as a service for the social interconnection and knowledge production of authors and readers in an academic setting.

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Flanders, J. (2005). Detailism, digital texts, and the problem of pedantry. *TEXT Technology*, 14(2), 41–70.

Julia Flanders acknowledges the long-standing academic anxiety surrounding detailism, automation, and numerical or scientific applications in textual studies and literary criticism. She contends that text analysis and digital

editing should not be written off as reductionist or unimportant; rather, Flanders states, these humanities computing practices open up new fields of play- and reader-based engagement and interpretation. She argues that text analysis practitioners and scholarly digital editors are very aware of the consequences and nature of their work. Contrary to critics' perspectives, these scholars do not consider computation the be-all, end-all to scholarship: computation is a means of expediting minute and tedious tasks in order to further – and differentiate – interpretation and knowledge creation.

Liu, A. (2009). The end of the end of the book: Lively margins, and social computing. *Michigan Quarterly Review*, 48(4), 499–520.

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McGann, J. (1991). *The textual condition*. Princeton, NJ: Princeton University Press.

Jerome McGann persuasively argues that the meaning of texts derives from the use of texts. As embodied phenomena, texts are always more expansive and inclusive than mere form or mere content. He purports that literary texts are social experiences, socially made, and thus require a form of social editing. McGann examines various theories and schools of textual editing, including literary theorist Gérard Genette's conception of the paratextual apparatus. Further, McGann argues that the concept of "authorial intention" is a fallacy; texts pass through various hands – even through the author's hands more than once – and to isolate one original, authentic, or "true" version is a technical and conceptual impossibility.

McGann, J. (2006). From text to work: Digital tools and the emergence of the social text. *Text*, 16, 49–62.

McGann meditates on the possibilities digital editing affords for instantiations of social textuality. He argues that well-designed digital editions comport significant opportunities for the social text (as bibliography scholar D.F. McKenzie championed). In contrast to their more conventional predecessors, digital editions can more accurately represent the dynamic relations inherent to the production and reception of a text. By simulating bibliographical and socio-textual phenomena and employing carefully designed user interfaces

that allow for multiple or specialized readings, digital editions can better represent texts as social artifacts and reading as a social act.

Moretti, Franco. (2005). *Graphs, maps, trees: Abstract models for a literary history*. New York, NY: Verso.

Franco Moretti develops his theory on “distant reading,” the practice of interpreting literature by looking at large-scale patterns – namely, through using graphs, maps, and trees as analytical tools. Moretti criticizes literary studies for having too narrow – too close – of a focus on specific, canonical literary works and thus missing significant themes and trends. He draws on various sources, from graphs of book production in the eighteenth century, to geometric maps/diagrams of village stories, to Darwinian theories of diverging evolution. Moretti concludes that distant reading can open up literary studies to a more morphological and inclusive way of analyzing and making knowledge.

Robinson, P. (2010). Electronic editions for everyone. In W. McCarty (Ed.), *Text and genre in reconstruction* (pp. 145–164). Cambridge: Open Book Publishing.

Peter Robinson acknowledges the significant gap between the projected success of digital editions at their inception and the actual popularity of these editions now. He suggests that editors significantly alter their methods of digital edition creation in order to reflect and take advantage of increasingly sophisticated technology and Web 2.0 practices. Robinson claims that digital editions would gain popularity if they were modelled in a more fluid and distributed form. He argues that editors should move away from compiling scholarly digital editions in a dedicated space with a specific interface, method of organization, and formally delineated content. Rather, Robinson imagines, we should develop Internet applications that track a user’s research interests and practices and automatically compile relevant information. This method would substantially alter digital scholarship and reflect the networked realm of the Internet much more accurately – and perhaps with more ease – than current digital editions are capable of.

Shillingsburg, P. (2006). *From Gutenberg to Google*. Cambridge, MA: Cambridge University Press.

Peter Shillingsburg ruminates on editorial practice and his ideal digital edition: the knowledge site. A knowledge site, in Shillingsburg’s conception, is a space where multiple editions of a text could be combined in a straightforward manner. Based on his experience and knowledge of editorial practice and the mandates of the scholarly edition, he deems various elements necessary for a knowledge site, including basic and inferred data, internal links, bibliographical analysis, contextual data, intertextuality, linguistic analysis, reception history, and adaptations. Furthermore, in keeping with the notion that digital scholarly editions have the capacity to shift the possession of the text to the users, Shillingsburg would ideally include opportunities for user-generated markup, variant texts, explanatory notes and commentary, and personal notes. Concurrently, Shillingsburg argues that editing is never neutral, but rather an interference in the history and status of the text. The

overt acknowledgement of the intrusive nature of editing is imperative for all successful scholarly editions. Since unobtrusive editing and universal texts are non-existent, scholarly editions are better conceived of as select interpretations of texts for specific means.

Siemens, R., with Garnett, A., Koolen, C., Leitch, C., Timney, M., & the ETCL, INKE, and PKP Research Groups. (2012). Toward modeling the social edition: An approach to understanding the electronic scholarly edition in the context of new and emerging social media. *Literary and Linguistic Computing*, 27(4), 445–461.

Raymond Siemens, Alex Garnett, Corina Koolen, Cara Leitch, and Meagan Timney formulate a vision of an emerging manifestation of the scholarly digital edition: the social edition. The authors ruminate on both the potential and already realized intersections between scholarly digital editing and social media. For Siemens et al., many scholarly digital editions do not readily employ the collaborative electronic tools available for use in a scholarly context. The authors seek to remedy this lack of engagement, especially concerning opportunities to integrate collaborative annotation, user-derived content, folksonomy tagging, community bibliography, and text analysis capabilities within a digital edition. Furthermore, Siemens et al. conceptually alter the role of the editor – traditionally a single, authoritative individual – to reflect facilitation rather than didactic authority. A social edition predicated on these shifts and amendments would allow for increased social knowledge creation by a community of readers and scholars, academic and citizen alike.

Smith, M.N. (2004). Electronic scholarly editing. In S. Schreibman, R. Siemens, & J. Unsworth (Eds.), *A companion to digital humanities* (pp. 306–322). Oxford: Blackwell Publishing.

Martha Nell Smith relies on her experience with the Dickinson Electronic Archives to formulate a conceptual theory of and argument for electronic scholarly editing. For Smith, a significant benefit of the digital scholarly edition is the shift from unilateral authority to networked experience, from the voice of the sole editor to the polyphonic interpretation of multiple readers. Smith acknowledges the various elements that allow for social knowledge production in the digital scholarly edition, including comprehensive inclusion of various artifacts and digital surrogates; ability for multiple editorial theories and consequent readings; engagement of many editorial and readerly intentions and priorities; and social communication via reader's responses, preferences, and tailored readings. Smith concludes that electronic scholarly editing offers the opportunity for more inclusive and democratic knowledge production.

Vetch, P. (2010). From edition to experience: Feeling the way towards user-focused interfaces. In G. Egan (Ed.), *Electronic publishing: Politics and pragmatics* (pp. 171–184). Tempe, AZ: Iter. New Technologies in Medieval and Renaissance Studies.

Paul Vetch explores the nuances of a user-focused approach to scholarly digital projects. He confers that the prevalence of Web 2.0 practices and standards requires scholars to rethink the design of scholarly digital editions. For Vetch, editorial teams need to shift their focus to questions concerning the

user. For instance, how will the user customize their experience of the digital edition? What new forms of knowledge can develop from these interactions? Moreover, how can rethinking interface design of scholarly digital editions promote more user engagement and interest? Vetch concludes that a user-focused approach is necessary for the success of scholarly publication in a constantly shifting digital world.

EXEMPLARY INSTANCES OF SOCIAL KNOWLEDGE CONSTRUCTION

Many pertinent examples of social knowledge creation exist both within and without the digital environment. For the purposes of this section of the annotated bibliography, literature on social knowledge creation projects has been meshed with examples of social knowledge creation tools. In our conception of the term, a social knowledge creation tool is a usable technology that encourages the collaborative work of multiple individuals in a networked, digital environment. Furthermore, a social knowledge creation tool supports the active generation of information or knowledge in an ethos of sharing, contact, and openness. The 11 selections in this annotated bibliography reflect a range of practices and social knowledge creation tools, from community bibliography to folksonomy tagging to collaborative annotation.

Cohen, D.J. (2008). Creating scholarly tools and resources for the digital ecosystem: Building connections in the Zotero project. *First Monday*, 13(8). URL: <http://firstmonday.org/ojs/index.php/fm/article/view/2233/2017> .

Daniel Cohen details how the Zotero project exemplifies both Web 2.0 and traditional scholarly ethos. Zotero is a widely used, open source, community-based bibliography tool. It exists on top of the browser as an extension, has maintained an API since its inception, and boasts comprehensive user features. Cohen conceptualizes Zotero as a node in an interconnected digital ecosystem that builds bridges instead of hordes information. As an easy-to-use collaborative tool, Zotero acts as both an effective scholarly resource and a facilitator of social knowledge creation.

Cohen, D.J., & Scheinfeldt, T. (2013). Preface. In D.J. Cohen & T. Scheinfeldt (Eds.), *Hacking the academy, the edited volume*. Ann Arbor, MI: University of Michigan Press.

Daniel J. Cohen and **Tom Scheinfeldt** introduce *Hacking the Academy*, a digital publishing experiment and attempt to reform academic institutions and practices by crowdsourcing content. Cohen and Scheinfeldt called for submissions to their project with the caveat that participants had one week to submit. Cohen and Scheinfeldt pitched their project with the following questions: “Can an algorithm edit a journal? Can a library exist without books? Can students build and manage their own learning management platforms? Can a conference be held without a program? Can Twitter replace a scholarly society?” (n.p.). Roughly one sixth of the 329 submissions received were included in the consequent publication. The intent of the project was to reveal the desire and possibility for large institutional change via digital means.

Fitzpatrick, K. (2007). CommentPress: New (social) structures for new (networked) texts. *Journal of Electronic Publishing*, 10(3). URL: <http://quod.lib.umich.edu/j/jep/3336451.0010.305?rgn=main;view=fulltext> .

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Huffman, S., & Ohanian, A. (2005–2013). *Reddit*. URL: <http://www.reddit.com> .

As a popular social news site, **Reddit** induces users to tag and submit content. The hierarchy of posts on the front page of the site (as well as the other pages) is decided by a ranking system predicated on both date of submission and voting by other users. *Reddit* exemplifies social knowledge creation via folksonomy tagging in a social network environment. Notably, the news site is also open source.

Liu, A. (2011). Friending the past: The sense of history and social computing. *New Literary History: A Journal of Theory and Interpretation*, 42(1), 1–30.

Alan Liu identifies media-induced sociality in oral, written, and digital culture. He proceeds to analyze Web 2.0 and social computing practices and concludes that Web 2.0 lacks a sense of history, despite its intricately interconnected state. Liu attributes this state to two concurrent historical shifts: a social move from one-to-many to many-to-many knowledge sharing and a temporal shift from straightforward conceptions of time into the contemporary conception of instantaneous and simultaneous temporality. Reflexively, Liu argues that conceiving of time in this new instantaneous/simultaneous framework may

ideologically proprietize the Internet and allow for ownership of social practices by organizations like Facebook, Twitter, and Google. As such, Liu opts for a more traditional sense of temporality and history characterized by narratological linear time. He cites the social network system of his Research-oriented Social Environment (RoSE) project as a platform that integrates history with Web 2.0 infrastructure and allowances.

Michel, J.-B., Shen, Y.K., Aiden, A.P., Veres, A., Gray, M.K., The Google Books Team, Pickett, J.P., Hoiberg, D., Clancy, D., Norvig, P., Orwant, J., Pinker, S., Nowak, M.A., & Aiden, E.L. (2011). Quantitative analysis of culture using millions of digitized books. *Science*, 14, 176–182.

Jean-Baptiste Michel et al. detail some of the processes and findings of Google's N-Gram viewer and the related field of study "culturomics." The authors state that by analyzing word frequencies in a large corpus of texts, linguistic and, therefore, cultural trends appear. Using word frequency and variation as the predominant metric, Michel et al. discuss various social and historical trends. They do not, however, account for the reductionist concept that word frequency in a selected corpus can attest for or represent all of the varying social movements, actors, and contexts that make up a cultural trend.

Mozilla. (n.d.). *Open Badges*. URL: <http://openbadges.org> .

Mozilla's Open Badges is an alternative credential-granting system designed for the public recognition of non-conventional learning and success. Broadly articulated as a democratizing service, Open Badges allows various organizations to accredit their participants within a recognizable system. In an era of Massive Open Online Courses (MOOCs) and citizen scholars, Open Badges embodies the ethos of the decentralized network of contemporary learning, accreditation, and social knowledge creation.

Nowvieskie, B. (2012). A digital boot camp for graduate students in the humanities. *The Chronicle of Higher Education*. URL: <http://chronicle.com/article/A-Digital-Boot-Camp-for-Grad/131665> .

Bethany Nowvieskie details the Praxis Program she directs out of the Scholar's Lab at the University of Virginia. She demonstrates how commitments to interdisciplinarity, collaboration, and tacit knowledge are combined to effectively train graduate students in contemporary humanities (and especially digital humanities) work. Nowvieskie acknowledges the challenges and benefits of blending radically new methods for graduate training with traditional humanities practices and credit systems. Overall, she reiterates the value of training graduate students in an open-ended, community-minded way; in this way, humanities programs can facilitate both graduate and postgraduate school careers.

Open Knowledge Foundation. (2009–2012). *AnnotateIt/Annotator*. URL: <http://annotateit.org> .

AnnotateIt is an effective and easy-to-use Web annotator system. AnnotateIt comprises the JavaScript tool Annotator and a bookmarklet that allows for annotation of any website (the annotations are saved to AnnotateIt. When

Annotator has already been loaded into a Web page, users may annotate or comment on various elements in the page. This sort of tool readily provokes social knowledge creation through collaborative annotation. User annotations may contain tags, markdown content, and individual permissions per annotation. Furthermore, the Open Knowledge Foundation designed Annotator to be easily extendible, in order to potentially include more behaviours or features. Of note, the Open Knowledge Foundation has developed many social knowledge creation tools, including BibServer (<http://bibserver.org>), CKAN (<http://ckan.org>), and TEXTUS (<http://textusproject.org>).

Roy Rosenzweig Center for History and New Media. (2007-2013). *Omeka*. URL: <http://omeka.org>.

Omeka represents a prime example of social knowledge creation through user-driven or user-generated content. Omeka is an open source content management system designed for displaying online digital collections of scholarly editions and cultural heritage artifacts. As well, this content management system acts as a collections management tool and an archival digital collection system, allowing for productive scholarly and non-scholarly exhibitions to develop. Omeka includes an extensive list of features aimed at scholars, museum professionals, librarians, archivists, educators, and other enthusiasts. Of note, the Roy Rosenzweig Center also developed the open bibliography initiative Zotero (zotero.org).

COMPLETE ALPHABETICAL LIST OF SELECTIONS

- Aarseth, E. (1997). Introduction. In *Cybertext: Perspectives on ergodic literature* (pp. 1–23). Baltimore, MD: Johns Hopkins University Press.
- Ackerman, J., Berkenkotter, C., & Huckin, T.N. (1991). Social context and socially constructed texts: The initiation of a graduate student into a writing research community. In C. Bazerman & J. Paradis (Eds.), *Textual dynamics of the professions: Historical and contemporary studies of writing in professional communities* (pp. 191–215). Madison, WI: University of Wisconsin Press.
- Althusser, L. (1971). Ideology and ideological state apparatuses (notes towards an investigation). In B. Brewster (Trans.), *Lenin and philosophy and other essays* (pp. 127–186). New York, NY: Monthly Review Press.
- Ang, I. (2005). Who needs cultural research? In P. Leystina (Ed.), *Cultural studies and practical politics: Theory, coalition building, and social activism* (pp. 477–483). New York, NY: Blackwell.
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2. Game-Design Models for Digital Social Knowledge Creation: A Selected Annotated Bibliography

Nina Belojevic with Alyssa Arbuckle, Matthew Hiebert, Ray Siemens, Shaun Wong, Alex Christie, Jon Saklofske, Jentery Sayers, & the INKE and ETCL Research Groups

INTRODUCTION

This bibliography outlines a selection of texts on game-design models and related definitions, discourses, and best practices relevant to digital social knowledge creation. Social knowledge creation in the digital realm, with the benefits of social networking models, crowdsourcing, folksonomic tagging systems, collaborative writing platforms, cloud-based computing, and a variety of many-to-many communication methods, has the potential to grow and flourish in the Web 2.0 environment. Similarly, videogames have developed and evolved in exciting ways, especially with the ubiquity of computers, smartphones, and tablets that are increasingly connected to the Internet. However, although game studies have been a much-discussed field for some time now, the ways in which digital humanities and game studies overlap and relate to each other remain unclear. As digital humanities practices, such as multimodal communication, collaborative writing, modelling and prototyping, and a breadth of hands-on making, become more widespread, possible overlaps or possibilities for shared learning and insights between game studies and digital humanities increase. Although many scholars may still be skeptical of such intersections, game-based pedagogy projects and humanities-related serious games indicate that overlaps are already taking place in practice.

