

**Toward Modeling the *Social* Edition:  
An Approach to Understanding the Electronic Scholarly Edition in the  
Context of New and Emerging Social Media**

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**Keywords**

scholarly editing, editorial theory, social networking, social media, networks, community

**Abstract**

This paper explores building blocks in extant and emerging social media toward the possibilities they offer to the scholarly edition in electronic form, positing that we are witnessing the nascent stages of a new *social* edition existing at the intersection of social media and the digital editing. Beginning with a typological formulation of electronic scholarly editions, activities common to humanities scholars who engage texts as expert readers are considered, noting that many methods of engagement both reflect the interrelated nature of long-standing professional reading strategies and are social in nature; extending this framework, the next steps in the scholarly edition's development in its incorporation of social media functionality reflect the importance of traditional humanistic activities and workflows, and include collaboration, incorporating contributions by its readers and re-visioning the role of the editor away from ultimate authority and more toward facilitator of reader involvement. Intended to provide a 'toolkit' for academic consideration, this discussion of the emerging social edition points to new methods of textual engagement in digital literary studies and is accompanied by two integral, detailed appendices: one addressing issues pertinent to online reading and interaction, and another on social networking tools.

**Overview**

1. Introduction: Extending Electronic Editorial Traditions
2. A Rough Typology of the Scholarly Electronic Edition
3. Some Pertinent Activities of the Humanist, in the Context of the Commons
4. The General Scope of Social Software Applicable to the Scholarly Edition
5. A Toolkit, Toward Modeling the Social Edition

**1. Introduction: Extending Electronic Editorial Traditions**

In the very early days of the world wide web, but well into a period in which our community understood the positive and transformative impact that computational technique has had on scholarly editing, Fortier (1991) reminded us that literary studies is and always has been focused on the engagement of texts regardless of interpretive theoretical predisposition. In digital literary studies, that textual focus manifests in a

number of theories about the nature of the text in general and the electronic scholarly edition in particular, and has developed such that we can begin to construct, in relatively straightforward manner, a basic typology of electronic scholarly editions via the approach each type takes in handling and engaging its textual materials: from edited electronic text plus analytical tools for its readers (dynamic text), to text plus a static set of additional supporting materials in digital form for reader navigation and subsequent analysis (hypertextual edition), to text augmented by both dynamic analytical means and hypertextually-linked access to fixed resources plus automated means of discovering and interrelating external resources (dynamic edition). Such a typology, reductive as it may be, allows us to look forward – as Robinson (2010), Shillingsburg (2006), Bryant (2002), McGann (2001), Gabler (2010) and many others (as well as those mentioned, beyond specific citation) have encouraged us to do variously – to what lies ahead in our treatment of the text, and the textual editions, that lie at the core of our contemplation in literary studies and similar disciplines.

Well into what is often called the age of Web 2.0 – becoming immersed as we are in a generation of online tools facilitating collaboration, information sharing, and interoperability ... immersed as we are by social media interaction on the web – it is worth noting that the types of electronic scholarly editions we see prominently today were largely developed before the ubiquity of the web that we now enjoy and do not accurately reflect the full range of useful possibilities present for academic engagement and interaction around the textual materials that are our focus. While the electronic medium is most certainly a productive space in which to present and analyse editions, it is increasingly more difficult to ignore the influence of new and emerging possibilities for the electronic scholarly edition in the current phase in the social formation of the web. As such, our understanding of the electronic scholarly

edition in its current form requires reconsideration in light of the collaborative potential of already extant and newly-emerging digital technologies; put another way, we need to extend our understanding of the scholarly edition in light of new models of edition production that embrace social networking and its commensurate tools. Toward understanding the scholarly edition in the context of new and emerging social media, this paper and its appendices offer an early engagement of pertinent issues and, ultimately, a utility-based consideration in an academic context of the toolkit that allows us to consider the *social* edition as an extension of the traditions in which it is situated and which it has the potential to inform productively.

## **2. A Rough Typology of the Scholarly Electronic Edition**

Historically, the scholarly edition relied on the print medium and the expertise of a single authority or editor at its helm – something almost immediately challenged by the provision of text in electronic, readily malleable, and ultimately re-combinable and redistributable form. One of the first models of the movement from the print to the electronic edition is typically referred to as the *dynamic text*. Its principles articulated most fully in the late 1980s, the dynamic text emphasises extant textual and linguistic relationships; its historical roots are in word-based scholarly activities such as concordance creation and indexing, collation, collocation and distribution, attribution and dating, rhyme and content analysis, while allowing the reader to engage with the text *dynamically* (Siemens, 2005). In practical terms, this model of the electronic edition is the combination of a properly encoded electronic text with text-retrieval and analysis software (Lancashire, 1989). What makes this type of edition *dynamic* is the way in which the computer facilitates a non-linear interaction with the text. In essence, the dynamic edition structures and treats the text as a

database. This database structure allows the reader to draw a good deal of text-based information that is not as easily accessible to the reader of the same work in print. In addition to its disseminative and editorial flexibility, a chief benefit of this sort of edition is that it combines text with tools, speeding academic reading-related tasks. The dynamic text automates reading-related functions that would likely not be carried out without the assistance of the computer because of the expense in time involved. A *computer-assisted analysis* of the text and a linear *reading* of it are acts that become closely affiliated and, potentially, equivalent.