The application of game-based models in digital humanities endeavours, although unconventional, should come as no surprise. Games are known for their potential to capture the player's attention, encourage focus and concentration, facilitate collaboration among large groups, and express complex stories and topics in intuitive, experiential ways. As digital humanists develop scholarly and pedagogical environments, these benefits will become increasingly valuable. Perhaps the most widely known game-design approach applied in non-game environments is gamification. Gamification falls into a peculiar position within the game studies/digital humanities relationship: its obvious genesis in the gaming world positions it in the realm of game studies, but the application of gamification necessarily diversifies this position. Furthermore, definitions of gamification provoke an array of opinions. While the term is often used in an ambiguous sense, referring to all game-like or gaming-inspired instances in non-gaming contexts, many scholars justly differentiate between gamification, serious games, playful design, and other related approaches. Sebastian Deterding, Dan Dixon, Rilla Khaled, and Lennart Nacke (2011) offer a well-articulated definition, stating that gamification is "the use of game design elements in non-game contexts" (p. 2), but they also note that gameful design may be a better term for use within academic contexts, since it comes with less baggage than gamification (p. 6). In addition to the negative connotations associated with gamification, the particular focus on implementable game mechanics and elements may limit the potential of the approach. For this reason, we use the term gameful design, as well as game-design models, game-design thinking, or game-inspired approaches, to refer to the broader potential of applying such methods in the development of non-game environments. Such an approach resists the reduction of game design to common game elements and

instead aims to apply broader game-design practices and approaches in the development of non-game environments.

Humanities scholars often eschew game-design approaches because of the corporate and exploitative reputation of gamification. Gamification had been particularly popular in corporate and consumer-facing digital environments – most often to increase user engagement with a site, program, or application. Within that context, the application of game-design elements often takes place for exploitative purposes. Because games are so effective at capturing attention and driving engagement, companies and organization can encourage forms of free immaterial labour from users and find veiled means of driving profits and success rates by applying gamification methods. In this way, gamification provides a prime example of the blurring between play and labour that critics such as Ian Bogost, Alexander Galloway, Trebor Scholz, Lisa Nakamura, McKenzie Wark, and Nick Dyer-Witheford and Greig de Peuter study. However, rather than assuming that all game-design-inspired approaches are exploitative across all contexts, this bibliography aims to open up the discourse to acknowledge and engage with critiques of socioeconomic and academic structures. Concurrently, this bibliography draws attention to inspirational and practice-based texts on game studies and game design that may incite scholars to develop game-based responses and solutions.

While certain game-design applications in non-game environments may seem reductive, we believe that a game-inspired design approach can, in fact, help to design sophisticated, self-reflexive environments that benefit not only from the iterative prototyping process of game design, but also apply procedural rhetoric and effective game mechanics in order to communicate complex arguments in practice. In a social knowledge creation context, game-design models are still in their early stages, and scholarly work on the topic is scarce. As such, the selections in this bibliography focus on specific areas that aim to offer the reader insight into the critical discourse regarding socioeconomic and institutional practices related to game-design models and social knowledge creation. Ideally, the selections will inspire interested scholars and practitioners to use game-design methods to overcome challenges in social knowledge creation environments. Due to the scarcity of resources on this particular field, we recommend that readers approach the selections in this bibliography with the above-mentioned vision of game-design-inspired thinking in mind and consider its potential in the design of social knowledge creation tools and environments. While a number of texts listed below do not discuss game-design methods directly, they cover important issues, concepts, and theories that offer relevant considerations for practitioners who plan to study or implement game-design approaches.

The bibliography consists primarily of sources from the past ten years, although a few exceptions were made for particularly relevant texts. Because of the digital humanities context of and expected audience for the bibliography, we decided to include primarily scholarly, humanities-related work. However, due to the interdisciplinary nature of the proposed game-design inspired practice, we also included a number of texts from other areas – primarily game design. The intention is to provide digital humanities scholars and practitioners with a present-day survey of popular, widely studied game-design practices, while offering a snapshot of discourses and concerns regarding

academic humanities practices, videogames and game design studies, and related aspects of the digital landscape and economy. Examples of relevant videogames, social networks, and applications also make up a portion of the bibliography. Rather than attempting to cover all relevant videogames and applications or offer a history of videogames, we included select examples that are either referenced widely, offer particular insight into the origins and practices of game-design applications in non-game contexts, show inspiring examples from the indie game development movement, or provide a unique, stimulating indication of how games can be applied for scholarly or pedagogical purposes. Additionally, a small number of texts from other industries warranted inclusion based on reception and topical relevance Zichermann & Cunningham (2011). The bibliography has been organized into six sections of 98 individual entries:

1. Game-Design Models in Scholarly Communication Practices and Digital Scholarship
2. Game-Design-Inspired Learning Initiatives
3. Game-Design Models in the Context of Social Knowledge Creation Tools
4. Defining Gamification and Other Game-Design Models
5. Game-Design Models and the Digital Economy
6. Game-Design Insights and Best Practices
7. Complete Alphabetical List of Selections

The initial sections, “Game-Design Models in Scholarly Communication Practices and Digital Scholarship” and “Game-Design-Inspired Learning Initiatives,” provide a basis for scholarly practices and challenges concerning social knowledge creation. The third section, “Game-Design Models in the Context of Social Knowledge Creation Tools,” outlines a select overview of gamification and game-related approaches in particular tools and environments. The second half of the bibliography focuses more specifically on game-related discourses. The fourth section, “Defining Gamification and Other Game-Design Models,” discusses the much-debated terminology and definitions of gamification and related approaches. “Game-Design Models and the Digital Economy” discusses certain key concerns and risks associated with current socioeconomic structures and cultural habits. Building on the critical base of the previous sections, the final focus on “Game-Design Insights and Best Practices” consists of a selection of game-design related approaches and practices intended to inform the more practical requirements of developing social knowledge creation tools and environments that incorporate game-design-inspired approaches. The structure of this bibliography intends to combine an introduction to the issues regarding gamification and social knowledge creation with the proposition that game-design-inspired approaches have the potential to offer critical responses and solutions, if applied conscientiously.

GAME-DESIGN MODELS IN SCHOLARLY COMMUNICATION PRACTICES AND DIGITAL SCHOLARSHIP

Scholarly communication is an evolving and much-debated field in the humanities. The discourse ranges from issues of tenure track, peer review, and engagement in the digital humanities, to the ways knowledge and history are presented via Web 2.0 practices and the opportunities social data collection heralds for initiating change in academic institutions. Based on current changes in and criticism of scholarly

communication practices and digital scholarship, this section can best be approached by considering how game-design-inspired engagement, task definition, goal orientation, and collaboration practices can offer new ways of tackling the changes taking place in the humanities. Within the realm of digital scholarship, digital editions offer a unique example as to how gameful design can be applied as an approach. Scholars are beginning to consider the areas of overlap between player engagement in videogames and digital-edition environments. Rather than simply suggesting the placement of game-design elements – like points systems or badges – into a social-edition environment, the 29 sources below offer critical and conceptual background considerations to keep in mind while approaching social knowledge creation from a game-design perspective.

Aarseth, E. (1997). Introduction. In E. Aarseth, *Cybertext: Perspectives on ergodic literature* (pp. 1–23). Baltimore, MD: Johns Hopkins University Press.

Espen Aarseth attempts to develop a theory of cybertext works, with a focus on “ergodic texts.” Aarseth’s scholarly interest lies in texts that are purposefully shaped by the reader’s tangible and visible actions and decisions. He bases his speculation on the concept that cybertexts are labyrinthine and user dependent, and that they contain feedback loops. Aarseth criticizes the counterarguments that many texts can be read as cybertexts; he does not, however, concede that this distinction derives from cybertexts’ necessarily electronic mode. The inherent performativity involved in reading cybertexts occurs in a network of various parts and participants, compared with the more conventional reading model of reader/author/text. Further, Aarseth argues, ergodic texts (primarily virtual games and multi-user domains [MUDs]) are defined by the agency and authority of the human subject (reader) whose decisions affect the outcome of the text as a whole.

Balsamo, A. (2011). Taking culture seriously in the age of innovation. In A. Balsamo (Ed.), *Designing culture: The technological imagination at work* (pp. 2–25). Durham, NC: Duke University Press.

Anne Balsamo studies the intersections of culture and innovation and acknowledges the unity between the two modes (“technoculture”). She argues that technological innovation should seriously recognize culture as both its inherent context and as a space of evolving, emergent possibility – as innovation necessarily alters culture and social knowledge creation practices. Balsamo introduces the concept of the “technological imagination”: the innovative, actualizing mindset. She also details a comprehensive list of truisms about technological innovation, ranging from considering innovation as performative, historically constituted, and multidisciplinary, to acknowledging design as a major player in cultural reproduction, social negotiation, and meaning making. Currently, innovation is firmly bound up with economic incentives, and the profit-driven mentality often obscures the social and cultural consequences and implications of technological advancement. As such, Balsamo calls for more conscientious design, education, and development of technology, and a broader vision of the widespread influence and agency of innovation.

Clement, T. (2011). Knowledge representation and digital scholarly editions in theory and practice. *Journal of the Text Encoding Initiative*, 1. URL: <http://jtei.revues.org/203> .

Tanya Clement reflects on scholarly digital editions as sites of textual performance, wherein the editor lays and privileges various narrative threads for the reader to pick up and interpret. She underscores this theoretical discussion with examples from her own work with the digital edition *In Transition: Selected Poems by the Baroness Elsa von Freytag-Loringhoven*, as well as TEI and XML encoding and the Versioning Machine. Clement details how editorial decisions shape the social experience of an edition. By applying John Bryant's theory of the fluid text to her own editorial practice, she focuses on concepts of various textual performances and meaning-making events. Notably, Clement also explores the idea of the social text network. She concludes that the concept of the network is not new to digital editions; nevertheless, conceiving of a digital edition as a network of various players, temporal spaces, and instantiations promotes fruitful scholarly exploration.

Cohen, D.J., & Scheinfeldt, T. (2013). Preface. In D.J. Cohen & T. Scheinfeldt (Eds.), *Hacking the academy, the edited volume*. Ann Arbor, MI: University of Michigan Press.

Daniel J. Cohen and **Tom Scheinfeldt** introduce *Hacking the Academy*, a digital publishing experiment and attempt to reform academic institutions and practices by crowdsourcing content. Cohen and Scheinfeldt called for submissions to their project with the caveat that participants had one week to submit. Cohen and Scheinfeldt pitched their project with the following questions: "Can an algorithm edit a journal? Can a library exist without books? Can students build and manage their own learning management platforms? Can a conference be held without a program? Can Twitter replace a scholarly society?" (n.p.). Roughly one sixth of the 329 submissions received were included in the consequent publication. The intent of the project was to reveal the desire and possibility for large institutional change via digital means.

Davidson, C.N. (2009). The futures of scholarly publishing—Urgently and again [Blog post]. *HASTAC*. URL: <http://www.hastac.org/blogs/cathy-davidson/futures-scholarly-publishing-urgently-and-again> .

Cathy Davidson comments on Al Greco's *The State of Scholarly Publishing: Challenges and Opportunities*, where her essay "The Futures of Scholarly Publishing" appears. She reiterates her argument from this article, drawing attention to the fact that monographs are rarely used to teach in universities and that sales of monographs are extremely low. Davidson advocates for change in the academy, because professors do not in fact work in a way that is supportive of the practices that require monograph publication to reach tenure.

Davidson, C.N. (2011). Why badges? Why not? [Blog post] *HASTAC*. URL: <http://www.hastac.org/blogs/cathy-davidson/2011/09/16/why-badges-why-not> .

In this much-debated *HASTAC* post, **Davidson** argues in support of the "Badges for Lifelong Learning" competition and for the use of badges as an alternate credential system in academia, training, and education. She notes that one of the key benefit of badges is that they "recognize achievement and

contribution, not reputation or credentials,” offering alternatives to current institutional and educational credential and evaluation standards. This blog post incited an extensive discussion about badges as a new credential system. In the comments section, Ian Bogost offers a critical view, pointing out issues such as the false dichotomy between badges and the current letter-grade system, the question of standardization of badges, and issues such as the labour metrics that go with badge systems.

Davidson, C.N., & Goldberg, D.T. (2004). Engaging the humanities. *Profession*, 42–62.

Cathy Davidson and **David Goldberg** contend that humanistic approaches and perspectives are highly important in university environments, although the humanities are often marginalized and devalued. Rather than defining a field-specific approach for multidisciplinary work, Davidson and Goldberg propose a problem- or issue-based humanities model. This interdisciplinary approach could cultivate forms of interpretation and complex models of cultural and human exchange in order to respond to “different and ongoing problems” (p. 49). Davidson and Goldberg suggest that interdisciplinarity within institutions (rather than interdisciplinary institutions, models, or methods) would offer flexible and transformable approaches to academia and education, while still operating within institutional structures.

Drucker, J. (2006). Graphical readings and the visual aesthetics of textuality. *TEXT Technology*, 16, 267–76.

Johanna Drucker discusses design aspects and graphic features that often go unnoticed in print, manuscript, electronic, and text formats. She states that the conception of design elements as autonomous entities is problematic, since it ignores the relational forms of expression in design systems. Drucker describes the space of the page as a system, or a quantum field, in which all the graphical elements operate together in “a relational, dynamic, dialectically potential ‘espace’ constitutive of, not a pre-condition for, the graphical presentation of a text” (p. 270-71). Defining the categories of graphic, pictorial, and textual space, Drucker performs a reading of a page from Boethius’s *De Consolatione Philosophiae* to demonstrate her proposed reading and interpretive approach to materiality in textual studies.

Drucker, J. (2011). Humanities approaches to graphical display. *Digital Humanities Quarterly*, 5(1). URL: <http://www.digitalhumanities.org/dhq/vol/5/1/000091/000091.html>.

Drucker proposes a usability and interaction design approach to data visualization in humanities fields. She draws attention to the fact that many digital visualization tools presuppose an observer-independent reality and an unquestionable representation. Counter to traditional humanities thinking, these tools do not acknowledge ambiguity, interpretation, or uncertainty. Drucker urges humanists to recognize all data as *capta* (which is actively taken rather than given). Furthermore, she advocates for forms of visual expression that display information as constructed by human motivation and perceived according to interpretation of the viewer or reader. Her argument also opens up space for more 3D representations in data visualization, adding subjective

experience to otherwise 2D expressions of time and space. Drucker stresses that such graphical approaches are imperative for humanities tenets to be applied and implemented in digital graphical expressions and interpretations.

Drucker, J. (2011). Humanities approaches to interface theory. *Culture Machine*, 12, 1–20. URL: <http://www.culturemachine.net/index.php/cm/article/viewArticle/434> .

Drucker defines interface as the content we read combined with the practice of reading, which she sees as a provocation of the cognitive experience. Thus, Drucker draws attention to the increased mutability that takes place when reading in the digital space because of the cognitive jumps between modules. She argues for a humanities approach to interface theory that integrates different forms of reading and analysis in order to allow readers to recognize the relations of the dynamic space between environments and cognitive events. She evokes the gaming world as a source to inform a humanities interface theory, since it offers combinations of perspectives.

Erickson, J., Lagoze, C., Payette, S., Van de Sompel, H., & Warner, S. (2004). Rethinking scholarly communication: Building the system that scholars deserve. *D-Lib Magazine*, 10(9). URL: <http://webdoc.sub.gwdg.de/edoc/aw/d-lib/dlib/september04/vandesompel/09vandesompel.html> .

John Erickson, Carl Lagoze, Sandy Payette, Herbert Van de Sompel, and Simeon Warner ruminates on transforming scholarly communication to better serve and facilitate knowledge creation. They primarily target the current academic journal system. In the authors' view, this system constrains scholarly work, as it is expensive, difficult to access, and print biased. Erickson et al. propose a digital system for scholarly communication that more accurately incorporates ideals of interoperability, adaptability, innovation, documentation, and democratization. Furthermore, the proposed system would be implemented as a concurrent knowledge production environment instead of a mere stage, annex, or afterthought for scholarly work.

Fitzpatrick, K. (2009). Peer-to-peer review and the future of scholarly authority. *Cinema Journal*, 48(2), 124–29.

Kathleen Fitzpatrick explains that, in the digital space, decentralized and displaced authority structures are taking over and intellectual authority is shifting to spaces such as Wikipedia. Thus, scholars need to embrace similarly open structures and public accessibility, otherwise the academic world will appear divorced from real-world practices. For this reason, online peer-reviewed journals should not follow print practices of peer review, but must adapt and shape a new scholarly system. Current peer-review processes do not only ensure that the best work is in circulation, they also form areas of privilege. She argues for open process, Web-native modes of peer review in a peer-to-peer structure. Finally, Fitzpatrick advocates for the need to articulate these values and standards to credentialing bodies in order for a more appropriate model of intellectual authorization to emerge.

Fitzpatrick, K. (2011). *Planned obsolescence: Publishing, technology, and the future of the academy*. New York, NY: New York University Press.

Fitzpatrick dully surveys academic publishing and calls for reform. She argues for more interactivity, communication, peer-to-peer review, and a significant move toward digital scholarly publishing. Fitzpatrick demonstrates how the current mode of scholarly publishing is unviable economically. Moreover, tenure and promotion practices based primarily on traditional modes of scholarly publishing also need to be reformed. Fitzpatrick acknowledges certain touchstones of the academy (peer review, scholarship, sharing ideas), and how these tenets have been overshadowed by priorities shaped, in part, by mainstream academic publishing practices and concepts. She details her own work with CommentPress and the benefits of publishing online in an infrastructure that enables widespread dissemination as well as concurrent reader participation via open peer review.

Fitzpatrick, K. (2012). Beyond metrics: Community authorization and open peer review. In M. K. Gold (Ed.), *Debates in the digital humanities* (pp. 452–59). Minneapolis, MN: University of Minnesota Press.

Fitzpatrick outlines the changed needs of peer-review practices in the digital age. The current reliance of the academic system on peer-review evaluation is mismatched with the forms of intellectual engagement supported by the Internet. Fitzpatrick encourages community-based authorization from recommendations, linking, and even likes, which are all highly valued in the digital space. She points out that the processes of current peer-review practices risk conservatism and a resistance to innovative or controversial approaches. Crowdsourcing has the potential to avoid such exclusivity, because more readers not only review the text but also engage in dialogue with the author and with other readers. An additional benefit of crowdsourcing is that it enables the collection of measurable success data. While further work is required to identify the best practices to measure and assess engagement to determine the value of digital work (including scholarly texts as well as multimodal archives, projects, and blogs), these metrics should be used to share alternative assessment practices with the academy in order to encourage change in current practices regarding academic tenure and promotion.

Guldi, J. (2013). Reinventing the academic journal. In D.J. Cohen and T. Scheinfeldt (Eds.), *Hacking the academy: The edited volume*. Ann Arbor, MI: University of Michigan Press.

Jo Guldi calls for rethinking scholarly journal practices in light of the emergence and allowances of Web 2.0. She argues that journals can reestablish themselves as forthright facilitators of knowledge creation if they adopt notions of interoperability, curation, multimodal scholarship, open access, networked expertise, and transparency regarding review and timelines. For Guldi, the success of the academic journal depends on incorporating social bookmarking tools and wiki formats. Journals should assume a progressive attitude predicated on sharing and advancing knowledge, instead of a limiting view based on exclusivity, profit, and intellectual authority.

Hayles, N.K. (2008). *Electronic literature: New horizons for the literary*. Notre Dame, IN: University of Notre Dame Press.

N. Katherine Hayles provides a survey of the field of electronic literature. Electronic literature looks at different genres and proposes a theoretical framework for the study of electronic literature that can help move this field of literary studies into the classroom. Hayles suggests that while electronic literature acknowledges the expectations formed by the print medium, it also builds on and transforms them. In addition to building on the print medium, electronic literature should be informed by other traditions in contemporary digital culture, including computer games. Thus, electronic literature becomes a hybrid of various forms and traditions that may not usually fit together. Hayles outlines a wide variety of examples of electronic literature and notes that new approaches of analysis are required; in particular, the ability to “think digital” and recognize the aspects of networked and programmable media that do not exist in print literature. In electronic literature, neither the body nor the machine should be given theoretical priority. Instead, Hayles argues for interconnections that “mediat[e] between human and machine cognition” (p. x). She sees this “intermediation” as a more playful form of engaging with the complex mix of possibilities offered by contemporary electronic literature (p. 57).

Huizinga, J. (1949). *Homo ludens: A study of the play-element in culture*. London, UK: Routledge and Kegan Paul.

Johan Huizinga's text on play and culture offers a thorough study and analysis of forms of play. Huizinga's definition and characteristics of play have been widely cited among game scholars and other theorists, demonstrating the importance of his initiative in acknowledging the value of studying the meaning of play. As Huizinga carefully outlines, the characteristics of play consist of the following: play is a free activity; play steps outside of “real” life; play is different from ordinary life because it is restrained by locality and duration; play consists of rules and has order; and play includes no material interests or profit. While the definition of games and play remains a much-debated topic, Huizinga's categories offer an important starting point. One key term in contemporary game studies that has emerged from *Homo ludens* is the concept of the magic circle. As also indicated in the categories described above, gameplay is isolated from “real” life through locality and duration – play starts and ends, and it is limited in terms of time and space. All play occurs within the realm of these play-grounds.

Jones, S.E. (2009). Second Life, video games, and the social text. *PMLA*, 124(1), 264–72.

Steven E. Jones considers the similarities between the metaverse space in games such as Second Life and the social text and Web 2.0 in general. He explains that in these game spaces, tagged objects exist in relation to users – who may also be meta-tagged through technologies such as radio-frequency identification (RFID) chips – thus forming structures in which interactions unite users and objects. Jones argues that these social spaces do not exist apart from the “real world” of meaning making and production. In games such as World of Warcraft, Second Life, Spore, The Sims and in certain alternate-reality games (ARGs), collaborative construction is already taking place to

create objects and information. Jones concludes that such videogame spaces provide humanists with models of networked, meta-tagged, multidimensional environments.

Jones, S.E. (2011). Performing the social text: Or, what I learned from playing Spore. *Common Knowledge*, 17(2), 283–291.

Jones examines how texts and videogames offer performative social system environments that allow for collaborative modelling toward knowledge development and acquisition. He sees videogames as social objects that, similar to texts, only attain their meaning through engagement of the player or reader, where players take on a director/meta-editor role through content creation and content sharing. He describes the environment of the simulation game Spore as “a continually reedited universe of content-objects” (p. 288). Jones goes on to compare gameplay in Spore to textual analysis, referring to Jerome McGann’s development of Ivanhoe as an example, and considers the ways in which both areas allow for modelling to visualize interpretation and rewriting by players. He calls for a cyberinfrastructure for the humanities that allows for interpretive consequences within a social and a structural space. In this space, players/readers/textual analysts learn through complex, collaborative modelling, and knowledge is acquired through the process of manipulating representations. A textual editing environment based on this premise would remain purposefully unfixed, open, shared, and perpetually manipulatable.

Jones, S.E. (2013). *The emergence of digital humanities*. London, UK: Routledge.

Jones’ text offers a timely study of the digital humanities in the current context. Looking at the emergence of digital humanities in response to changes in culture, Jones uses William Gibson’s concept of the *eversion* of cyberspace as a way to describe the cultural change that has led to the current incarnation of digital humanities. Furthermore, he frames the emergence of digital humanities as a blending of textual studies and game studies. Jones provides readings of popular games such as *Fez* and *Spore*, as well as a number of indie games, to analyze the relation between digital humanities and game studies. The text concludes with an overview of relevant practices, such as desktop fabrication, that are relevant to both gaming and digital humanities.

Kirschenbaum, M. (2012). Digital humanities as/is a tactical term. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 415–428). Minneapolis, MN: University of Minnesota Press.

For **Matthew Kirschenbaum**, “digital humanities” should be considered a tactical term because of its notable role as a means instead of simply as an end. He argues that social media environments and interactions highlight this tactical nature. For instance, social networks and blogs (particularly Twitter) offer a space for digital humanists to engage in alternative professional interaction and dialogue. Kirschenbaum indicates, however, that Twitter’s significance exceeds the sheer presence of digital humanist users. The digital humanities community is in fact established through social media’s tendency to build reputations and status, metrically indicate influence, and aggregate

information and like-minded individuals. Thus, while accepted scholarly channels and institutions continue to represent the digital humanities in a more traditional sense, the community's tactical, online existence promotes constant change and alternative forms of professional clout.

Latour, B. (2008). A cautious Prometheus? A few steps towards a philosophy of design (with special attention to Peter Sloterdijk). *Networks of Design Meeting of the Design History Society*. Cornwall. URL: <http://www.bruno-latour.fr/sites/default/files/112-DESIGN-CORNWALL-GB.pdf>.

Bruno Latour meditates on the form and function of the term *design*, and proposes a more comprehensive vision for the practice. Latour suggests that design practitioners focus more fully on drawing together, modelling, or simulating *complexity* – more inclusive visions that incorporate contradiction and controversy. He argues that we are living in an age of design (or redesign) instead of a revolutionary modernist era of breaking with the past and making everything new. Increasingly, design encapsulates various other acts, from arrangement to definition and from projecting to coding. Consequently, the possibilities and instances for design grow exponentially. For Latour, the concept of an age of design predicates an advantageous condition defined by humility and modesty (because it is not foundational or construction-based); a necessary attentiveness to details and skillfulness; a focus on purposeful development (or on the meaning of what is being designed); thoughtful remediation; and an ethical dimension (exemplified through the good design versus bad design binary).

Liu, A. (2011). Friending the past: The sense of history and social computing. *New Literary History: A Journal of Theory and Interpretation*, 42(1), 1–30.

Alan Liu reviews our sense of history and sociality through types of media in oral, written, and digital culture. After moving through these historical stages to identify the forms of sociality in each, Liu analyzes Web 2.0 and social computing practices. He notes that although Web 2.0 is highly connected, it has no sense of history. He attributes this to two shifts that have taken place throughout history: a move from one-to-many to many-to-many knowledge sharing from a sociality perspective, and, from a temporality perspective, a shift from “store-and-forward temporality ... into the new ideal of instantaneous/simultaneous temporality” (p. 22). However, instantaneous simultaneity can be seen as an ideological construct that relies on a proprietary structure, so that the sociality of simultaneity can be owned by organizations like Facebook, Twitter, and Google. Liu urges for the older sense of history, which includes forms of temporal grammar and narratology, to be a part of the Web 2.0. He uses the social-network system RoSE (Research-oriented Social Environment), a project he leads, as an example of a platform integrating history with Web 2.0.

Losh, E. (2012). Hactivism and the humanities: Programming protest in the era of the digital university. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 161–186). Minneapolis, MN: University of Minnesota Press.

Elizabeth Losh scans the instantiations of, and relations between, hacktivism and the humanities. She contends, along with scholar Alan Liu, that through an increased self-awareness, the digital humanities can actually affect real political, social, public, and institutional change. Losh examines the hacking rhetoric and actions of scholar Cathy Davidson, via the HASTAC collaboratory; the Radical Software Group and its director, Alexander Galloway; and the Critical Art Ensemble, with a focus on CAE member and professor Ricardo Dominguez. Losh concludes by acknowledging criticism of the digital humanities and suggests a solution: digital humanists should engage in more public, political collaborations and conversations.

Manovich, L. (2012). Trending: The promises and the challenges of big social data. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 460–475). Minneapolis, MN: University of Minnesota Press.

Lev Manovich elaborates on the possibilities and limitations of performing humanities research with Big Data. He asserts that although Big Data can be incredibly instructive and useful for humanities work, certain significant roadblocks impede this project. These roadblocks include the fact that only social media companies have access to relevant Big Data; user-generated content is not necessarily authentic, objective, or representative; certain analysis of Big Data requires a level of computer science expertise that humanities researchers do not typically possess; and Big Data is not synonymous with “deep data,” the type of data procured through intense, long-term study of subjects. Nevertheless, Manovich looks forward to a future where humanists can overcome these boundaries and integrate Big Data with their research aspirations and projects.

McGann, J. (2001). *Radiant textuality: Literature after the world wide web*. New York, NY: Palgrave.

Jerome McGann's compilation of essays from 1993 to 2000 shows the development of his work in digital editions, literary studies and interpretation, and digital scholarly work. He comes to regard critical gaming structures as environments that allow for new approaches to the above areas of study. The essays move through McGann's understanding of the potential of the digital medium as “thinking machines” (p. 212) that can go beyond the material limitations of the book. He describes scholarly work, editions, and translations as performative deformation that manipulates text and supplies a perceptual presentation for the reader. McGann explores the opportunity to leverage the digital ecosystem and enable interplay between multiple fields by using markup and databases to make “N-dimensional space” (as described in Chapter 6) accessible. The final chapter reveals how the digital game *Ivanhoe* offers such an environment. *Ivanhoe* is a digital role-playing game where a literary work is read and interpreted in a framework that combines primary and secondary texts, scholarship, and the players' interpretations and commentaries in the same area, thus encouraging new forms of critical

reflection. In the conclusion to his book, McGann names this a “quantum field,” where textual objects and reading subjects operate within the same space and allow for algorithmic and rhetorical performative activity within, rather than outside of, the object of attention.

Pfister, D.S. (2011). Networked expertise in the era of many-to-many communication: On Wikipedia and invention. *Social Epistemology: A Journal of Knowledge, Culture and Policy*, 25(3), 217–31.

Damien S. Pfister argues that Wikipedia is a prime example and facilitator of contemporary many-to-many communication structures and the resultant changing nature of knowledge production. Pfister advocates for many-to-many communication, as it disrupts traditional knowledge practices that depend on specialized experts to disseminate knowledge through carefully regulated channels and institutions. Furthermore, social knowledge creation spaces like Wikipedia induce productive epistemic turbulence through multivocal authorship, arguments, and collaboration. Pfister champions this networked or participatory expertise as a more democratic, representative, and therefore less hierarchical model of communication.

Ramsay, S., & Rockwell, G. (2012). Developing things: Notes toward an epistemology of building in the digital humanities. In M.K. Gold (Ed.), *Debates in the digital humanities* (pp. 75–84). Minneapolis, MN: University of Minnesota Press.

Stephen Ramsay and **Geoffrey Rockwell** take up the “your database/prototype is an argument” conversation (notably championed by Lev Manovich and Willard McCarty). They assert that taking building seriously as scholarly work could productively dismantle or realign the focus of the humanities from its predominantly textual bent. Ramsay and Rockwell advocate for installing the user, reader, or subject at the level of building. Through this socially minded conceptual and physical shift, some of the abstractions and black boxing that render digital humanities tools theoretically insufficient could be avoided or amended.

Ryan, M-L. (1994). Immersion vs. interactivity: Virtual reality and literary theory. *Postmodern Culture*, 5(1). URL: <http://pmc.iath.virginia.edu/text-only/issue.994/ryan.994>.

Marie-Laure Ryan examines the theoretical implications of virtual reality (VR) in relation to literary theory. She notes the similarities between literary devices commonly used to create a sense of reader participation in a fictional world, and the immersion and interaction devices used in VR to affect what Ryan calls “telepresence.” She identifies immersion (the realistic representation) and interaction or interactivity (the ability to not only navigate but to modify) as the two key features that create experiences of reality. Ryan considers VR a semiotic phenomenon and states that the VR effect is the “denial of the role of signs” (n.p.), thus allowing for an unmediated environment by working toward the appearance of a transparent medium. She concludes that textual environments are limited in their ability to develop experiences of reality in the way VR does, because their tools of interactivity are signs instead of physical, unmediated interactivity through the body.

Shillingsburg, P. (2006). *From Gutenberg to Google*. Cambridge, MA: Cambridge University Press.

Peter Shillingsburg ruminates on editorial practice and his ideal digital edition: the knowledge site. A knowledge site, in Shillingsburg's conception, is a space where multiple editions of a text could be combined in a straightforward manner. Based on his experience and knowledge of editorial practice and the mandates of the scholarly edition, he deems various elements necessary for a knowledge site, including basic and inferred data, internal links, bibliographical analysis, contextual data, intertextuality, linguistic analysis, reception history, and adaptations. Furthermore, in keeping with the notion that digital scholarly editions have the capacity to shift the possession of the text to the users, Shillingsburg would ideally include opportunities for user-generated markup, variant texts, explanatory notes and commentary, and personal notes. Concurrently, Shillingsburg argues that editing is never neutral, but rather an interference in the history and status of the text. The overt acknowledgement of the intrusive nature of editing is imperative for all successful scholarly editions. Since unobtrusive editing and universal texts are non-existent, scholarly editions are better conceived of as select interpretations of texts for specific means.

Vetch, P. (2010). From edition to experience: Feeling the way towards user-focussed interfaces. In G. Egan (Ed.), *Electronic publishing: Politics and pragmatics* (pp. 171–184). Tempe, AZ: Iter. New Technologies in Medieval and Renaissance Studies.

Paul Vetch explores the nuances of a user-focused approach to scholarly digital projects. He contends that the prevalence of Web 2.0 practices and standards requires scholars to rethink the design of scholarly digital editions. For Vetch, editorial teams need to shift their focus to questions concerning the user. For instance, how will the user customize their experience of the digital edition? What new forms of knowledge can develop from these interactions? Moreover, how can rethinking interface design of scholarly digital editions promote more user engagement and interest? Vetch concludes that a user-focused approach is necessary for the success of scholarly publication in a constantly shifting digital world.

GAME-DESIGN INSPIRED LEARNING INITIATIVES

The instructional potential of and possibility for learning through games is not a new concept in the realm of pedagogy and teaching. Scholars and teachers have long recognized that engaging students in certain gameplay activities can capture attention, encourage focused and strategic thinking, and teach skills and knowledge. Beyond the actual playing of games, however, game-design thinking can also contribute to the structuring of successful learning environments. The entries in this section look at different learning spaces in relation to game-design-inspired approaches and models from game environments – such as massively multiplayer online games (MMOGs) and massively multiplayer online role-playing games (MMORPGs) – in order to show the different ways in which games can help create collaborative, engaging, and goal-oriented interactive learning environments.

Carson, S., & Schmidt, J.P. (May 2012). The massive open online professor. *Academic Matters: The Journal of Higher Education*. URL: <http://www.academicmatters.ca/2012/05/the-massive-open-online-professor> .