Following quickly, with the rise of hypertext, the *hypertextual edition*<sup>ii</sup> exploits the ability of hypertextual organisation to facilitate a reader's interaction with the apparatus (textual, critical, and otherwise) that traditionally accompanies scholarly editions, and with relevant external textual and graphical resources, critical materials, and so forth (Faulhaber, 1991), and is seen by some as a technological manifestation of social theories of editing that were transformative near the end of the last century. As with the dynamic text, all of the interactions facilitated by a hypertextual edition could be carried out, hypothetically, with a print edition; here, however, that edition would have to be supplemented by the resources (paper-based, audio, video) of an excellent library and considerable leg-work. What is hypothetically available to the reader in a research library, or group of libraries, is here made immediately available, encouraging use of the resources by the reader in a seamless fashion; as such, the hypertextual edition, like the dynamic text, also makes accessible dimensions of the text not normally or conveniently available to readers, but does so by providing immediate access to a different sort of material than that handled by the dynamic text. Moreover, as with the dynamic text, the hypertextual edition affords a type of intertextuality that produces a critical reader with a potentially more powerful grasp of

that which is being read than one employing print resources alone. Lastly, because of the broad range of materials that can be incorporated therein, both because of the economy of data storage in the electronic medium and the benefits of hypertextual navigation, the hypertextual edition can quite comfortably accommodate many ‘types’ of editions: documentary, genealogical, copy-text, multiple version, socially-based, eclectic, variorum, and so forth.

In his seminal discussion of the hypertextual edition, Faulhaber (1991) saw the hypertextual edition as having evolved from the dynamic text (see also Neuman [1991]). In practice, however, hypertextual editions often relegate the principles of the dynamic edition to the background (if they are included at all),<sup>iii</sup> and instead emphasise the ability of hypertext to provide interaction with materials common to, or ideal for, print-based editions—albeit, with much greater ease-of-navigation and with the potential for interaction with a much larger body of material than that which typically accompanies a paper edition.

As such, the hypertextual edition is most often embraced for its employment of hypertext to emphasise relationships of textual and extra-textual natures, facilitating the reader’s interaction with the text and materials related to it with an ease unknown even in the best of scholarly editions published in print; its historical roots are to be found in the apparatuses of scholarly editions and, in the best of examples, the variorum editions. The hypertextual edition, as well, facilitates a close affiliation of the acts of reading and analysis, by providing and assisting in the management of a significant amount of related material extra to the text of the edition itself; promoting such an affiliation of reading and analysis is in keeping with the goals of all scholarly editions, electronic and otherwise (Lavagnino, 1995) and the tools that a hypertextual edition can provide are significant (Cover, 1991).

Moving forward, the argument toward the *dynamic edition* is founded, first, in the observation that the two perspectives on the electronic scholarly edition, dynamic and hypertextual, should be united in practice as they are, seemingly, in theory so that the reader can take advantage of both dynamic interaction with the text *and* its related materials, and also reap the benefits of the fixed hypertextual links that typify the standard relation of materials we find in a scholarly edition. It is then augmented by the notion that even these types of editions, like their print counterparts in many ways, are objects that attempt to represent or fix at a single moment in time the work of an unfixed, ever-evolving—and thus dynamic—scholarly community engaged in the process of stockpiling scholarship, as Frye might note (1991). As the argument goes: electronic editions that live up to the potential of the medium, especially in terms of the inclusivity that it allows, must also be *dynamic*; they must be able to navigate the contents of the edition in familiar ways, and also able to reflect and draw upon the growing, evolving, and unfixed stockpile of scholarship that relates to the matter of the edition.<sup>iv</sup> The dynamic edition, of which there is not yet a exemplifying touchstone, is predicated on the possibility that the level of interaction one can enjoy with an electronic edition itself, if facilitated in the style of the dynamic text, can replace much of the interaction that one typically has with a text's accompanying materials via explicit hypertextual links in a hypertextual edition. The principles of computationally-facilitated interaction allowed by the dynamic text, which indexes and concords itself, are transferrable to the realm of textual apparatus and commentary as typically modeled in the hypertextual edition, and well beyond into all materials in the medium that relate to the matter of any edition. Such an edition has the ability, in effect, to annotate itself and provide its own apparatus, employing

sophisticated software to automate the process of formalising the associations we take for granted in current editions.

In this, we capitalize on a growing ability to manage, and to navigate, what is available in relation to our electronic scholarly editions in a dynamic manner.<sup>v</sup> The premise for this navigation is found in humanistic assumptions of the relations that exist within and among texts; it rises out of an accepted understanding of intertextuality, explicitly manifest. A hypertext, which in its best definition is a ‘multisequentially read text’ (Landow, 1999) embraces such an understanding, and implementations of hypertextual structures rely on the fact that one instance of textual material has association with other instances; in short, such structures rely on the fact that intertextuality exists, and their advancement, further, can be managed by varied means, including algorithmic. At base, we might see in this a connection to the founding functional premises of socially-facilitated interaction on the web – a useful point of derivation to consider.

### **3. Some Pertinent Activities of the Humanist, in the Context of the Commons**

Just as the textual core of the literary-based scholar’s activity has remained fairly stable over time – even as the ways in which the scholar may access and interact with that core have changed considerable – the core of activities traditionally involved in humanities scholarship have altered very little since the professionalization of academic study during the nineteenth century. Recent work toward articulating them and even modeling them computationally, as independent basic activities or in clusters of related activities, has been a valuable occupation of the digital humanities community, especially among those who build computational tools for humanistic use;<sup>vi</sup> much of this work is situated around key activities of humanities scholars as

described by Unsworth (2000) among the seven scholarly primitives essential to humanistic work: discovering, annotating, comparing, referring, sampling, illustrating, and representing.