Stephen Carson and **Jan Philipp Schmidt** offer an overview of the current state and possible effects of massive open online courses (MOOCs). MOOCs have been initiated by institutions such as Stanford and MIT, offering free, online courses that hundreds of thousands of users can enroll in at minimal additional cost to the institution. The authors describe the characteristics of MOOCs as consisting of open content, peer-to-peer interactions, automated assessment and grading, and alternative recognition or credential systems. Gamification, and specifically the use of badges, has been an approach led by the Mozilla Foundation, the MacArthur Foundation, and Peer 2 Peer University to develop a new way of acknowledging learning achievements. Carson and Schmidt speculate about the lasting changes MOOCs may bring about, such as the possibility of long-term engagement in learning (beyond the completion of university courses and degrees).

Danforth, L. (2011). Gamification and libraries. *Library Journal*, 136(3), 84–85.

Liz Danforth defines gamification as the application of game-play mechanics in non-game settings. She contextualizes gamification as a method often used in marketing tactics in a type of rewards-based incentive program. Danforth acknowledges that gamification can be beneficial if it is engaging and encourages creative thinking. She points out its use in educational settings and sees gamification's potential use in enhancing library skills and intellectual endeavours.

Dickey, M.D. (2007). Game design and learning: A conjectural analysis of how massively multiple online role-playing games (MMORPGs) foster intrinsic motivation. *Educational Technology Research and Development*, 55(3), 253–273.

Michele Dickey investigates how massively multiple online role-playing games (MMORPGs) may offer structural models for the design of interactive learning environments. In her paper, she focuses on the aspects that support intrinsic motivation in MMORPGs, looking at character design and narrative, player motivation, and how narrative structure and scaffolding for problem solving encourage learning. Dickey conducts a thorough literature review and recognizes that MMORPGs are structured as collaborative, strategy-driven, multimodal, interactive environments. These attributes tie in with the objectives of interactive learning environments, which seek to generate collaboration and critical thinking.

Gibson, D., Aldrich, C., & Prensky, M. (Eds.). (2007). *Games and simulations in online learning: Research and development frameworks*. Hershey, PA: Information Science Publishing.

Gibson, Aldrich, and **Prensky's** compilation of essays offers a thorough overview of the opportunities that games and simulations offer in the design of online learning environments. The book covers an array of areas, such as innovative design models, learning and instruction in networked virtual worlds and massively multiplayer online games (MMOGs), the use of

simulation for discovery learning, guidelines for the development of prototypes and applications that include game and simulation approaches, game-based assessment, and the tracking and analytics capabilities that game and simulation approaches in online education offer. The collection acknowledges various fields and levels of education, thus providing a wide scope for scholars and instructors from different areas.

Jensen, M. (2012). Engaging the learner. *Training and Development*, 66(1), 40.

Matthew Jensen outlines approaches, practices, and risks in using gamification for learning environments. He notes that successful gamification must elicit meaningful engagement by putting the player experience first, making the experience personally relevant, and gearing it toward the target audience. He also highlights the power of narrative. Common characteristics of player-centred games in a successful gamification environment are responsive, collaborative, ritualistic, incremental, convenient, and rewarding. Thus, gamification should be approached with the mindset of a game designer, rather than simply implementing decontextualized mechanisms.

Kapp, K.M. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. San Francisco, CA: Pfeiffer.

Karl Kapp offers a practical guide for readers who want to implement gamification in learning environments. Kapp provides definitions and examples of gamification, surveys individual elements and aspects of gamification, and reviews them in detail. He discusses the different levels of effectiveness of gamification for instructional purposes, and offers practical advice to planning the development of a gamified learning environment. Kapp is critical of common implementations of gamification (i.e., merely placing badges into a tool, trivializing learning, or only considering basic game mechanics rather than actual game design practices). His detailed analysis and overview of gamification methods to improve learning environments provides educators and scholars with a thorough resource on the topic.

Mysirlaki, S., & Paraskeva, F. (2012). Leadership in MMOGs: A field of research on virtual teams. *Electronic Journal of E-Learning*, 10(2), 223–34.

Sofia Mysirlaki and **Fotini Paraskeva** develop a theoretical framework for the analysis of leadership and social interactions in massively multiplayer online games (MMOGs) and massively multiplayer online role-playing games (MMORPGs). Recognizing these environments as self-organized, complex systems, the authors consider how the social structures of MMOGs and MMORPGs may offer insight for the design of collaborative virtual environments. The authors focus specifically on leadership skills and how a sense of community is related to player motivation.

Squire, K. (2008). Open-ended video games: A model for developing learning for the interactive age. In K. Salen (Ed.), *The ecology of games: Connecting youth, games, and learning* (pp. 167–98). The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: MIT Press.

Kurt Squire reviews different types of videogames, including targeted games, epistemic games, and augmented reality role-playing games. He focuses his analysis on open-ended simulation games, or sandbox games, as theoretical models for videogame-based learning environments. Taking *Civilization* and *Grand Theft Auto: San Andreas* as examples, he looks at identity, competitive spaces, and experiences within those spaces, before moving on to consider more education-related insights. Squire considers how games are designed as communities for learning, the forms of engagement in open-ended games in school settings, interpretations of history through games, games as learning systems, and participatory education. Based on the insights gained from this review, Squire concludes that sandbox game approaches offer educators new models and forms to enable student participation and learning.

GAME-DESIGN MODELS IN THE CONTEXT OF SOCIAL KNOWLEDGE CREATION TOOLS

This section contains a sampling of 23 texts on, and examples of, social knowledge creation tools, social networks, game platforms, and social literary-analysis environments. It aims to offer an overview of applications on and practical insights into the potential of game-design models in the development of social knowledge creation tools. Covering an array of environments, the selections below indicate not only how gameful design can incite user engagement and participation but also the possible interoperable effects of game environments in the context of social knowledge creation. As Johanna Drucker, Steven Jones, Alan Liu, Jerome McGann, and Geoffrey Rockwell indicate, game interfaces can aid in bringing out critical awareness, enabling learning by doing (or by modelling, as Jones notes), and integrating otherwise disparate components and interactions, thus leading to deeper forms of collaboration.

Blizzard Entertainment. (2005). *World of Warcraft*. [Videogame]. URL: <http://us.battle.net/wow/en/?-> .

World of Warcraft (WoW) is the world's most subscribed to massively multiplayer online role-playing game (MMORPG). Set in the universe of *Warcraft*, players create avatars based on different races and characters. Gameplay can consist of quests assigned by non-player characters (NPCs), setting up player-versus-environment (PvE) gameplay, or players can engage in player-versus-player combat (PvP). While WoW players can solely play individually, the formation of guilds and subsequent strategic play is common.

CCP Games. (2003–). *Eve Online*. [Videogame]. URL: <http://www.eveonline.com> .

Eve Online is a massively multiplayer online role-playing game (MMORPG) that takes place in a science fiction space setting. Players can assume or create one or multiple characters to navigate a galaxy set 21,000 years in the future. The galaxy consists of over 7,500 star systems that players can navigate in space ships, accessing different star systems by means of star gates. Characters can take on different races and societies, and they can engage in different

professions and activities, such as mining, trading, manufacturing, piracy, and combat. Eve Online consists of a large community of subscribers, which reached over 500,000 in 2013.

Chang, E. (2012). Video+Game+Other+Media: Video games and remediation. [Blog post]. *Critical Gaming Project*. URL: <https://depts.washington.edu/critgame/wordpress/2012/01/videogameothermedia-video-games-and-remediation> .

This blog post looks at videogames within media culture and the adaptation of games for other purposes in the context of remediation. Referring to his work with **Sarah Kremen-Hicks, Edmond Chang** questions whether we can only imagine new media in the frame of old media and in existing structures of information. He notes that innovation in a medium can only be based on prior innovation of technology. Within this framework, innovation may not necessarily be better, but may just be more, which indicates the teleological refinement that takes place and recognizes the “effect of new forms on existing ones” (n.p.).

Chicago Summer of Learning. (2013). *The Source*. [Videogame]. Chicago, IL: University of Chicago.

The Source is an alternate reality game played by youth across Chicago between July 8th and August 16th, 2013. The game consists of a series of Webisodes showing Adia, a 17-year-old African American girl, speaking through her webcam to the players. Players split into teams to solve problems and help Adia understand a letter she received. In this process, the youth playing the game engage in investigations, break codes, solve STEM-based puzzles, and engage in media production.

Crowley, D., & Selvadurai, N. (2009). *Foursquare*. [Social networking website and application]. New York, NY: Foursquare. URL: <https://foursquare.com> .

Foursquare is a location-based social networking application primarily developed for mobile use. The main activity consists of users “checking in” to different locations and tagging either the venue or the activity. Foursquare is built as a gamified structural mechanism that is often used as a model for gamification. Every check in helps the user gain points, and certain tags or specific locations can earn the user badges. Users can become “mayors” of certain locations if they check in more than any other user over a certain time span.

De Carvalho, C.R.M., & Furtado, E.S. (2012). Wikimarks: An approach proposition for generating collaborative, structured content from social networking sharing on the web. *Proceedings of the 11th Brazilian Symposium on Human Factors in Computing Systems, IHC '12*. Porto Alegre, Brazil: Brazilian Computer Society, 95–98.

Carlos De Carvalho and **Elizabeth Furtado** argue in support of what they call a Wikimarks approach to computing, in order to encourage organized, sustainable, social content creation. Based on this approach, users share online content that flows into a content repository and is subsequently categorized in a taxonomy system by the users. User participation is fostered through social interaction and extrinsic motivation. In order to motivate participation in the classification of content, the authors recommend gamification methods.

De Paoli, S., De Uffici, N., and D'Andrea, V. (2012). Designing badges for a civic media platform: Reputation and named levels. *Proceedings of the 26th Annual BCS Interaction Specialist Group Conference on People and Computers, BCS-HCI '12*, 59–68. Swinton, UK: British Computer Society.

Stefano De Paoli, Nicolò De Uffici, and Vincenzo D'Andrea outline a design experience for badges in civic media platforms (CMP) based on insights gained from a CMP design model called timu, which aims to offer a framework for a participative, bottom-up information ecosystem. While acknowledging critiques of gamification, the authors argue that badges offer a way to formalize skills and reputation. De Paoli et al. review various strengths and opportunities that badges bring to civic and educational platforms: they can represent a number of different things (e.g., community membership, competence, experience, reputation); they support transferability of skills, reputation, or achievements; they trigger motivation; and they build a sense of community among participants.

Drucker, J. (2003). Designing Ivanhoe. *TEXT Technology*, 2, 19–41.

Johanna Drucker charts the interface design approach that was used in the development of the Ivanhoe project she worked on with Jerome McGann. The objective was to challenge usual design practices and their assumptions about clarity and communication. Instead of designing Ivanhoe based on the structuralist premise that visual presence and graphical form are self-evident, Drucker used a theory-driven approach that allows for the interface to be conceived of as dialogic and networked, generative and procedural, emergent, relational, iterative, dialectical, and transformative. Ivanhoe is designed so that critical awareness is not only a part of the game (through the textual studies perspective), but the interface itself is based on critical awareness and theoretical insights.

Drucker, J., & McGann, J. (2000). *Ivanhoe*. SpecLab. URL: http://www.ivanhoegame.org/?page_id=21 .

Ivanhoe is an online game environment where multiple players collaboratively read, interpret, and reflect on a literary text. Similar to other role-playing game (RPG) environments, players take on alternate identities to perform their reading and interactions with each other. This structure encourages players to be aware of the ways in which interpretations are formed, and encourages reflection on the meaning of such acts. Thus, the game enables collaborative interpretation of the selected text as well as critical reflection of the interpretive process itself. The gamespace, or bookspace, consists not only of the primary literary text that the game is structured around, but combines multiple primary and secondary texts, player contributions, and computer-generated processes in the same sphere.

Galloway, A., Kane, C., Parrish, A., Perlin, D., DJ /rupture, Shadetek, M., and Zer-Aviv, M. Kriegspiel. (n.d.). RSG. [Videogame]. New York, NY: New York University. URL: <http://r-s-g.org/kriegspiel/index.php> .

Kriegspiel is a game designed by Galloway and the RSG collective of programmers and artists. It is based on Guy Debord's game of the same name.

Debord first produced a limited edition of the game in 1977. He developed a full rulebook, a mass-production of the game made of cardboard and wood tiles, and a book that he co-published with Alice Becker-Ho in 1987. Kriegspiel, which means “war game” in German, is a chess-variant war game that consists of 500 squares and is played between two opposing players. The players each control an army that tries to destroy the opponent’s army. The digital game developed by RSG is an attempt to situate Debord’s game in a contemporary landscape.

Jakobsson, M. (2011). The achievement machine: Understanding Xbox 360 achievements in gaming practices. *Game Studies International Journal of Computer Game Research*, 11(1). URL: <http://gamestudies.org/1101/articles/jakobsson> .

Mikael Jakobsson scans the achievements environment in Xbox 360 games. In this console gaming environment, multiple individual games are combined into a total score or achievement level that is visible to other players, similar to the structure of massively multiplayer online game (MMOG) environments. The achievement system offers a specific approach that provides extrinsic rewards that can be seen by others and thus function as external motivators. Comparing MMOG game environments and console gaming, Jakobsson notes that both have similar properties, such as persistence, coveillance, and open-endedness. Jakobsson concludes that, although the achievements system in Xbox games follows rewards system approaches, it functions like a MMOG game that all Xbox Live members participate in.

Kopas, M. (2012). *lim*. [Videogame]. URL: <http://mkopas.net/2012/08/lim> .

Merritt Kopas’ game, *lim*, requires the player to move a square through a structure of other squares (using the arrow keys) and to take on the colour of other squares in order to fit in and avoid attack. Built in Construct 2, a DIY game-making platform, *lim* offers a superb example of the ways in which game mechanics can make arguments. While highly abstract, the game clearly communicates certain feelings such as distress and not fitting in, which are important to the topic of liminality.

Maxis and The Sims Studio. (2000–). *The Sims*. Electronic Arts. [Videogame]. URL: <http://www.thesims.com/en-us> .

The Sims is a best-selling, strategic, life simulation videogame that consists of a main series and a variety of spin-offs. It is structured as a sandbox game in which players create people called “Sims.” The gameplay consists of helping these Sims live in their houses, engage in daily activities, and satisfy their desires.

Maxis. (2008). *Spore*. Electronic Arts. [Videogame]. URL: <http://www.spore.com/ftl> .

Spore is a multi-genre, single-player God game wherein the player develops a species and aims to achieve certain objectives in different stages of development of the species. The way that each stage is played determines new characteristics that the species obtains for the following level. *Spore* consists of several genres, including action, strategy, and role-playing game (RPG). The species that players create can be uploaded to Sporepedia, allowing other players to download them.

McGann, J. (2005). Like leaving the Nile. IVANHOE, a user's manual. *Literature Compass*, 2, 1–27.

In the user manual for the online literary-analysis game Ivanhoe, **Jerome McGann** explains why he considers it imperative that humanities activities such as text analysis and interpretation move into and embrace the digital space. While recognizing that humanities and social sciences material must be treated as information at the computational level, he argues that such materials must also be treated as knowledge at the “level of perception and thought—at the level of their human uses” (p. 4). Ivanhoe is structured as an online gamespace where multiple readers can explore and interpret a text in a manner that visualizes the interpretations and shows interrelations between the players, moves, and documents. Thus Ivanhoe allows for interpretation to take place on two levels: through the interpretation of the documents that are being studied and through the interpretation of the critical thought of the players participating. McGann explains the functions and interactions of the game by walking through a textual mockup of an actual gameplay.

Meier, S. (1991–). *Civilization*. MicroProse. [Videogame]. URL: <http://www.civilization.com>.

The Civilization series is a turn-based strategy game in which players construct, control, develop, and manage an empire. The player rules the civilization, builds cities and expands the empire, and, at times, has to engage in warfare and protect the empire. The culture, technology, and intellectual states of the civilization develop as the empire evolves.

Mojang and Microsoft Studios. (2011). *Minecraft*. [Videogame]. URL: <https://minecraft.net>.

Minecraft is an open-world, or sandbox, game that allows for players to engage in activities outside of specific goals. The main activity is to build constructions within a grid system using blocks that consist of a variety of materials. Players most commonly play in the first person, but Minecraft also allows for third person gameplay. The game contains an optional achievement system, and players can choose to play in a survival mode or a creative mode, thus enabling different types of activities.

Polytron Corporation. (2012). *Fez*. [Videogame]. URL: <http://polytroncorporation.com/61-2>.

Fez is an indie puzzle and platform game developed by Polytron for Xbox Live Arcade. The game is unique in that it is a 3D world played from a 2D perspective. Gomez, the player character, starts out in a 2D world, but he receives a hat that allows him to enter the third dimension. Thus, the player can rotate 90 degrees across four sides of the world to move through it. The goal of the game consists of collecting 32 cubes to reconstruct the hexahedron that existed in Gomez' world at the beginning of the game. In this pursuit, the player moves through the world, finds secrets, and solves puzzles. However, Gomez does not fight enemies, and although death can occur, there is no penalty for it.

Rockwell, G. (2003). Serious play at hand: Is gaming serious research in the humanities? *TEXT Technology*, 12, 89–99.

Geoffrey Rockwell examines the role of games in academic research within the humanities. Referring to the theories of Wittgenstein, Huizinga, Gadamer, and others, Rockwell conducts an investigation of the game *Ivanhoe* (a game environment for the collaborative interpretation of literary texts) to show how the humanities can combine gaming and research. He depicts *Ivanhoe* as a model that shows how a game environment can enable a number of beliefs of “what criticism should and could be in the context of learning and collaborative research” (p. 93), while bringing playfulness into humanities activities.

Rockstar Games. (1997–). *Grand Theft Auto*. [Videogame]. URL: <http://www.rockstar.com/games.com/grandtheftauto> .

The **Grand Theft Auto** (GTA) series is an open-world action-adventure driving game. Players take on characters who usually try to rise in the ranks of organized crime. Structured as a sandbox game, GTA is set in urban environments with fictional names, although they are based on U.S. cities and states. The game action is primarily organized around vehicles, drivers, pedestrians, and traffic signals. However, gameplay goes far beyond driving, and player characters can choose which missions they complete and how they interact with other characters.

Stack Exchange Network. (2013). *Stack Overflow*. [Website]. URL: <http://stackoverflow.com> .

Stack Overflow is a free programming Q&A site that allows users to build their reputation in order to gain more access and privileges. The site aims to offer an environment that allows programmers to ask relevant questions and receive helpful answers while discouraging irrelevant content. Structured as a user-built and user-run environment, Stack Overflow’s relevant content is curated and developed through gamification methods. Within the Q&A framework, the best answers are displayed at the top of the list of responses. Users can vote up each other’s contributions. As a user’s questions, answers, and edits are voted up, that person’s reputation score increases. The higher the reputation score, the higher the user’s access privileges. Users can also earn badges for certain achievements and forms of participation.

Zynga. (2009 and 2011). *FarmVille*. Facebook and HTML 5. [Videogame]. URL: <http://company.zynga.com/games/farmville> .

FarmVille is a social network game that leverages the Facebook environment. Gameplay consists of the management of a farm that players maintain by plowing land, raising livestock, and planting, growing, and harvesting crops. Players have an avatar and can interact with their friends through Facebook. Players earn farm coins through certain actions or by obtaining enough experience points to move up levels, or farm points can be purchased for real money. Players are encouraged to interact with friends by visiting each other’s farms or joining efforts by forming co-ops. Ian Bogost’s game *Cow Clicker* satirizes *FarmVille* and similar games.

DEFINING GAMIFICATION AND OTHER GAME-DESIGN MODELS

A wide range of fields, from marketing to pedagogy to human resources, apply, study, and discuss gamification. Hence, it is no surprise that an array of definitions and descriptions of gamification cause confusion as to what it really means. While Gabe Zicherman and Christopher Cunningham (2011) offer a fairly broad definition of gamification as “game-thinking and game mechanics to engage users and solve problems” (p. XIV), Sebastian Deterding, Rilla Khaled, Lennart Nacke, and Don Dixon (2011) differentiate gamification from similar approaches by defining it as “the use of game design elements in non-game contexts” (p. 9). For the purpose of specificity in the context of this bibliography, we follow Deterding’s definition and use gameful design, game-design thinking, and game-inspired approaches to refer to our suggested broader use of game-related methods and strategies in non-game environments. The definitions below and their relation to similar approaches provoke debates about terminology, especially because the word “gamification” holds negative connotations associated with marketing tactics. Many scholars, including Deterding and Ian Bogost, argue for alternative terminology in order to distance academic uses of gamification from controversial or exploitative examples.

Bogost, I. (2011). Persuasive games: Exploitationware [Blog post]. *Gamasutra*. URL: http://www.gamasutra.com/view/feature/6366/persuasive_games_exploitationware.php.

Ian Bogost asserts that the power of gamification lies in the term’s rhetorical effect, which diminishes how “hard” games actually are and simplifies the field of gaming to make it applicable in multiple contexts. Bogost states that gamification as it currently appears in corporate and marketing platforms should be replaced with the term “exploitationware,” since it substitutes real incentives with fictional ones, thus creating exploitative relationships between company and consumer. In his pursuit to rid the industry of exploitative gamification, Bogost invokes the term “games-as-systems” to supersede gamification with alternatives that do “real, meaningful things with games” (n.p.).

Deterding, S., Dixon, D., Khalad, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining “gamification.” *MindTrek ’11 Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9–15. New York, NY: ACM.

Deterding et al. investigate gamification methods in order to define gamification and contrast it with other concepts, such as pervasive games, alternate reality games, and serious games. The authors outline the industry origins and precursors of gamification to indicate how contested the term is. They define gamification as “the use of game design elements in non-game contexts” (p. 9). Deterding et al. argue for the appropriateness of this definition because it focuses on games, not play; it indicates that it consists of elements of games, rather than being structured as full games; it constricts gamification to game design elements, rather than game-based technologies or practices; and it contextualizes gamification outside of games for pure entertainment. They suggest that “gameful design” may be a better term to use in place of “gamification” within academic discourses.

Douma, M. (2011). What is gamification? *Idea*. URL: <http://www.idea.org/blog/2011/10/20/what-is-gamification> .

Michael Douma defines gamification as “adapting game mechanics into non-game settings — such as building online communities, education and outreach, marketing, or building educational apps” (n.p.). While differentiating between gamification, serious games, and playful interaction, Douma does allow for some leeway as to what defines gamification. He outlines numerous ideas and approaches for gamification, such as levels, cascading information theory, community collaboration, loss aversion, quests/challenges, and infinite gameplay. Badges, trophies, and points are discussed in the most detail. He notes that badges offer psychological functions such as setting goals, instruction, reputation, status and affirmation, and group identification, but in addition to badges as external motivators, they also need to be a part of a narrative and offer personalized, goal-oriented engagement.

Graham, A. (2012). Gamification: Where’s the fun in that? *Campaign*, 47. URL: <http://www.campaignlive.co.uk/news/1156994> .

Adam Graham defines gamification as “the use of game thinking and game mechanics to enhance non-game contexts. By skillful use of game elements, it is possible to hugely increase engagement across myriad diverse applications” (n.p.). While he notes that it is possible to gamify anything, the majority of gamification examples simply follow a formulaic pattern set by the Foursquare model, which uses points, badges, leaderboards, and prizes as incentives for participation. Instead of following this process, Graham urges practitioners to consider the extensive array of game-design approaches available, and to determine which ones would be the most successful in inciting player flow based on the target audience’s triggers and motivators.

Groh, F. (2012). Gamification: State of the art definition and utilization. In Naim Asaj et al. (Eds.), *Proceedings of the 4th Seminar on Research Trends in Media Informatics*, 39–46. Ulm, Germany: Institute of Media Informatics Ulm University.

Fabian Groh reviews the definition of gamification developed by Deterding et al. and analyses the opportunities and problems gamification offers in the context of self-determination theory. He points out the differences between game (*ludus*) and play (*paidia*), differentiates gamification from “serious games” (“which are full-fledged games for non-entertainment purpose,” rather than game elements), and notes how such game design elements can be used to enhance other applications (pp. 39–40). Groh presents the ways in which the values of relatedness, competence, and autonomy inherent in self-determination theory are also key components for gamification to be effective.

Jagoda, P. (2013). Gamification and other forms of play. *Boundary 2*, 40(2), 113–44.

Patrick Jagoda discusses the ubiquity of games in different digital contexts and explores gamification in particular. Defining gamification as “the use of game mechanics in traditionally nongame activities” (p. 114), Jagoda sees gamification as an approach that uses game mechanics and objectives to function as an interface between work, leisure, thought patterns, affects, and

social relations common in the current overdeveloped world and “the real” (p. 116). This gamified world, Jagoda argues, differs from a society oriented around the production of what Guy Debord called “spectacles.” Rather than relying on one-directional representations, the gamified world is structured in a two-directional, many-to-many format that encourages engagement through customization and user-generated content. While Jagoda acknowledges that gamification perpetuates the productive capitalist hierarchy, he also notes that game-based approaches can function to resist those exact socioeconomic structures. He analyzes three games that problematize gamification: SPENT (2011), Third World Farmer (2006), and Thresholdland (2010). Rather than perpetuating a false sense of triumph and winning, these games draw attention to the failure that the majority of people experience in contemporary capitalism, thus functioning as critiques not only of the capitalist system, but also of gamification. Thus, Jagoda shows that although games and gamification in many ways perpetuate dominant socioeconomic hierarchies and exploitation, game-based approaches can also function as forms of resistance.

Ritterfeld, U., Cody, M., & Vorderer, P. (Eds.). (2009). *Serious games: Mechanisms and effects*. New York, NY: Routledge.

Ute Ritterfeld, Michael Cody, and Peter Vorderer explore how games can encourage learning in the real world. The editors define serious games as “any form of interactive computer-based game software for one or multiple players to be used on any platform that has been developed with the intention to be more than entertainment” (p. 6). Organized into four sections, the chapters explore the psychological mechanisms of serious games and how they facilitate learning, development, and change in a variety of areas, including health care, human rights, education, research, and immigration.

Rose, F. *The Art of Immersion*. (2011). New York, NY: Norton.

Frank Rose explores how the Internet changes storytelling. He argues that while stories in other media also appear in patterns that we make meaning out of, the Internet communicates narratives in a unique way, changing how we communicate, create, consume, and engage with content. Rather than communicating stories as sequential narratives, the Internet allows for stories to be communicated in a nonlinear, participatory, game-like, and immersive way. This allows for deeper engagement with stories where distinctions between author and audience, story and game, entertainment and marketing, and fiction and reality become increasingly blurred.

Zichermann, G., & Cunningham, C. (2011). *Gamification by design: Implementing game mechanics in web and mobile apps*. Sebastopol, CA: O'Reilly Media.

Gabe Zichermann and Christopher Cunningham's work targets marketers, corporate brand and product managers, and application designers. The authors demonstrate the ways in which gamification can be utilized in digital applications in order to acquire and engage consumers and users, shifting from traditional loyalty programs to engagement platforms. They define gamification as “the process of game-thinking and game mechanics to engage

users and solve problems” (p. XIV). Zichermann and Cunningham outline areas of game fundamentals that focus on player motivation, game mechanics, design practices, and integration of social interactions. The book contains case studies of companies that apply gamification, as well as tutorials to develop game mechanics.

GAME-DESIGN MODELS AND THE DIGITAL ECONOMY

Within academic discourse, gamification has provoked heated debates and strong criticism. This is not surprising, as videogames, and particularly the objectives of gamification, epitomize the play/labour dichotomy. The following 15 texts offer varying views of the digital economy with the aim to engender critical approaches to potential implementations of gamification. While some scholars are highly skeptical of gamification, we believe that game-design models can be used in an ethical and transparent manner. Rather than applying game approaches in an exploitative manner, we see the potential for game-inspired design practices to offer methods that encourage self-reflexivity, critical thinking, and creative engagement. The digital economy in general, and videogames in particular, often bear challenges as to how to engage scholars and the public in an ethical manner – especially concerning the blurring boundaries between labour and play, entertainment and payment. Furthermore, social shifts in the value and forms of attention are taking place (see Jonathan Beller and N. Katherine Hayles), and the study of game environments is being reformulated and problematized by approaches such as object-oriented ontology and procedural rhetoric (Ian Bogost). Taking these discourses into consideration, the challenge will be to develop uses of gameful design that not only overcome these issues, but contain responses and solutions to them.

Beller, J. (2006). *The cinematic mode of production: Attention economy and the society of the spectacle*. Hanover, NH: Dartmouth College Press.

Jonathan Beller posits cinema (as well as television, video, computers, and the Internet) as the dominant mode of production in global, postindustrial capitalism. He contends that new media functions as a de-territorialized factory wherein spectators engage in value-productive labour. Beller explains that the commodification of experience and leisure time emerges because the exchange value of a commodity increases the more the commodity “image” gets consumed. Furthermore, the spectator or consumer performs the labour of a worker, because watching becomes a productive labour act for which the spectator is “[paid] in fun (know-how, anesthesia, acquired stupidity, fashionability, enjoy[n]ment),” thus providing surplus labour beyond normal working hours (p. 13). Beller provides numerous examples to demonstrate how this process takes place in current capitalist environments.

Beller, J. (2006/07). Paying attention. *Cabinet*, 24. URL: <http://www.cabinetmagazine.org/issues/24/beller.php>.

Beller argues that attention is a commodity in the current neoliberal, global capitalist economy. In today’s media landscape, attention constantly gets traded for information, whether in the form of media buyers in the advertising industry, in the economy of entertainment (e.g., cinema, videogames, etc.), or through content and information sharing in social networks. Not only is

attention a commodity, it can be seen as productive labour, since attention produces capital. Using cinema as an example, Beller explains that the attention economy relies on the visual gaze and subsequent value production through the viewer; he describes this as a process wherein surplus value is extracted from spectators in de-territorialized factories that produce value for media companies. This process enables productive labour as well as the social cooperation necessary to maintain the capitalist hierarchy.

Bogost, I. (2007). *Persuasive games: The expressive power of videogames*. Cambridge, MA: MIT Press.

Ian Bogost details his theory that videogames are an expressive media, which make arguments through procedural rhetoric. He describes procedural rhetoric as “the practice of persuading through processes in general and computational processes in particular” (pp. 2–3). According to Bogost, procedural computer representation differentiates itself from textual, visual, and plastic representation in that it is the only system in which process can be represented with process. He focuses on persuasive games, which he defines as “videogames that mount procedural rhetorics effectively” to influence players (p. 46). Bogost reviews in detail the persuasive capabilities of videogames in the realms of politics, advertising, and education from a theoretical and a game-design perspective.

Bogost, I. (2012). *Alien phenomenology, or, what it’s like to be a thing*. Minneapolis, MN: University of Minnesota Press.

Bogost proposes a form of study that goes beyond the way objects relate to humans. Rather than considering ideas as more valuable than “stuff” and our sense of being as the only way of being, Bogost suggests that we should begin to look at things through relations between object and object. In object-oriented ontology (OOO), things are at the centre of being, everything exists equally, and nothing (including humans) has special status. As an alternative term to OOO, Bogost suggests “unit operations.” “Unit” does not imply a subject and also does not require materiality. Similarly, the term “operations” more accurately describes the processes in which all units behave and interact. Through the approaches of ontography (revealing the object’s existence and relations) and metaphorism (using metaphor to speculate about the unknowable), the phenomenology of units (or things or objects) can be studied, described, and analyzed, while recognizing that we as humans cannot actually know what it means to be a thing. An OOO approach suggests a new form of humanism that does not rely on the correlational system of humans.

Dyer-Witheford, N., & de Peuter, G. (2009). *Games of empire: Global capitalism and video games*. Minneapolis, MN: University of Minnesota Press.

Nick Dyer-Witheford and **Greig de Peuter** argue that videogames are a media of Empire – Michael Hardt and Antonio Negri’s notion of a hypercapitalist sphere where the economic, cultural, and political issues of global capitalism take place in the same way as in the physical world. Dyer-Witheford and de Peuter’s political critique of videogames assumes that “a media that once seemed all fun is increasingly revealing itself as a school for labor, an

instrument of rulership, and a laboratory for the fantasies of advanced techno-capital” (p. xix). Drawing from Hardt and Negri, autonomist Marxism, and poststructuralist radicalism, the authors note the capitalist domination in videogames in the form of “network power,” with multiple institutional agencies shaping and participating in the videogame space. Virtual games are examples of Empire that highlight its constitution and conflicts, maintaining it and, at times, offering the space to challenge and rebel against it.

Feenberg, A., & Grimes, S.M. (2009). Rationalizing play: A critical theory of digital gaming. *The Information Society*, 25(2), 105–118. URL: http://www.tandfonline.com/doi/abs/10.1080/01972240802701643#.Uop_BhaPCgE.

Andrew Feenberg and **Sara Grimes** propose their theory of socially rationalized games through an analysis of World of Warcraft. They suggest that the societal forms of motivation developing systemically out of massively multiplayer online games (MMOGs) progressively diminish the “playfulness” associated with the discovery-based motivation intrinsic to these environments. Like Deterding et al., Grimes and Feenberg acknowledge their dependence on Caillois’ distinction between *ludus* (relates to games that consist of structure and rules) and *paidia* (relates to playfulness and unstructured play) in developing their case for videogames as systems of social rationality that change the experience of play through the forms of standardization that occur in their large-scale use (p. 109).

Galloway, A.R. (2006). *Gaming: Essays on algorithmic culture*. Minneapolis, MN: University of Minnesota Press.

Based on the argument that “video games are actions” (p. 2), **Alexander Galloway** develops a four-part system that incorporates theoretical insights while treating videogames as material objects, regarding them as an active and material medium. Following these assumptions, Galloway differentiates between machine actions (by the computer software and hardware) and operator actions (by the players). Furthermore, he recognizes that games are made up by diegetic space (the sphere of narrative action) and nondiegetic space (“gaming elements that are inside the total gamic apparatus yet outside the portion of the apparatus that constitutes a pretend world of character and story” [pp. 7–8]). Between these categories emerge four game actions that comprise Galloway’s system: the diegetic machine act, the nondiegetic operator act, the diegetic operator act, and the nondiegetic machine act. Building on this structure, the essays provide examples of videogames and other media, and look at gaming practices to analyze videogames as a cultural form that is actively played rather than read or watched.