Not surprisingly, digital scholarly editions have aspects of their functional interaction modeled to facilitate these activities, since the earliest dynamic texts integrating digital tools with electronic text, and typically in the context of what might best be described as a humanistic workflow that is modeled computationally. Elsewhere, in a piece entitled ‘Underpinnings of the *Social Edition*’ (Siemens *et al.*, 2010) that reported on work carried up to *ca* 2008 on a prototypical reading environment in a subject-specific knowledgebase, members of our research team explored the activities of the humanist via the output of humanistic achievement toward identifying exemplary, interrelated groups of tasks for the computational model we would build to understand them better: the *representation* of archival materials; *analysis* or critical inquiry originating in those materials; and the *communication* of the results of these tasks.<sup>vii</sup> Articulated initially in 2004, the computational model was built by 2007 or so and, as reported at the conference *The Shape of Things to Come* (U Virginia, 2010), this work was stalled *ca* 2008 with the realization – after we brought our computational model to some of the same expert, professional readers in the user groups with which we’d consulted initially in the formulation of our model (itself reported, partly, in Siemens *et al.* 2009) – that expert readers in our discipline were beginning to incorporate social media tools, seemingly as they emerged, in their standard activities without explicit identification of them as such, seeing them as natural extensions of the way in which they had always carried out their work. This represented a significant departure from the earlier explicitly-articulated practices on which our model was established; that such activity had not

been hitherto documented was surprising, and yet proof of such a movement was then readily found in the widespread acceptance of tools such as Zotero. Subsequent discussion suggested that such tools used by expert readers were related, chiefly, to activities in areas of analysis, synthesis, communication, and formal dissemination – each with the potential to be, by their nature, both interrelated and social to varying degrees, some of which can be dictated by the scholar: for example, analysis and synthesis grow from communication that, in turn, affects formal dissemination, and communication and dissemination cannot take place without what is generated by synthesis and analysis; and, noted also was that, just as analysis and synthesis tools in use by our community draw us closer to the objects of our contemplation, so too do communicative and disseminative tools draw us closer to each other and to the communities we serve beyond academe.

Derived from study of expert readers in our discipline, as above, this movement is also documented in terms of literary theory and those of community; two evolving concepts are central to this: the social dimension of McGann's model of multi-dimensional textuality and the idea of the community of practice, broadly construed. In 'Marking Texts of Many Directions', McGann outlines a key dimension of textuality as *social*, which is production- and reception-oriented (2004, p. 214)<sup>viii</sup> – an area in which digital textual modeling and mediation is noted to have, at the time, been least successful. Here, we see the social dimension of reading and analysis identified implicitly for broadening via computational facilitation, a notion extended further, and in broader context, when McGann notes in the context of humanistic labour and engagement that 'There are crowds of us yet to be sourced' (2010).

These crowds exist in large part in communities of practice situated around humanistic methods and materials. The term 'community of practice' refers to a

group that forms around a particular interest, where individual members participate in collaborative activities of various kinds. Active involvement in the group is key; through this involvement, group members ‘develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short a shared practice’.<sup>ix</sup> Knowledge-building communities as a particular kind of community of practice take ‘as an explicit goal the development of individual and collective understanding’ (Hoadley and Kilner 2005, p. 33). In academe, we have noted communities of practice via varied names, and have described such large and now well-established initiatives as the Text Encoding Initiative – and even humanities computing and the digital humanities, earlier – in these terms; indeed, the digital humanities readily understand such collaborative formations (Inman et al., 2004). With the facilitation of social media, there is a growing movement in humanities knowledge-building communities to expand the scope of community membership beyond academics, and into the interested and engaged general public, to those practicing what has come to be termed citizen scholarship. Greenberg (2010) identifies three modes of citizen scholarship – contributory, collaborative, and co-created – in each, the traditional scholarly community of practice is extended to include public expertise while still valuing the experience, resources, and tools already in place; based on experience with humanities projects that have had extra-academic appeal and active engagement, many in our community have highlighted ways in which digital scholarship can welcome the contributions of participants from outside academia, via means of control and regulation that are not wholly foreign to processes used by humanists traditionally.<sup>x</sup> The key to success in this instance is being very clear in our understanding of what it is we do, how we do it, and how we

evaluate the results of what we've done across our pertinent activities,<sup>xi</sup> regardless of how we articulate, group, and model those activities.

#### **4. The General Scope of Social Software Applicable to the Scholarly Edition**

Within this framework, then, it is worth considering what is of most use to the scholarly edition from among the abundance of interactive digital tools with which scholars may choose to engage, and that might augment and enable communities of practice as they may exist around the texts that lie at the core of our consideration – tools, both scholarly and non-scholarly, that facilitate the sharing of and interaction with data in various ways, and offer new possibilities for community-driven scholarship. The majority of these tools fall into the broad category of ‘social software’, which is, notes Boyd (2006), ‘based on supporting the desire of individuals to affiliate, their desire to be pulled into groups to achieve their personal goals’. At core, social software comes in many kinds, often grouped based on the nature of their interaction with (and with others interacting with) digital objects: knowledge creation and sharing, media sharing, blogs, bibliographic and bookmarking tools, aggregators, collaborative (scholarly) editing, massively multi-player online games (MMOGs), peer to peer social networks, project management software, and wide-scope content management systems, among others.

While useful to consider social software within these many and broad divisions, it is most productive in the context of this paper to focus more specifically, with scope limited to those most readily applicable to the pursuit of the next steps of the scholarly edition. Here, issues of device and interaction platform arise,<sup>xii</sup> as do those around commenting and annotation, collaborative reading and learning,<sup>xiii</sup> referencing and citation systems, peer review and identity,<sup>xiv</sup> and patterns of use

specific to academic use of social media and the scholarly use of social media by those in communities beyond academe,<sup>xv</sup> and, above all, collaboration;<sup>xvi</sup> these are treated in great detail, with survey of the emerging professional literature in the area, in the attached appendices, the first entitled ‘Reading Devices, Tools and Social Media Issues of Pertinence to the Development of the Scholarly Edition’ (Koolen and Garnett) and the second entitled ‘Social Networking Tools for Professional Readers in the Humanities’ (Leitch). Their most functional organisation here is via their use in relation to the *social* edition, emphasising the crucial features of these tools and the ways in which they engender new modes of engagement with digital objects, such as (1) collaborative annotation, (2) user-derived content, (3) folksonomy tagging, (4) community bibliography, and (5) shared text analysis. What follows is an overview of some of the current possibilities in each category:

1. Collaborative Annotation: A chief scholarly primitive, annotation is crucial to scholarly editorial activities. While older models privilege the annotations of a single editor, social tools such as BioNotate (<http://bionotate.sourceforge.net>), Google Wave (<http://wave.google.com>), digress.it (<http://digress.it>; formerly CommentPress), Reframe it (<http://reframeit.com>), and Diigo (<http://www.diigo.com>) allow for community knowledge creation. These collaborative systems usually require the installation of a toolbar that allows for annotation layering to promote ‘the incremental growth of information as users review others’ thoughts on a resource before adding their own’ (*Educause*). Diigo, which markets itself as a ‘group knowledge repository’, serves as a prime example here, as it comprises the key features of annotation: highlighting and markup (known as sticky notes), as well as searchable tags and bookmarks. In this context, see also, among others, Ovsianikov et al

(1999), Marshall (1997), Wolfe (2002), Hunter (2010), Watters (2011), Lardinois (2009), Cadiz and Grudin (2000), and Yang (2011).

2. **User-derived Content:** Some online repositories allow for the creation of user-derived content, or the collection and management of fully-searchable exhibits comprising multiple digital objects. The opportunity for collaborative knowledge building is most prevalent in sites that already contain large-scale collections, as the exhibits are by necessity limited by the scope of the material available. Some prime examples include the Library of Congress's Flickr Stream ([http://www.flickr.com/photos/library\\_of\\_congress/](http://www.flickr.com/photos/library_of_congress/)), Inexhibit (<http://www.inexhibit.org/>), and the *Networked Infrastructure for Nineteenth-Century Electronic Scholarship* (NINES) Collex (<http://www.nines.org>). In this context, see also, among many others, Howard (2011), Fitzpatrick (2007), Kjellberg (2011), Fernheimer et al. (2011), and Hopkins (2010).
3. **Folksonomy Tagging:** Collaborative or social tagging is 'the process by which many users add metadata in the form of keywords to shared content' (Golder and Huberman 2006). The term now most often used to describe this type of user-generated cataloguing is *folksonomy*, which is defined as 'the result of personal free tagging of information and objects [...] for one's own retrieval. The tagging is done in a social environment (usually shared and open to others). Folksonomy is created from the act of tagging by the person consuming the information' (Vander Wal 2007). The English Broadside Ballad Archive ([http://emc.english.ucsb.edu/ballad\\_project](http://emc.english.ucsb.edu/ballad_project)) uses a type of 'user-generated metadata' (Mathes 2004) to manage and catalogue images. Other applications that manage knowledge using folksonomy include many

media sharing sites such as Flickr (<http://flickr.com>; see fig. 1), Twitter (<http://twitter.com>), bookmarking sites such as Del.icio.us, as well as Diigo (above). See also Guy and Tonkin (2006).

4. Community Bibliography: Social Bibliographies relate closely to collaborative tagging and also participate in knowledge creation. These tools allow users to collect and catalogue references and resources using academic citations, folksonomy tagging, and link sharing. Some of the most popular community bibliography tools include Zotero (<http://www.zotero.org>; see also Cohen [2008]), Digg (<http://digg.com>), reddit (<http://www.reddit.com>), StumbleUpon (<http://www.stumbleupon.com>), Connotea (<http://www.connotea.org>), CiteULike (<http://www.citeulike.org>), and BibSonomy (<http://www.bibsonomy.org>). BibSonomy, for example, is a 'social bookmark and publication sharing system'. Twitter (<http://www.twitter.com>) has also allowed groups of users to share links and resources, especially within the digital humanities community (see Priem and Costello [2010] and Ross [2011] for other academic uses). See also Hendry et al. (2006) and, for social bookmarking, Estelles et al (2010), Hammond et al (2005), and Lund et al (2005).
5. Text-Analysis: Digital humanities textual analysis 'involves the application of algorithmically facilitated search, retrieval, and critical processes that, originating in humanities-based work, have been demonstrated to have application far beyond' (Schriebman, Siemens, and Unsworth, 2007, vii). Examples include Voyeur's embedded widgets (<http://voyeur.hermeneuti.ca>), and Ivanhoe (<http://patacriticism.org/ivanhoe>), which allows for community analysis of literary texts. While many text analysis applications exist, the

exploration of the social potential of these tools is still only in its nascent stages.

This sketch is derived from and supplemented by the more wide-ranging materials presented in the two appendices below. Pertinent characteristics shared by these tools, and the interactions and augmentations they facilitate, is that they are user- rather than creator-driven, evolving rather than fixed, collective rather than individual, expansive rather than inclusive, and open source rather than proprietary and closed.<sup>xvii</sup>

### **5. A Toolkit, Toward Modeling the *Social Edition***

What sits at the intersection of social media and the scholarly edition in electronic form is founded, at its core, via these tools that offer us new ways to work together, for our editions to work together, and for us to work with others. Despite Stephen Nichols's call to 'dismantle the silo model of digital scholarship' (2009), many electronic scholarly editions, like print editions, continue to exist as self-contained units that do not encourage interaction with other resources, and they do not yet actively encourage or facilitate interaction among the communities of practice they serve or even among those who have the most knowledge to bring to bear. These tools, and others like them, can help remedy this. The *social* edition grows from the spirit of Greg Crane's exhortation, and others like it, that '[w]e need to shift from lone editorials and monumental editions to editors ... who coordinate contributions from many sources and oversee living editions' (2010). And, indeed, documented movement in this direction is already well underway with projects such as EEBO interactions, 'a social networking resource for *Early English Books Online*', George Mason University's 'Crowdsourcing Documentary Transcription: An Open Source Tool', *Transcribe Bentham*, and more.<sup>xviii</sup> These projects, and others like them, point

to a growing need in the scholarly community to expand our knowledge communities using the social technologies at our disposal. Building on existing, expanding, and newly-emerging communities of practice in combination with the model of Web 2.0, we can appropriately harness the power of specifically social tools, the majority of which move in some way towards combining digital social interaction with scholarly activities.