Hayles, N.K. (2007). Hyper and deep attention: The generational divide in cognitive modes. *Profession*, 1, 187–99.

N. Katherine Hayles examines the differences in cognitive styles between deep attention and hyper attention. Deep attention, common in the humanities, concentrates on a single object for an extended period and ignores other stimuli. Hyper attention switches the focus of attention rapidly and requires stimulation. Rather than advocating for one or the other cognitive

mode, Hayles calls for a change in education systems that allows for both types of attention. Hayles notes that hyper attention can still be focused on single activities for long periods of time, e.g., in videogames. Videogames, however, offer high levels of stimulation through the escalating series of rewards that players experience. As videogame research has indicated, “stimulation works best [...] when it is associated with feelings of autonomy, competence, and relatedness,” which offers important insights for educators, especially when taking into consideration the digital space and how technology can be used in pedagogical environments (p. 195). Hayles offers examples of possible approaches to show that critical interpretation and practices common in the humanities can be taught to and applied by all students, whether they are more comfortable with hyper attention or deep attention, if presented in the right way.

McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world*. New York, NY: Penguin.

Jane McGonigal's book revolves around the bold statement that “reality, compared to games, is broken” (p. 3). Drawing upon her own experiences as an independent game designer (see worldwithoutoil.org) and building on definitions of games and utopia from the work of Bernard Suits, McGonigal argues that the global ascendance of videogames as a cultural form signals a “purposeful escape” from established societal structures. In McGonigal's view, videogames are fulfilling genuine intrinsic human needs – teaching, inspiring, engaging, and building communities – in ways that reality is no longer able to. Games and game design are not just a pastime and a craft but instead offer current ways of thinking and leading in order to effect real changes in the world. McGonigal contends that, as “reality is broken,” videogame designers must set out to recreate it.

Nakamura, L. (2009). Don't hate the player, hate the game: The racialization of labor in World of Warcraft. *Critical Studies in Media Communication*, 26(2), 128–44.

Lisa Nakamura analyzes the racialization of informational labour in massively multiplayer online games (MMOGs) generally and World of Warcraft (WoW) specifically. Chinese player workers, discriminatively called “Chinese gold farmers” in the player community, are racialized and dehumanized by other WoW players. Analyzing examples of machinima that negatively present and attach Chinese player workers, such as the well-known machinima “Ni Hao,” Nakamura points out the many ways in which these user-generated videos produce racist narratives that rely on the game world and thus distance themselves from “real world” racism. Gold farming as a labour practice, Nakamura indicates, also shows the reality of the exploitative digital economy and informationalized capitalism. Immaterial labour that often gets treated as play in fact becomes pure, real work for gold farmers who work 12-hour shifts in factory-like settings for incredibly low wages. These worker players do not have the opportunity to “play” the game that they are experts in. While other players have the opportunity to fully engage in the games as a leisure activity and even produce additional game-related content – such as the racist, dehumanizing machinima that Nakamura analyses – for

fun, the player worker does not have the opportunity to engage with the game in such a way. Instead, they become disliked, racialized, discriminated non-player characters.

Nakamura, L. (2013). "Words with friends": Socially networked reading on Goodreads. *PMLA*, 128(1), 1–11.

Nakamura looks at the shift toward electronic literature, noting not only the move from p-books (print books) to e-books, but also asking in what ways reading is changing in digital environments. Rather than relying primarily on the hardware contexts of digital environments, digital reading follows social media in claiming a more service-based nature. Nakamura points out that books have always promoted forms of social networking, and especially in the current digital generation, she predicts a continuation of such social behavior. Goodreads provides a highly developed example of what a social, digital reading environment can look like: it contains social networking elements (an inbox, notifications, a status ticker), links to other social networks, includes invitation generators to add friends, and it can be used in the format of different apps. Bookshelves are public and reading data is shared, allowing for a variety of social forms of engagement. However, Nakamura notes that this also turns users into "objects to be collected" (p. 6): by participating in an environment like Goodreads provides, users share their data and become objects in a database. Thus, the reader becomes a labourer by engaging in activities that combine play and labour. Although Goodreads positions itself as a "passive conduit" that facilitates folksonomic creation and individual contribution, Nakamura highlights that reading is a social, economic, and cultural activity that is never passive.

Schenold, T. (2011). The 'rattomorphism' of gamification. *Critical Gaming Project*. URL: <https://depts.washington.edu/critgame/wordpress/2011/11/the-rattomorphism-of-gamification> .

Terry Schenold offers a strong critique of gamification, using the notion of "rattomorphism" (termed by Arthur Koestler and applied by Alfie Kohn) to describe the common rewards- and incentive-driven conditioning. While such an approach may be effective in the short term, Schenold likens it to "digital meth," arguing that the incentivized activities of gamification quickly become corrosive and any form of attentiveness or creativity that the user may have been engaged in falls apart quickly. Finally, Schenold points out that there is no game layer, because games cannot merely be stripped to assemblages of techniques. Instead, there are rewards layers or feedback layers that may draw inspiration from games, but merely "address our inner rat, not our inner 'gamer'" (n.p.).

Scholz, T. (Ed.). (2013). *Digital labor: The internet as playground and factory*. New York, NY: Routledge.

This collection of essays (by **Trevor Scholz**, Ed.) examines the current digital space as a labour site or factory, and what implications this structure – dominated by profit-driven, oligarchic owners – has on the digital worker today. The authors recognize a continuation of traditional economies in the

digital space, which enables free labour that may not seem like labour at all. While the social Web may appear free, users pay through their participation and with their data, ultimately being sold as the product that they also consume. This raises the question of the difference between work and play, since digital activities often make it difficult to differentiate between nonproductive leisure activity that consist of play, and productive activity that is part of the workplace. Playbor (play/labour) is an aspect of the gift economy, where users do something for nothing for fun. Notably, McKenzie Wark cautions against the rhetoric of gamification, arguing that it is a simulation of the gift economy, since it extracts labour in the form of play within a reciprocal structure that is not driven by the players but by the business requirements.

Suits, B. (2005). *The grasshopper: Games, life and utopia*. Introduction by Thomas Hurka. Peterborough, ON: Broadview Press.

This philosophical dialogue, originally published in 1978, has been recognized as among the most underrated philosophical works of the twentieth century. The book suggests that Wittgenstein's conception of games as sharing certain "family resemblances" is insufficiently clear. **Bernard Suits** conceives playing a game as "the voluntary attempt to overcome unnecessary obstacles" (p. 157). A game is comprised of a goal, means of achieving the goal, rules, and what Suits calls the "lusory attitude," or the acceptance by players of "rules which prohibit use of the most efficient means for reaching a prelusory goal" (p. 52). To play a game, according to Suits' complete definition, "is to attempt to achieve a specific state of affairs [prelusory goal] using only means permitted by rules [lusory means], where the rules prohibit use of more efficient in favour of less efficient means [constitutive rules], and where the rules are accepted just because they make possible such activity [lusory attitude]" (p. 54-55).

Wark, M. (2007). *Gamer theory*. Cambridge, MA: Harvard University Press.

McKenzie Wark engages in a theoretical discourse of the gamespace of our everyday by discussing concepts of meaning, space, nuanced thinking, the work/play dichotomy, subjectivity, and resistance or social change through examples of videogames. Wark regards the "real world" as divided into games, thus deeming it a "gamespace" that exists everywhere. Because of this spread of the gamespace, play has become work and work has become play. In order to engage in a critical theory of action, Wark presses for play from within the game against gamespace. Wark encourages an active approach to theory that overcomes social binaries such as work/play by engaging in gamer subjectivity to "[go] further and further into gamespace [until we] come out the other side of it" and get beyond it (p. 224). Thus, Wark encourages a form of play in and against gamespace that conceives of new concepts.

GAME-DESIGN INSIGHTS AND BEST PRACTICES

The following selections cover game-design approaches, best practices, models, and how-tos. Salen and Zimmerman's *Rules of Play*, Bjork and Holopainen's *Patterns in Game Design*, and Galloway's *Gaming* offer extensive overviews of videogame studies and game design, providing insights to practices from game studies and the gaming

industry. The entries specifically discussing gamification have been selected based on impact, reception, and critical perspective. Gamification should not consist of the mere addition of game elements into existing platforms, but must be approached from a game-design perspective in order to be successful. Thus, the selections below aspire to provide a broad overview of examples, instructions, and approaches to inform practitioners of the possibilities of game-design thinking in social knowledge creation tools and environments.

Aarseth, E. (2012). A narrative theory of games. *Proceedings of the International Conference of the Foundation of Digital Games, ACM, FDG'12*, 129–133. URL: <http://dl.acm.org/citation.cfm?id=2282365> .

Espen Aarseth considers the foundational debate that took place in game studies between “narratorologists” who followed Janet Murray in approaching videogames and electronic texts as stories, and “ludologists” who contended with Jesper Juul that the computer game is not simply a narrative medium. Aarseth sees videogames as a combination of games and stories through software, one that can result in a variety of ludo-narratological constructs. This ludo-narrative designspace consists of four dimensions: world, objects, agents, and events (pp. 130–131). Interestingly, Aarseth sees agents/characters as the most important one of these dimensions in videogames, which offers a key difference from other narrative environments.

Anthropy, A. (2012). *Rise of the videogame zinesters: How freaks, normals, amateurs, artists, dreamers, dropouts, queers, housewives, and people like you are taking an art form back*. New York, NY: Seven Stories Press.

Anna Anthropy calls for more people to make videogames in order to broaden the perspectives communicated through videogames and thus push against the exclusive nature of current videogame culture. She argues that the current videogames scene, and the history that has led to it, is highly dominated by a small group of people – educated men who have grown up playing games and then decided to become game designers. Because of this, most games communicate stories and experiences from that male perspective. Thus games lack diversity. Since games are particularly good at exploring dynamics, relationships, and systems, Anthropy defines games as “an experience created by rules” (pp. 43–46). The player must play the game in order for it to take place; thus, it is through the player’s interaction with the rules that it becomes a game. Based on this requirement for interaction, the game creator tells stories not just through the content, but also through the design and the system of the game. Highly personal, complex stories can be told in this way, which is why Anthropy highlights the importance of bringing in more perspectives. In order to facilitate this, Anthropy describes different forms of hacking, modding, and game development that do not require any coding knowledge or particular design skills. Game design tools are becoming increasingly available and accessible for wider audiences. Thus Anthropy calls for the rise of videogame zinesters – hobbyists, makers, and players who express their stories in the form of videogames.

Bjork, S., & Holopainen, J. (2005). *Patterns in game design*. Hingham, MA: Charles River Media.

Staffan Bjork and **Jussi Holopainen** outline an approach to game design that considers elements of games as game design patterns that can be analyzed and applied. This toolset offers game designers and scholars a language to talk about the elements of gameplay, which is currently lacking. The book is organized into types of game design patterns. Bjork and Holopainen explain that design patterns are useful for analytical purposes of existing games or prototypes and for game design during the creation of games, since they can help at the stage of idea generation and structure the development of game concepts. The authors aim to construct a language based on interactions, rather than narratology, which has been common in game studies in the past and has used concepts from narrative fields like film, theatre, and literature.

Bogost, I. (2011). *How to do things with videogames*. Minneapolis, MN: University of Minnesota Press.

Ian Bogost provides an overview of the many different applications of videogames. He demonstrates that combinations of applications reveal that the medium of videogames is much broader, richer, and more relevant than generally acknowledged. The extensive scope of videogames indicates that they should not be simplified and regarded as a medium for leisure or productivity, but recognized as a medium that offers a wide range of potential uses.

Caillois, R. (2001). *Man, play, and games*. Chicago, IL: University of Illinois Press.

Roger Caillois' influential book, *Man, Play, and Games*, assesses social practices as rule-bound games that serve to limit freer forms of play within cultures. Structures of games culturally acknowledged as such (e.g., chess) derive from outmoded social practices. Caillois' work has been particularly significant in defining play and games. He defines gameplay as that which is free, separate, uncertain, unproductive, governed by rules, and make-believe. Furthermore, Caillois argues that all games contain one or a combination of the following categories: *agon* (competition), *alea* (chance), *mimicry* (simulation), and *ilinx* (vertigo). The distinction between *paidia*, which is "active, tumultuous, exuberant, and spontaneous," and *ludus*, which represents "calculation, contrivance, and subordination to rule" (p. x), is still used frequently by game scholars.

Deterding, S. (2012). Gamification: Designing for motivation. *Interactions*, 19(4), 14–17.

This forum in *Interactions* offers multiple perspectives relevant in the discourse on gamification by **Sebastian Deterding**, **Judd Antin**, **Elizabeth Lawley**, and **Rajat Paharia**. Antin asserts that online gamification participants do not work for free but are paid with good feelings. Gamification mechanisms such as badges have a bad reputation, not because they do not work, but because they are frequently implemented inappropriately for the audience and purpose of a particular site or environment. As Lawley points out, successful gamification applies to game design, not solely game components. The forum urges practitioners to recognize the value of gamification beyond the stock features commonly implemented.

Ferrara, J. (2012). *Playful design: Creating game experiences in everyday interfaces*. Brooklyn, NY: Rosenfeld.

John Ferrara structures his book as a guide for UX designers to apply game design as part of their approach. While critical of the buzz around gamification and the imprecise application of the term, Ferrara stresses that game design approaches can be highly successful if focused on the player experience. The book offers an extensive and insightful overview introducing the reader to game-design approaches that may be relevant to general UX design. The first section, “Playful Thinking,” explains the ways in which games can be effective when applied to the everyday or the real world, defines games and their relation to everyday experiences, and outlines aspects of player experience and player motivation. “Designing Game Experiences” addresses more practical aspects of building user experiences based on game-design approaches. This section outlines tips for building game concepts, creating prototypes, play testing, behavioural tools, and the potential of rewards in games. The final section, “Playful Design in User Experience,” looks in more detail at how games can be used as methods for action, learning, and persuasion in the everyday. Ferrara concludes with speculations on future trends.

Gamification Wiki. Gamification. URL: <http://gamification.org>.

This wiki offers an array of resources related to gamification and game mechanics. The wiki contains general information on gamification as well as links to books, examples, presentations, and videos. Specific areas of gamification include education, marketing, government, social good, and design.

Høgenhaug, P.S. (2012). Gamification and UX: Where users win or lose. *Smashing Magazine*. URL: <http://uxdesign.smashingmagazine.com/2012/04/26/gamification-ux-users-win-lose>.

Peter Høgenhaug outlines the ways in which gamification can improve the user experience of websites and applications. Høgenhaug begins by defining four key actions that comprise games: play, pretending, rules, and goals. Practitioners who plan to use gamification should not consider it an add-on but include it in the design process itself. Game models and approaches that work well in UX design include tangible user interfaces, constructive and helpful feedback, storytelling, and Easter eggs. Gamification should not be overused, but rather considered a tool to improve user experience by complementing the content and structure of a site or app. Høgenhaug also suggests what to avoid when using gamification.

Kim, B. (2012). Harnessing the power of game dynamics: Why, how to, and how not to gamify the library experience. *College & Research Libraries News*, 73(8), 465–69.

Bohyun Kim acknowledges that gamification of the library experience is becoming increasingly common in academic libraries. She recognizes the strengths of gamification in terms of motivation, engagement, and increased achievements of tasks toward a goal. Kim also outlines tactical opportunities as well as approaches to avoid when gamifying the library experience.

Liu, Y., Alexandrova, T., & Nakajima, T. (2011). Gamifying intelligent environments. *Proceedings of the 2011 International ACM Workshop on Ubiquitous Meta User Interfaces (Ubi-MUI '11)*, 7–12. New York, NY: Association of Computing Machinery.

Yefeng Liu, Todorka Alexandrova, and Tatsuo Nakajima review the ways in which digital designers apply gamification methods in the design of intelligent environments in order to improve user engagement. They provide two case studies to determine the effectiveness of this approach (a crowdsourcing application called UbiAsk and a persuasive application to reduce CO₂ emissions called EcoIsland). The authors conclude that gamification approaches are only effective in driving participation when they are implemented as additional components supporting an otherwise functioning app or environment, and that game-actions must be initiated by a deeper game structure throughout the environment.

McGonigal, J. (2008). The engagement economy: The future of massively scaled collaboration and participation. In J. Hemerly & L. Mumbach (Eds.), *The institute for the future*. Palo Alto, CA: Technology Horizons Program. URL: http://www.iftf.org/uploads/media/Engagement_Economy_sm_o.pdf.

Jane McGonigal contends that the current economy of engagement is no longer just about competing for attention, but about engagement based on interaction and contribution by users. She claims that innovative organizations need to tackle the challenge of “participation bandwidth” and ought to learn “from the world of play” to do so (p. 2). McGonigal explains that the digital environment contains more and more mass-collaboration and crowdsourcing platforms and networks, which makes it increasingly difficult to encourage and maintain engagement. She asserts that gaming approaches can help to optimize participation bandwidth because of the importance of emotional incentives in today’s social mindset. McGonigal infers that designing for positive emotional goals will keep users of all levels of participation more engaged. Finally, she suggests that the most effective way of ensuring a continuous engagement lifecycle is to structure platforms that “empower the community to invent their own tasks” (p. 18).

Play the past. [Website]. URL: <http://www.playthepast.org>.

Play the Past is a collaboratively authored and edited website that looks at the intersections between cultural heritage and games (not just digital games, but all kinds of games). The authors write about diverse topics related to culture and games, including theoretical approaches, philosophical reflections, and practical considerations.

Salen, K., & Zimmerman, E. (2003). *Rules of play: Game design fundamentals*. Cambridge, MA: MIT Press.

Katie Salen and Eric Zimmerman’s seminal text on games and game design offers an analysis of games as designed systems and outlines key concepts for the creation of games, thus establishing a critical discourse for game design. The book begins by defining core concepts, such as play, games, design, systems, and interactivity. As the authors explain, all games have rules, and the rules of a game are what distinguish it from other games. Thus, players accept

the rules and limitations defined by a particular game when they play it. The second section of the book looks at game rules in detail by defining rules, explaining different rule levels, and looking at various rule systems. The next section looks at another key component of game design: play. As Salen and Zimmerman note, “the play of a game is the experiential aspect of a game. Play in a game occurs as the game rules are set into motion and experienced by the players” (p. 311). The book outlines three phenomena of play behaviour (gameplay, ludic activities, and being playful) and then walks the reader through the details of different categories of play type. The final component of game design that the book looks at is culture. Salen and Zimmerman outline the social relationships, player roles, and community aspects of gameplay as well as the structure, environment, and social contracts that are required for the culture of a game to flourish.

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3. Social Knowledge Creation Tools: A Selected Annotated Bibliography

Alyssa Arbuckle, Nina Belojevic, Shaun Wong, & Derek Siemens, with Ray Siemens
& the INKE and ETCL Research Groups

INTRODUCTION

The methods and channels for social knowledge creation proliferate alongside an increasingly networked world. Individuals, corporations, academic organizations, and others have all developed and employed tools of varying usefulness and relevance for social knowledge creation. The following selected annotated bibliography outlines a brief scan of current digital social knowledge creation tools. By collecting these diverse tools into a single compiled list, we attempt to describe the breadth of social knowledge creation applications and services available. From the commercial to the open source, the proprietary to the freely available, these tools all contribute to social knowledge creation in the digital sphere at large.

Certain resources included here remain specific to the digital humanities community, while many other examples fall outside of that delineated space. Frequently, the latter can be applied or repurposed to cater to the former. With this potential usage in mind, we include selections that may appear less relevant than others at first glance. Theoretically, an abundance of digital applications and services could be classified as social knowledge creation tools. In order to present a manageable amount of relevant information, we have sought after and divided the selections of this annotated bibliography into 5 categories of 56 individual entries:

1. Collaborative Annotation
2. User-derived Content
3. Folksonomy Tagging
4. Community Bibliography
5. Shared Text Analysis
6. Complete Alphabetical List of Selections

Of note, we have only included tools that are active at the time of writing. The temporal nature of the Internet dictates that many of these tools will eventually become obsolete. As such, instead of envisioning this annotated bibliography as an authoritative, static list, we encourage readers to consider the included selections as an archival snapshot of current social knowledge creation tools. We hope that this list might serve as a representative of early twenty-first-century social knowledge creation tools, even as they morph and change with Internet trends and technology.

The outlined five sections intentionally complement each other, and often a multipurpose or easily extensible entry may relate to multiple categories. While some of the tools are purposefully dedicated to social knowledge creation, others can be applied for use in a social knowledge creation context or else can be hacked or repurposed to serve social knowledge creation ends. The first section, "Collaborative Annotation," features tools that facilitate multi-participant annotation of a shared document, image, or other digital artifact. "User-derived Content," the second constellation of entries, comprises tools and services that foster the development of user content. The third section, "Folksonomy Tagging," includes tools and services for

folksonomy development via content producer and consumer tagging. “Community Bibliography” describes tools and applications that enable collaborative and shared cataloguing and reference management. The final section of the bibliography, “Shared Text Analysis,” outlines Web-based tools designed for collaborative text analysis and visualization. As well, a complete alphabetical list of all the entries follows the final section.

This annotated bibliography of social knowledge creation tools is intended to complement two other lengthier, more literature-focused annotated bibliographies: “Social Knowledge Creation and Conveyance” (Arbuckle with Belojevic, Siemens, Wong, INKE Research Group, & ETCL Research Group) and “Game-Design Models for Digital Social Knowledge Creation” (Belojevic with Arbuckle, Hiebert, Siemens, Wong, Christie, Saklofske, Sayers, INKE Research Group, & ETCL Research Group). Taken together, these three resources provide an environmental scan of current academic, para-academic, and non-academic instantiations and explorations of social knowledge creation. Readers interested in examining the field will benefit from perusing this bibliography in the context of the others, as together they form a comprehensive tripartite research structure.

As social knowledge creation and the digital environment become increasingly intertwined, it is important to examine who is involved in the shaping of this field, and how. Ideally, the reader of this annotated bibliography will benefit from the breadth and depth of selected tools, services, and applications. This bibliography intends to provide a useful resource for the active study, participation, and instigation of social knowledge creation.

COLLABORATIVE ANNOTATION

Annotation is pivotal to scholarly research and production. Remediating annotation practices has been a pressing concern as an increasing amount of scholarly resources and projects move into the online sphere. Furthermore, the rise of social knowledge creation practices has encouraged the active development of collaborative annotation – the practice of annotating a document along with a group of online collaborators. Of course, there is no one right way to engage in collaborative annotation. This practice is also not limited to the academy; in fact, collaborative annotation tools have been largely taken up in the project management and business world, where many teams jointly develop and comment on documents or prototypes. The following 16 tools have been selected based on their relevance, usability, portability, and overall ability to instigate social knowledge creation via shared annotation. Although the predominant focus of this section remains concerned with how collaborative annotation can induce social knowledge creation in the scholarly community, tools that broach various communities and can be applied broadly perhaps present the most interesting opportunities for initiating truly social knowledge creation.

Brooke, J., & Hammond, A. (n.d.). *He Do the Police in Different Voices*. URL: <http://hedothepolice.org> .

The website **He Do the Police in Different Voices** was specifically created for the exploration of T.S. Eliot’s notoriously complex poem, “The Waste Land.” So far only used in a classroom setting, He Do the Police in Different Voices

encourages students to annotate “The Waste Land” for voice. He Do the Police in Different Voices incorporates versions of “The Waste Land” that have already been marked up for voice and automated through an algorithm. Although this website is not a tool, per se, it does demonstrate the various ways collaborative annotation can instigate social knowledge creation; in this case, new insights and explorations are garnered by focusing group work on a shared text.

Diigo. (2012). URL: <https://www.diigo.com> .

Diigo professes to specifically focus on enhancing e-reading. Diigo performs this mandate in a number of ways, and may be best conceived of as a platform for collecting and managing research (including text, bookmarks, images, and documents). Diigo enables a variety of online practices, from social bookmarking, to comprehensive search, to multi-user annotation. This service’s strength lies in its double role as collaborative research tool and social knowledge-sharing site. Users can perform their own research and use Diigo to manage and facilitate those practices, but they can also engage with other users via the built-in social network and repository of shared bookmarks. In this way, Diigo encourages social knowledge by both taking the individual’s needs and desires seriously and providing an online forum for inter-user interaction.

Evernote. (2013). URL: <http://evernote.com> .

Evernote is a platform for capturing and archiving digital content. Applicable content includes formatted text, Web pages, images, audio, and handwritten text. In the tool, every individual file or document becomes a note, and these notes can be easily shared, organized, and archived. Although primarily geared toward individual research and project management, Evernote can easily facilitate collaborative work through sharing practices.

FilteredPush. (2013). URL: <http://wiki.filteredpush.org/wiki/FilteredPush> .

FilteredPush is a project to develop an annotation network across multiple remote sites. Ideally, the network encourages the development of annotations to be held in respective collections. FilteredPush’s goal is to create a cross-institutional infrastructure specifically for biologists, in order to make it easier to share and manage digitized natural history collections data.

Glass, G. (n.d.). *Marginalia*. URL: <http://webmarginalia.net> .

Although **Marginalia** could feasibly be adopted for other endeavours, it was primarily designed with education, collaboration, and online discussion in mind. As a web annotation system, Marginalia integrates with learning management systems like Moodle. Marginalia acts as both a straightforward tool for personal and collaborative annotation as well as a more comprehensive forum for discussion. Of note, this tool is open source.

Google. (2013). *Google Drive*. URL: <https://drive.google.com> .

Google Drive is a browser-based application for document storage, creation, and sharing online. Over 30 file types can be saved, and common file types

(documents, presentations, spreadsheets) can be created in the Google Drive environment. In addition to allowing users to develop and save files online, Google Drive also makes collaboration easy, as it enables multiple users to chat, comment, and work on the same document simultaneously. The documents also contain a versioning system for users to revert to previous versions or view specific changes.

Haystack & Massachusetts Institute of Technology. (n.d.). *nb*. URL: <http://nb.mit.edu> .

A web-based annotation tool and service designed for online discussion, **nb** was initially conceived for use in an educational context. It can be used to collaboratively write, share, and respond to annotations in PDF files. To date, nb has been used primarily in Massachusetts Institute of Technology classroom settings.

HBR Labs. (2008–2011). *ShowDocument*. URL: <http://www.showdocument.com> .

ShowDocument aims to encourage efficient online collaboration. ShowDocument incorporates tools like document sharing, collaborative annotation, web meetings, and shared whiteboards. The service also includes translation, map sharing, and voice, video, and chat abilities. Although ShowDocument is distinctly geared toward increasing productivity for businesses, this service clearly facilitates social knowledge creation in specific, predetermined environments.

Massachusetts General Hospital. (2013). *Domeo*. URL: <http://www.annotationframework.org> .

Domeo was developed to encourage social knowledge creation through shared annotation practices. Domeo is an extensible Web application for creating and sharing ontology-based annotations on HTML or XML documents. Domeo facilitates sharing through the Annotation Ontology (AO) RDF framework. Notably, Domeo supports fully automated, semi-automated, and manual annotation, as well as both personal and community annotation with access authorization and control.

Open Knowledge Foundation. (n.d.). *TEXTUS*. URL: <http://textusproject.org> .

TEXTUS is an open source platform that aims to encourage online discussion and enhance professional reading environments. More specifically, this service was designed for students, researchers, and teachers to collaboratively work with texts. With TEXTUS, users can individually or collaboratively annotate texts as well as view others' annotations.

Open Knowledge Foundation. (2009–2012). *AnnotateIt/Annotator*. URL: <http://annotateit.org> .

AnnotateIt is an effective and easy-to-use Web annotator system. AnnotateIt comprises the JavaScript tool Annotator and a bookmarklet that allows for annotation of any website (the annotations themselves are saved to AnnotateIt). When Annotator has already been loaded into a Web page, users may annotate or comment on various elements in the page. User annotations may contain tags, markdown content, and individual permissions per annotation. Furthermore, the Open Knowledge Foundation designed

Annotator to be easily extendible in order to potentially include more behaviours or features.

Protonotes. (2008). URL: <http://www.protonotes.com> .

Protonotes is a simple, straightforward collaborative annotation tool for prototype development. Protonotes enables the direct addition of notes onto a prototype, for the purpose of collaborative development. It is free to use and simply requires installing a JavaScript library into the desired prototype. When the installation is complete, anyone who visits the prototype may view, add, edit, or delete notes.

Sopinspace. (2010). *co-ment*. URL: <http://www.co-ment.com> .

co-ment is a Web service for viewing, creating, and interacting with annotations. With co-ment, a user may upload or create texts online, invite designated users to comment on files, and revise drafts. According to its website, co-ment is “the reference Web service for submitting texts to comments and annotations.” Via an API, one can create plugins for multiple content management systems and platforms. Notably, co-ment is open source and Web-based.

Tegea, E.A. (n.d.). *Digress.it*. URL: <http://digress.it> .

Digress.it attempts to alter e-reading practices by facilitating vertical, right-side commenting on online documents. By shifting the comment space from the more conventional blog style, where comments appear below the post, to side-by-side text and commentary, Digress.it aims to facilitate greater engagement in online reading environments. In this way, Digress.it strives to emulate the long-standing textual ritual of marginalia. Digress.it is a WordPress plugin and thus primarily intended for use on WordPress blogs and sites. Of note, Digress.it developed from the Institute for the Future of the Book's CommentPress project. The tool is also open source and free.

Textensor. (2013). *A.nnotate*. URL: <http://a.nnotate.com/index.html> .

As a browser-based tool, **A.nnotate** allows users to privately or publicly annotate and index documents, images, and snapshots of Web pages. In this way, A.nnotate can be used by an individual as a personal indexing tool or by a group to collaboratively comment on a shared document. A.nnotate facilitates further document management practices, including reviewing drafts, compiling corrections for revision, and noting passages for future reference.

Zurb. (2011–2013). Bounce. URL: <http://www.bounceapp.com> .

Bounce attempts to improve prototype development via an open, shared feedback structure. As a ZURBapp, Bounce was created to facilitate productive, collaborative design work. Specifically, Bounce was designed for colleagues to provide each other feedback on ongoing projects. Users can upload an image or submit a URL and comment directly onto this file. In the framework of collaborative annotation, Bounce could ostensibly be used to easily share basic notations on a shared document. One may also copy and paste a Bounce-generated URL for dissemination after commenting on a page.

USER-DERIVED CONTENT

Online repositories that encourage the production of user-derived content showcase the breadth of and possibilities for social knowledge creation in the digital realm. Although users (read: individuals) have been generating content (read: interacting, making artifacts, sharing experiences) for centuries, the Internet has provoked the creation of vastly popular, widespread, and specifically delineated spaces for presenting this content. Issues arise as this content is farmed or otherwise exploited by corporations, many of whom actively promote the creation of user-generated or user-derived content. The tools and services highlighted here tend to differ from their more boldly capitalist digital brethren. The 11 selections comprise exhibits, databases, networks, and game-based credential systems that facilitate social knowledge production by the very nature of their form. Many of these tools are for use in an academic or otherwise educational context. Often, these tools and services both enable users to generate content and to manipulate, catalogue, visualize or otherwise engage with their own and others' content.

Citizen Cyberscience Centre & Open Knowledge Foundation. (2013). *PyBossa*. URL: <http://dev.pybossa.com> .

An open source platform, **PyBossa** enables the creation of web applications for individuals to participate in and submit content to. More specifically, PyBossa is a micro-tasking platform that utilizes crowdsourcing in order to carry out small, user-derived tasks and contributions. To date, crowdcrafting (crowdcrafting.org) remains the most notable project developed on PyBossa.

Credly. (2012–2013). *BadgeOS*. URL: <http://badgeos.org/badgestack> .

Badge Stack is a free WordPress plugin that facilitates the creation of reward- or achievement-based environments. Using Badge Stack, organizations and individuals alike can create sites that incorporate the currently popular practices of structuring digital activities in a game-inspired manner. Sites based on Badge Stack indicate activities and successes by including rewards and credentials in the form of levels, quests, achievements, and badges. Badge Stack uses the widely recognized credential system from Mozilla Badges. All badges and credentials are also shareable by integrating with Facebook, Twitter, LinkedIn, blogs, and even individuals' resumes.

Gruzd, A. (2006–2013). *Netlytic*. URL: <http://netlytic.org> .

Netlytic detects and expresses innate social networks of online participants based on user's digital tracks. Netlytic is a Web-based social network analysis tool for summarizing large amounts of text and discovering social networks from electronic communication, including emails, forums, blogs, chats, Youtube, and Twitter. This tool allows a user to either capture or import relevant online data and analyze said data for emergent themes, trends, and relationships. Furthermore, with Netlytic, users can visualize these communication networks.

IBM. (2007, 2010). *Many Eyes*. URL: <http://www-958.ibm.com/software/analytics/manyeyes> .

Many Eyes is predicated on the importance and potency of visual literacy, presentation, and analysis. This tool requires users to upload large data sets for experimentation with visualization practices. Many Eyes has been designed in order to facilitate the research of social data visualization; specifically, how alternate design and data visualization may affect knowledge creation.

Insemtives. (2009–2013). *INSEMTIVES*. URL: <http://insemtives.eu> .

This suite of tools focuses on the creation of semantic content via incentive-based gaming environments. **INSEMTIVES** aims to bridge the gap between machine-readable computational data and the necessary limitations of automating semantic content creation tasks. By providing incentives, INSEMTIVES attempts to inspire individuals to manually create, extend, or revise semantic content. This tool is geared toward social knowledge creation through user-generated content and participation.

Jacoby, J.J. (2013). *BuddyPress*. URL: <http://buddypress.org> .

BuddyPress is a social network tool built off of its parent project, WordPress. With BuddyPress, a user can instigate a social network customized for various purposes or communities. In this way, BuddyPress actively constructs a framework for social knowledge creation. Of note, BuddyPress is open source, easily extensible, and provides a range of features.

Mideast Youth. (2013). *CrowdVoice*. URL: <http://crowdvoice.org> .