This has a destabilizing effect; such tools facilitate a model of textual interaction and intervention that encourage us to see the scholarly text as a process rather than a product, and the initial, primary editor as a facilitator, rather than progenitor, of textual knowledge creation. The most conservative electronic scholarly editions or archives have used computation chiefly to ‘describe and express print-, visual-, and audio-based material in tagged and searchable electronic form’ (Schriebman, et al., 2004, p. vi), in many ways mimicking interactive structures more suitable to possibilities of the print medium rather than the digital one; this teleological, codex-based model sees the editor as a single authority, a mediator between the text and the reader, where the editorial entity determines and shapes what is important to the reader, focuses the editorial and analytical lens, and ultimately exerts immense control over what the reader can engage. While it is nothing new to interrogate the ‘single authoritative text’ (see, among others, Shillingsburg 1986, p. 16), and to consider the change in the structure of authority offered by the digital edition especially in relation to the dynamic nature of a digital text,<sup>xix</sup> the integration of social tools into the electronic scholarly edition pushes the boundaries of authority further, shifting power from a single editor, who shapes the reading of any given text, to a group of readers comprising a community whose interpretations themselves form a new method of making meaning out of the material.<sup>xx</sup> In a *social* edition, textual

interpretation and interrelation are almost wholly created and managed by a community of users participating in collective and collaborative knowledge building using Web 2.0 technologies. Further, in expanding the community of practice – beyond a single editorial entity, to an academic group, and even beyond that group into citizen scholars – we cannot avoid challenging current notions of personal and institutional authority, and the systems in which they are perpetuated;<sup>xxi</sup> the *social* edition privileges a new kind of scholarly discourse network that eschews traditional institutionally-reinforced hierarchical structures and relies, instead, upon those that are community-generated.<sup>xxii</sup> Taken together, in this the *social* edition appears to represent welcome extension of recent accepted and understood movements in editorial theory.

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In brief, with the tools of social media at its centre, the *social* edition is process-driven, privileging interpretative changes based on the input of many readers; text is fluid, agency is collective, and many readers/editors, rather than single editor, shape what is important and, thus, broaden the editorial lens as well as the breadth, depth, and scope of any edition produced in this way. A definitively *social* edition employs web 2.0 tools for activities such as transcription, user bookmarking and bibliography-building, flagging and tagging, commenting and annotating,<sup>xxiii</sup> linking to contextual material (especially for names and integration of bibliographic information), glossary and other analytical functions, and all other pertinent activities that sit at the evolving intersection of social media and the electronic scholarly edition. Relying on dynamic knowledge building and privileging process over end result, this expansive structure offers new scholarly workflows and hermeneutical method that build, well, on what we already do.

This all said, the *social* edition is not something – at least not *yet* something – that we can clearly describe and typologise as readily as we now can the dynamic text, the hypertextual edition, and the dynamic edition; but the same could be said of the dynamic text, the hypertextual edition, and the dynamic edition at the times our community was busy experimenting with their precepts and building blocks, through theoretical engagement and prototypical experimentation. Regardless, the basic tenets of such a scholarly electronic edition are beyond first discernment, and indeed are becoming more readily visible almost daily through the evolution and adoption in our community of social media methods and its practices that we are increasingly and more regularly bringing to the electronic editions we produce.

Whatever it is that sits at intersection of social media and the scholarly edition in electronic form – whatever the *social* edition manifests itself as – as our community has known through our conjoint development of the dynamic text, the hypertextual edition, and the dynamic edition, the *social* edition is something that we will articulate and define, through theory and functional prototyping, together.

## Notes

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<sup>i</sup> Earlier versions of this work were presented by Leitch, Timney, and Siemens, variously, in 2010 and 2011 to groups at gatherings of the Modern Language Association (Los Angeles), Digital Humanities (Stanford U), the Institute for English Studies (London), the Renaissance Society of America (Montreal), Archives and the Profession (U Texas Austin), Congress of the Humanities and Social Science Federation of Canada (Concordia U), Huygens Institute (The Hague), U Victoria, and elsewhere. An earlier version of this piece was made available via the Electronic Textual Cultures Lab (ETCL) website, at <http://etcl.uvic.ca/files/2011/01/timneyleitchsiemens-socialedition.pdf>, under the title ‘Opening the Gates: A New Model for Edition Production in a Time of Collaboration;’ it was also circulated at the Society for Textual Studies’ 2011 meeting in a seminar led by Katherine D Harris, ‘Redefining the Scholarly Edition’.

In addition to benefiting greatly from discussion with those via these forums, and from comments of *LLC*’s anonymous reviewers, at its core this article results from the combined consideration and work of a number of researchers across several research groups – including members of the ETCL, the Implementing New Knowledge Environments (INKE) project, and the Public Knowledge Project (PKP), with writing up to the earlier-circulated draft (as above) coordinated chiefly by Timney. The phrase ‘social edition’ was, to our knowledge, coined by Leitch, describing aspects of

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the phenomena reflected on in this paper our group was discussing in 2009. Final coordination, writing, and revision of this paper were carried out by Siemens, with the assistance of Garnett, Koolen, and others from the research groups credited.

The authors wish to express their gratitude for the support and feedback on the paper received by those in these forums, and from *LLC*'s reviewers. In response to comments from the reviewers and the community about the nature of the material presented in this paper, it is accompanied by two integral appendices, the first addressing pertinent issues to online reading and interaction (Koolen, Garnett), and the second an unpublished white paper on social networking drawn upon by several researchers in the area (Leitch).