CrowdVoice is an overtly political Web service that harnesses crowdsourcing to track and provide updates on protests around the world. CrowdVoice allows protesters to share information, images, video, links, and updates of events. In this way, CrowdVoice offers an alternative to standard news outlets and draws attention to corruption, violence, uprisings, and revolutions as they occur. This project is not open source due to risk of persecution for involvement with or contribution to the site. CrowdVoice is an exemplary instance of how user-derived content can foster social knowledge creation and even, perhaps, social change.

Mozilla. (n.d.). *Open Badges*. URL: <http://openbadges.org> .

Mozilla's **Open Badges** is an alternative credential-granting system designed for the public recognition of non-conventional learning and success. Broadly articulated as a democratizing service, Open Badges allows various organizations to accredit their participants within a recognizable system. In an era of massive open online courses (MOOCs) and citizen scholars, Open Badges embodies the ethos of the decentralized network of contemporary learning, accreditation, and social knowledge creation.

Open Knowledge Foundation. (n.d). *CKAN*. URL: <http://ckan.org> .

Employed by various government catalogues, **CKAN** is both a Web-based data portal and data management system. CKAN supports data publishers (governments, data providers) with services to publish data through a guided

process, customize metadata and branding, manage versions, access user analytics, and store data. As a data portal, CKAN encourages data users (researchers, journalists, programmers, NGOs, citizens) to build extensions, search and tag data sets, engage in a social network, and access metadata and APIs. CKAN's dual role induces social knowledge creation through both user-generated and user-manipulated content. Notably, CKAN is completely open source and easily customizable.

Roy Rosenzweig Center for History and New Media. (2007–2013). *Omeka*. URL: <http://omeka.org>.

Omeka represents a prime example of social knowledge creation through user-driven or user-generated content. Omeka is an open source content management system designed for displaying online digital collections of scholarly editions and cultural heritage artifacts. As well, this content management system acts as a collections management tool and an archival digital collection system, allowing for productive scholarly and non-scholarly exhibitions to develop. Omeka includes an extensive list of features aimed at scholars, museum professionals, librarians, archivists, educators, and other enthusiasts.

Transliterations Project. (2012). *RoSE*. URL: <http://rose.english.ucsb.edu>.

RoSE aims to foster a more networked, holistic environment for humanities research, scholarship, and practices. By combining farmed information from Project Gutenberg and Yago with user-generated content, RoSE methodically constructs a social network of collaborators, authors, movements, and works. These relationships are visualized either as a social network graph or in a packed radial style. In this way, users can both contribute to and benefit from the linking of various individuals and texts.

FOLKSONOMY TAGGING

Through folksonomy or social tagging practices, individuals can add metadata to artifacts for their own or others' searching and indexing benefit. Folksonomy tagging creates an infrastructure of navigable digital images, texts, videos, and sites. Folksonomy tagging provokes social knowledge creation by supplying the tools to efficiently access and otherwise manipulate user-generated content. Although folksonomy tagging is most common on social networks, the following annotated bibliography includes seven diverse selections that range from predominantly social media sites, to digital bookmarking applications, to community commerce spaces. The variance between entries speaks to the many ways that folksonomy tagging can be used to foster social knowledge creation.

Association for Computers and the Humanities. (n.d.). *Digital Humanities Questions & Answers*. URL: <http://digitalhumanities.org/answers>.

Digital Humanities Questions & Answers, known simply as **DHAnswers**, is an online question and answer board for digital humanities practitioners. Questions are appropriately tagged, thus creating a collection of tags for others to navigate and ideally find answers to their own questions. DHAnswers provides an excellent example of how folksonomy tagging can be harnessed by

a specific community in order to foster social knowledge creation on a predetermined subject.

AVOS. (2013). *Delicious*. URL: <https://delicious.com> .

Delicious is primarily a social bookmarking site. Users can bookmark various links, websites, or articles on the Internet and share these bookmarks with other Delicious users. Although the default setting is public sharing, users can choose to archive bookmarks privately. Folksonomy develops on Delicious as users tag their selected bookmarks with any desirable metadata terms. Delicious facilitates knowledge creation through a purposefully social environment.

Etsy. (2013). *Etsy*. URL: <http://www.etsy.com> .

Etsy is a large online community wherein users can set up online stores and sell vintage or hand-crafted goods. Sellers employ folksonomy tagging to market their goods, and buyers use the same practice to create an archive of desired (or desirable) products. In this way, Etsy users contribute to social knowledge creation by actively indexing and cataloguing their own and each other's content.

Huffman, S., & Ohanian, A. (2005–2013). *Reddit*. URL: <http://www.reddit.com> .

As a popular social news site, **Reddit** induces users to tag and submit content. The hierarchy of posts on the front page of the site (as well as the other pages on the site) is decided by a ranking system predicated on both date of submission and voting by other users. Reddit exemplifies social knowledge creation via folksonomy tagging in a social network environment. Notably, the news site is also open source.

Pinterest. (2013). *Pinterest*. URL: <http://pinterest.com> .

Pinterest merges folksonomy tagging, inspiration boards, and a classic social network framework. A Web-based application, Pinterest encourages sharing through “pinning” or posting image or video collections to a user's pinboard or page. Pins can be freely shared and circulated, multiple users can pin on the same board, and users can follow other users' boards. Notably, boards can be public or private depending on user preferences.

StumbleUpon. (2013). *StumbleUpon*. URL: <http://www.stumbleupon.com> .

StumbleUpon is a discovery search engine that finds and recommends content based on personal user interests. In this way, users may discover new content based on their already-asserted interests. In order to keep the system running, users are encouraged to rate content while they review it, as peer-sourcing functions determine relevant content. Through collaborative filtering and folksonomy tagging, the system organizes and culls user opinions. Notably, StumbleUpon also functions as a social network.

Yahoo! (2013). *Flickr*. URL: <http://www.flickr.com> .

At the time of writing, **Flickr** boasts over 8 billion images and 70 million photographers or active content uploaders on their site. Flickr relies heavily on

folksonomy tagging to bolster its community and induce cross-community media sharing. Users can tag their uploaded photos in order to promote sharing, as well as take advantage of personal indexing capacities by tagging other's images. Notably, institutions like the White House and NASA also maintain their own Flickr streams.

COMMUNITY BIBLIOGRAPHY

A variety of cataloguing and reference management systems and resources have been developed to aid scholars in the creation, organization, application, and publication of bibliographies. Listed below is a selection of 15 browser-based, desktop, and command-line tools. In addition to providing means to a more efficient workflow process through simple import and export functions, many of these tools also allow for easier methods of publication or creation of online exhibits. We expand the concept of community bibliography to include comprehensive code repositories, pivotal as they are for organizing, accessing, and harnessing contemporary social knowledge creation. Online reference management and social bookmarking systems are increasingly structured as social networks or in ways that encourage collaboration by allowing for shared lists, libraries, notes, and discussion forums. Many tools also offer tagging functions in a folksonomy style to allow for higher searchability and dynamic recommendations of sources based on similar users. The majority of tools listed in this section target an academic audience, with certain selections geared toward humanities scholars and others toward scientists.

Apache. (2011). *Subversion*. URL: <http://subversion.apache.org> .

Subversion is an open source, centralized software versioning and revision control system. Unlike GitHub, another version control tool, Subversion is one repository with a lot of clients (in GitHub each user has their own local repository and publicizes changes to a centralized repository when desired). As an Apache product, Subversion works under an open source ethos and facilitates social knowledge creation through this attitude.

DEVONtechnologies. (n.d.). *DEVONthink*. URL: <http://www.devontechnologies.com/products/devonthink/overview.html> .

DEVONthink is a proprietary solution created by DEVONtechnologies. It allows users to save and organize documents in one program on their local drive. DEVONthink automatically files and connects related documents, and promotes sharing by enabling users to store their database on a local network or online. Users can also create a bibliographic record for each entry that is then indexed in DEVONthink along with the file.

Dice. (2013). *SourceForge*. URL: <http://sourceforge.net> .

SourceForge is a Web-based source code repository comprising a suite of tools dedicated to facilitating open source software development and dissemination. SourceForge resources include version control, integrated issue tracking, threaded discussion forums, documentation, download statistics, a code repository, and an open source directory. SourceForge induces social knowledge creation by hosting and indexing open source projects and

providing easy access to these projects for the community at large. Notably, SourceForge was the first service to offer free hosting for open source projects.

Drupal. (2013). *Bibliography Module*. URL: <http://drupal.org/project/biblio> .

Bibliography Module, also known as **Drupal Scholar**, is a Drupal module that enables users to manage and present lists of scholarly publications on Drupal sites using a variety of import and export formats (BibTeX, EndNote, MARC, and more). Output is available in most major citation styles and allows for in-line citing of references. Bibliography Module also includes taxonomy integration that allows for higher searchability.

GitHub. (2013). *GitHub*. URL: <https://github.com> .

As a code repository, **GitHub** is predicated on transparent and hierarchical project management and organization. GitHub facilitates effective version control by backing up code for a project; allowing collaborative annotation or commenting on lines of code; providing varying levels of access for different team members; hosting unlimited collaborators; and supplying integrated issue tracking. Repositories can be private (secured, limited access) or public (open for community collaboration). GitHub is an exemplary instance of a collaborative project management and indexing tool specifically geared toward digital endeavours.

Kaps, J.-P. (2003–2009). *Document Database*. URL: <http://docdb.sourceforge.net> .

Document Database is an open source PHP database. This database is written modularly and able to run on users' Web servers and with other databases. Document Database can be managed by multiple administrators and users, and employs BibTeX format. It also allows for various search functions, query types, note sharing, display of user statistics, and uploading and publishing capabilities. Moreover, Document Database includes an agenda management system that associates events and meetings to specific documents.

KDE group at the University of Kassel, DMIR group at the University of Würzburg, & L3S Research Center. (n.d). *BibSonomy*. URL: <http://www.bibsonomy.org> .

BibSonomy is a social bookmarking and publication-sharing system geared to the management of lists of literature. Users can store and organize resources in a public framework and tag entries with descriptive, user-determined terms. All publications are stored in BibTeX format and can be exported in a variety of ways, including EndNote and HTML.

Massachusetts Institute of Technology. (2008). *Citeline*. URL: <http://citeline.mit.edu> .

Citeline allows users to import bibliographies using BibTeX and publish them in the form of an online exhibit. In this way, users may easily create shareable, interactive bibliography exhibits. Users may also select from different background styles for the visual design of their bibliography exhibit.

Mendeley. (2013). *Mendeley*. URL: <http://dev.mendeley.com> .

Mendeley functions as a free reference management system and an academic social network. Users can generate bibliographies, collaborate with other users,

and import resources. The program can be accessed online and as a desktop, iPhone, or iPad application. While the standard tool is free and provides users with two gigabytes of Web storage space, additional storage can be purchased. The tool also includes a PDF viewer where users can add notes and highlight text. Citations can be exported as BibTeX and into several word processors. The social networking features include newsfeeds, comments, and profile pages. User statistics about papers, authors, and publications may also be viewed.

New Zealand Digital Library Project. (2005–2007). *Greenstone Digital Library Software*. URL: <http://www.greenstone.org> .

Greenstone is an open source software suite for creating and publishing digital library collections online. The software includes command-line tools as well as a graphical Greenstone Librarians Interface for users to build collections and assign metadata. User plugins enable the import of various digital document formats (including text, html, jpg, mp3, and video).

Open Knowledge Foundation. (2011). *BibServer*. URL: <http://bibserver.org> .

BibServer is open source software that allows for large bibliographic collections managed on tools such as Zotero, Bibsonomy, or Mendeley to be published and shared on the Web through a RESTful API and JSON format. The tool allows for collections to be customized and structured using filters. BibServer also offers a variety of visualization options, such as bar charts and bubbles.

Oversity. (2006). *CiteULike*. URL: <http://www.citeulike.org> .

CiteULike is a free online social bookmarking service for scholarly research. Users can search and discover resources, receive automatic article recommendations, share references, view what others are reading, and store and search a repository of PDFs. CiteULike is structured as a folksonomy, allowing users to tag references and thus organize their libraries. In addition to adding tags, users can also comment on and rate resources. Citation information can be automatically imported from a number of popular databases, such as JSTOR and arXiv, and citations can also be imported or adjusted manually, or else transferred to another reference management systems (e.g., End Note or Zotero).

Roy Rosenzweig Center for History and New Media. (n.d.). *Zotero*. URL: <http://www.zotero.org> .

Zotero is an open source reference management system for users to store citations and other content in a variety of file formats. Most library catalogues and common online research environments contain Zotero links, and Zotero integrates with word processors and other writing environments (e.g., email and Google Drive), making it easy to save reference information while working. Users can also assign tags to library items and organize research into collections and subcollections. The tool functions and automatically synchronizes across multiple devices and Web browsers. One of the capabilities that differentiates Zotero is the ability to create topical research

groups that can house shared libraries, notes, and discussions, offering a collaborative research environment.

University of Southampton. (2011–2012). *EPrints*. URL: <http://www.eprints.org> .

EPrints is open source software for creating open access repositories. It is a command-line application written in Perl. The database repository can be controlled using HTML, CSS, and inline images. EPrints allows for metadata harvesting and is most commonly used for institutional repositories and scientific journals. The software allows for data importing and exporting, object conversion for search engine indexing, and various user interface widgets.

WIKINDX. (2013). *WIKINDX*. URL: <http://wikindx.sourceforge.net> .

WIKINDX is a free online bibliography as well as a quotation and note management system. It allows for collaborative use of and contributions to bibliographic data, while also providing features for users to add notes, quotations, and articles. The tool thus functions as reference management software and as a collaborative writing environment. WIKINDX includes search functionalities, allows for attachments to bibliographic resources, exports into most major data and citation styles, and offers customizable plugins.

SHARED TEXT ANALYSIS

Increasingly, literary scholars recognize computer-aided text analysis as a relevant method for humanities work. Additionally, a growing number of online tools create new opportunities for sharing and collaborating during the text-analysis process. This section outlines seven Web-based tools and applications that supplement scholarly work in the realms of textual analysis, text comparison, annotation, markup, tagging, and visualization. The online nature of the tools makes collaborative work easier for textual scholars, as multiple users can view, access, and work on the same texts.

Baron, A. (2008–2010). *VARD 2*. URL: <http://www.comp.lancs.ac.uk/~barona/vard2> .

VARD 2 is interactive software that permits users to identify and replace spelling variations in historical texts, primarily early modern English texts. Spelling variations can be adjusted manually, replaced automatically, or defined semi-automatically by manually training the tool.

Northwestern University. (2004–2011). *WordHoard*. URL: <http://wordhoard.northwestern.edu/userman/index.html> .

WordHoard is a free Java application developed by Northwestern University. It enables tagging and annotations of large texts or transcribed speech. Currently, WordHoard is aimed toward early Greek epics and early modern English plays, but also includes texts by Chaucer and others. WordHoard allows users to easily annotate and analyze texts by looking at word frequency, lemmatization, and text comparison, or else by applying custom queries.

President and Fellows of Harvard College. (2011). *Highbrow*. URL: <http://osc.hul.harvard.edu/highbrow> .

Highbrow is a textual annotation browser and visualization tool. It visualizes the density of scholarly annotations and references in individual texts, and can

compare multiple texts to indicate patterns or highlight areas of interest for scholars. Users can view the visualizations at a higher level of quality that indicates density, or else zoom in for more detailed information. Highbrow functions for textual annotations as well as video and audio annotations.

Rockwell, G., & Sinclair, S. (2013). *Voyant*. URL: <http://voyant-tools.org> .

Voyant is an online text analysis environment. Users can submit texts in a variety of formats from a variety of locations (e.g., by using URLs to indicate entire web pages). Voyant analyzes single or multiple texts and displays word usage by indicating frequency of words, visualizing usage of words, and showing placements of words throughout documents.

TAPoR Team. (2013). *TAPoR*. URL: <http://www.tapor.ca> .

TAPoR (Text Analysis Portal for Research) is a collection of textual studies tools for scholars and researchers. The site functions as a portal to a number of tools relevant to textual studies scholars. Each tool listed is tagged with keywords, includes a short description, details information about documentation and tool attributes, and displays user ratings and comments.

University of Hamburg. (n.d). *CATMA*. URL: <http://catma.de> .

CATMA is a Web-based text analysis and literary research application that permits scholars to work collaboratively by exchanging analytical results online. The application boasts a number of features: users can apply analytical categories and tags; search the text using Query Builder; set predefined statistical and non-statistical analytical functions; visualize text attributes and findings; and share documents, tagsets, and markups. CATMA consists of three modules: the Tagger for the markup and tagging of a text, the Analyzer for queries and a variety of text analysis functions, and the Visualizer to create charts and other visualizations of analysis results.

Vision Critical Communications. (2013). *DiscoverText*. URL: <http://discovertext.com> .

DiscoverText is a proprietary software solution that enables cloud-based, collaborative text analysis. Primarily, the public and private sector employ the tool to analyze and gather insights about user, consumer, and employee activity and engagement. The software merges data from numerous sources, including text files, email, surveys, and online platforms (e.g., Facebook, Twitter, Google+, and blogs). Pricing varies for different packages and users.

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