<sup>ii</sup> See also Robinson and Gabler, eds. (2000). 'Introduction', and Robinson, 'The One Text and the Many Texts'.

<sup>iii</sup> Lavagnino (1995) notes: 'it is striking how many proposals for hypertext editions fail to mention even the rather ordinary function of text searching . . . mundane as it is, it is one of the most valuable things that can be done with electronic texts'.

<sup>iv</sup> See also McGann (1997), Ross (1996), and Landow (1999).

<sup>v</sup> Such an edition embraces an electronic context and notion of inclusivity that Bush (1945), Frye (1991), Winder (1996) and Nelson (1995) have articulated; such an edition also requires that a significant amount of related scholarly material is available in electronic form.

<sup>vi</sup> See, for brief example and earlier state of the field, Bradley (2004).

<sup>vii</sup> Communication of results involves the electronic dissemination of, and electronically facilitated interaction about the product of, archival representation and critical inquiry, as well as the digitization of materials previously stored in other archival forms; Communication of results takes place via codified professional interaction, and is traditionally held to include all contributions to a discipline-centered body of knowledge—that is, all activities that are captured in the scholarly record associated with the shared pursuits of a particular field. Critical inquiry involves the application of algorithmically facilitated search, retrieval, and critical processes that, although originating in humanities-based work, have been demonstrated to have application far beyond; associated with critical theory, this area is typified by interpretive studies that assist in our intellectual and aesthetic understanding of humanistic works, and it involves the application (and applicability) of critical and interpretive tools and analytic algorithms on digitally represented texts and artifacts. Archival representation, in turn, involves the use of computer-assisted means to describe and express print-, visual-, and audio-based material in tagged and searchable electronic form; associated as it is with the critical methodologies that govern our representation of original artifacts, archival representation is chiefly bibliographical in nature and often involves the reproduction of primary materials such as in the preparation of an electronic edition or digital facsimile, and is centred in the context of our larger discussion on considerations of issues such as the modeling of objects and processes, the impact of social theories of text on the role and goal of the editor. Ideally, object modeling for archival representation should simulate the original object-artifact, both in terms of basic representation (e.g. a scanned image of a printed page) and functionality (such as the ability to 'turn' or otherwise 'physically' manipulate the page). However, object modeling need not simply be limited to simulating the original. Although 'a play script is a poor substitute for a live performance', Martin Mueller has shown that 'however paltry a surrogate the printed text may be, for some purposes it is superior to the 'original' that it replaces' (2005, p. 61). The next level of simulation beyond the printed surrogate, namely the 'digital surrogate', would similarly offer further enhancements to the original. These enhancements might include greater flexibility in the basic representation of the object (such as magnification and otherwise altering its appearance) or its functionality (such as fast and accurate search functions, embedded multimedia, etc.). Archival representation might then involve modeling the process of interaction between the user and the object-artifact. Simulating the process affords a better understanding of the relationships between the object and the user, particularly as that relationship reveals the user's disciplinary practices—discovering, annotating, comparing, referring, sampling, illustrating, representing.

<sup>viii</sup> From McGann we adopt the following critical and theoretical points: (1) the recognition that scholars read what Barthes calls the 'plural text' by reading across dimensions and (2) a concern that

‘digitization . . . situates the critical agent outside the field to be mapped and re-displayed’ (McGann, 2004, p. 206). McGann identifies a text’s dimensions as *linguistic* (semantic and grammatical markers), *graphical/auditorial* (textual materiality), *documentary* (descriptors tied to specific object: bibliography, paleography, provenance), *rhetorical* (categorization, ordering, arrangement), *semiotic* (‘patterned relationships throughout the textual system’ (p. 214), and *social* (production and reception history) (p. 213-15). These codes and dimensions are neither prescriptive nor exhaustive but provide opportunities to read a text from different perspectives.

Of the six dimensions, digital texts to date have been most successful in mediating the first four but have had more limited success with the semiotic and social dimensions. This is not to say that current edition models do not address the semiotic dimension, which McGann describes as the ‘patterned relationships throughout the textual system’ (p. 214) or include information about a text’s production and reception history.<sup>viii</sup> In current models of digital editions, the problem is that we are not capturing the fluid state of a text’s production and reception as it is remediated online. Where we see an opportunity to intervene is in extending these dimensions to include an ongoing interrogation of the social and semiotic life of the text. McGann’s delineation of ‘N-dimensions’ offers a promising shift in paradigm, a shift, we would suggest, that points us directly to the construction of a specifically *social* edition that takes this fluidity into account. McGann writes that,

Traditional textual conditions facilitate textual study at an inner standing point because all the activities can be carried out — can be represented — in the same field space, typically, in a bibliographical field. Subject and object meet and interact in the same dimensional space — a situation that gets reified for us when we read books or write about them. Digital operations, however, introduce a new and more abstract space of relations into the study-field of textuality. This abstract space brings the possibility of new and in certain respects greater analytic power to the study of traditional texts. (McGann, 2004, 205)

His proposed model affords a broadening of our conceptual understanding of the layers of reading; or, reading across dimensions.

<sup>ix</sup> Wenger (2006); see also Wenger (1998), Cohen (2009) and Cambridge et al. (2005).

<sup>x</sup> Specific instances of this have become almost too numerous to list. For one example, see Crane (2010). For more general discussion of this, see Santo and Lucas (2009) and, on the very closely related topic of social media’s role in expanding the work of academe into its larger public context, see Brown and Adler (2008), Nikolov (2009), Unsworth (2008), and Mollet (2011). For background and expansion, see ‘Background and History’ in Leitch’s overview and bibliography in the second appendix.

<sup>xi</sup> For some, this might raise concerns related to qualitative assurance; in this vein, see among many others Fitzpatrick (2009). At the moment, the most useful discussions are taking place at conference and in the blogosphere.

<sup>xii</sup> Here, too, we need to broaden our view of where this type of software is most typically used, beyond standard laptop and desktop computers and onto dedicated reading devices of various kinds, particularly e-readers, plus other computational devices that we use to access web-based information. With respect to this, and to e-readers in the academic workflow, see Marshall (2010), Gielen (2010), O’Donnell (2010), ‘The iPad for Professors’ (2011), MacFadyen (2011), and Wang (2010).

<sup>xiii</sup> For collaborative learning, see among others Davis and Huttenlocher (1995), Scardamalia and Bereiter (1993). For collaborative reading, see among others Carmody (2010), Sorrel (2010), Weisberg (2011), Tashman and Edwards (2011), Watters (2010), Hornbæk and Frokjær (2001), and Qayyum (2008), as well as Weisberg (2011), Shanahan (2010), Purdy (2010), and Baumer et al (2008).

<sup>xiv</sup> For these, and beyond, see ‘Identity, Privacy & Trust’ in the second appendix.

<sup>xv</sup> For general treatments of the use of social media aspects of higher education and research practice, see among others CIBER (2010), Harley (2010), Davis (2010), Maron and Kirby Smith (2009), Procter et al. (2010), Greenhow (2009), and Research Information Network (2010). For libraries see ‘Education & Libraries’ in the second appendix.

<sup>xvi</sup> For discussion beyond those already cited above, see ‘Collaboration’ in the second appendix.

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<sup>xvii</sup> For a more detailed discussion of Web 2.0, see O'Reilly (2005), and O'Reilly and Battelle (2009).

<sup>xviii</sup> See Melissa Terras' excellent list of collaborative projects (2009). The George Mason project is described as 'an open source tool that would allow scholars to contribute document transcriptions and research notes to digital archival projects, using the Papers of the War Department as a test case'.

<sup>xix</sup> See Shillingsburg (1998, 2006) and Dahlström (2004). Dahlström writes, 'the web edition turns into a large resource archive and editorial laboratory, and even more often into a more or less temporary interface to a changing, dynamic digital archive' (p. 18).

<sup>xx</sup> In doing so, we do not question authority in terms of the multiple variants of a manuscript, for example, but more broadly ask how readers have collective power to make meaning from multiple texts. With an understanding that an edition performs 'the considered act of reproducing or altering texts' (Tanselle 1995, p. 10), the socialized text moves us towards a broader understanding of the text itself as an authorial and social entity; however, the traditional scholarly edition (whether in a print or digital medium) nonetheless follows a 'top-down' model that, in its interpretative and representational aspects, is static once published. Digital humanists have already questioned the genre of the database (Manovich, 2001), and spoken to the importance of providing both digital facsimiles and encoded source-texts (Ore, 2004, p. 35). The discussion that follows on the social *edition* naturally extends to the construction of a social 'archive' (Irvine, 2006, p. 184). Irvine has offered a productive way of understanding the socialized text:

Instead of superseding current critical editions—whether in print or online—or privileging one version or editorial practice over others, these digital archives could potentially enfold any number of critical and non-critical editions into an indexed network in which each edition is experienced as a socialized text—that is, social objects embedded in an apparatus that bears witness to the history of the edition's production, transmission, and reception. (pp. 202-203)

To construct a social edition we must rely on earlier theories of editorial practice and disciplinary conventions to determine our source text and ultimately the digital representation of that text (Shillingsburg 1986, Tanselle 1995, McGann [various]). But as a further step in socialisation, the paratext, rather than the text, becomes the focal point.

<sup>xxi</sup> The single-authored monograph has become both the gold ring and *bête noire* for those seeking tenure in the humanities, and has seen much (re)consideration in recent times. More to the point: with its lack of a single, authoritative editor, the social edition may seem to some to be a freewheeling invitation to early-career stasis. It is important that while we are imagining the form the social edition will take that we also imagine how it will be received by our institutions. Work in discussion by the Modern Language Association's Committee on Information Technology is heartening. Currently, their 'Short Guide to Evaluation of Digital Work' includes a section on best practices in 'enrichment' that reads '[i]n some cases enrichment can take the form of significant new scholarship organized as interpretative commentary or essay trajectories through the material. . . . Such interpretative curation is itself scholarly work that can be evaluated as a form of exhibit or essay' (Rockwell 2009). The work of the editor of the social edition is to make this kind of curation possible for members of the community of practice to undertake. By acting as a facilitator for community enrichment, the scholar or scholars heading up a social edition project must demonstrate considerable editorial skill in identifying possible avenues for interpretation and technological sensitivity in finding ways to make this kind of editing work.

<sup>xxii</sup> See Fitzpatrick (2007):

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

<sup>xxiii</sup> Collaborative annotation offers a particularly rich toolkit for the humanities scholar, and seems a prudent place to begin to envision the interactivity inherent within the social edition.

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## **Appendix 1: Reading Devices, Tools and Social Media Issues of Pertinence to the Development of the Scholarly Edition**

(A selected, annotated bibliography carried out by Corina Koolen and Alex Garnett for the ETCL's work independently and with INKE and PKP [-2011])

### **Overview**

1. Scholarly use of Social Media by academics
  - 1.1 Digital annotation before Web 2.0
  - 1.2 Collaborative learning before Web 2.0
  - 1.3 Academic use of Web 2.0
  - 1.4 Academic use of specific Social Media platforms
  - 1.5 Sidebar: other Social Media platforms
  - 1.6 Collaborative reading using e-reading devices
  - 1.7 Referencing and soft peer-review
2. Scholarly use of Social Media by non-academics
  - 2.1 Theoretical background
  - 2.2 Examples
3. e-Reader Hardware and Related Electronic Reading Tools

### **1. Scholarly use of Social Media by academics**

This survey supports those interested in exploring the development of collaborative work in academics, leading up to and including the use of the Internet and Social Media (SM). From a situation where the Internet had just become open to the mainstream public, up until now, we have seen great changes in the possibilities and ways of thinking that concern collaborative academic work. In this list, the focus shifts from collaborative work mainly to support student learning, to general collaborative work. This is perhaps logical, as collaboration on a greater scale, including sharing of information online - as opposed to in-university collaboration - has only begun to materialize fairly recently. The materials will reflect the relative novelty of the application in academia and offer a wide range of topics that can be explored further.

From two sections that provide a base in the history of collaborative reading, current practices are presented: reflecting on how often and in which fashion Social Media are currently used and consecutively providing a number of small-scale experiments and recommendations to engage more widespread use. Referencing and soft peer-review are also included as these are important issues in the changing world of academic scholarship because of the influence of Web 2.0.

#### **Digital annotation before Web 2.0**

Prior to the advent of online Social Media, several attempts have been made to offer students, teachers and researchers digital environments to facilitate the research workflow. These three - mostly theoretical - articles have been influential in academic research on digital (shared) annotation.

**Ovsiannikov, Iliia A., Michael A. Arbib, and Thomas H. Mcneill. (1999). 'Annotation Technology'. *International Journal of Human-Computer Studies* 50.4: 329-362.**

In this article, the authors first give an overview of the field of annotation systems, starting with offline software such as MS Word. It gives insight in a wide variety of annotation tools with different underlying principles, most of which are now obsolete. A number of these systems were meant for online use, and some of the systems described show how the hyperlink was still a point of focus in academic research. The authors then report a qualitative survey on paper annotation, one of the findings of which is that scholars primarily highlight and write in margins (as opposed to writing on top of the text or between the lines for instance); another result was that reasons for annotation are to remember, to think, to clarify and to share. Sharing is seen as least important by the authors and is of secondary importance to their research, as the authors claim is not typical of the academic environment to do so and more of interest for business purposes. The authors suggest a taxonomy which classifies annotations with respect to their content, form and functionality. Consecutively, based on this taxonomy Annotation Technology (AT) is developed, 'a set of recommendations for software design' (p. 340) Interesting features are: non-local referencing, where annotations on a similar topic across documents is recognized; a tight integration of note-taking and reader ergonomics which includes a *non-menu approach*; the importance of linking, which includes the use of URLs to point to specific notes; the separate storage of annotations in a database - or several databases, so the reader is able to choose which ones to publish; intelligent automated search; format-independent anchors so readers can annotate any type of document. The authors see automated annotation search as the greatest benefit over paper annotation. In the last section, the authors present Annotator, a tool built on AT, which is described in detail. Further research is said to be directed at annotation-driven search.

**Marshall, Catherine C. 'Annotation: From Paper Books to the Digital Library'. (1997). *Proceedings of the Second ACM International Conference on Digital Libraries*. Philadelphia, Pennsylvania, United States: ACM. Pp. 131-140. Print.**

<http://www.csdl.tamu.edu/~marshall/dl97.pdf> (accessed July 14, 2011).

An influential study on the annotation behavior of college students in their (paper) university textbooks. The author studied used textbooks from a campus bookstore, with as many samples of the same edition of a textbook as possible. Student selection criteria concerning the annotations as they bought used textbooks were also taken into account. Annotations are generally seen as private, whereas in this case students would sometimes select the books on the quality of the annotations. The annotations in the selected books were then classified by form and function. The author classifies a total of six functions, among which aids to memory and records of interpretative activity. In the final section implications for annotations in the digital library are discussed, where the author notes that in the design of new facilities, four conditions should be supported: annotation *in* the text, but distinguishable from the original text; non-interpretive markings; fluidity of form (freeform

type of annotation) and informal codings (being able to switch between colors or implement systems).

**Wolfe, Joanna. (2002). ‘Annotation Technologies: A Software and Research Review’. *Computers and Composition* 19.4: 471-97.**

This article is focused on annotation to aid student learning. In the first section, the author provides a description of the use of annotation in medieval manuscript culture, explaining how digital annotation can provide these same functions and more. The goal of the article is to provide a review of current tooling, but to prevent the information of becoming outdated too soon, the author has described different groups of annotation tools, discerning them through context: annotations readers make to themselves; annotations readers make and are meant to be shared with the author; annotations readers make and are meant to be shared with other readers; annotations from the author, intended for readers. This division is perhaps no longer as relevant as the social web has rendered the distinction between these roles less important, but it is nevertheless an interesting starting point to consider the different functionalities tools provide. The author then describes seven factors in which tools can vary, including input, anchor, storage and searching and filtering. The four types of context are then analyzed, providing first possible strategies of form and function by reviewing literature on the topic, followed by examples of annotation tools. The author has included a wide variety of tools. Examples in the first group are a dedicated reader, XLibris (<http://www.fxpal.com/?p=xlibris>), that has flexible annotation options, including linking of a single annotation to several text fragments and Animal Landlord, a tool for classroom video annotation. In the second group, MS Word 2000 and iMarkup are discussed. In the final section, the author discusses difficulties for research groups and companies in developing and maintaining their tools. An interesting example is mentioned, ThirdVoice (1999), which gave readers the opportunity to annotate web pages, resulting in law suits from companies who did not care for unpermitted comments. The more recent Google Sidewiki (<http://www.google.com/sidewiki/intl/nl/index.html>) faced the same problem. The author sees future possibilities in stylus-based annotation and sharing and suggest that a reader/annotator might want to be able to switch between interfaces, when either annotating themselves or reading another person’s notes for instance.

**Collaborative learning before Web 2.0**

From academia, there have been (and still are) numerous attempts to build social platforms for shared learning and reading, which has eventually developed into a distinct discipline (Computer Supported Collaborative Learning) - stressing the value of shared information processing through the computer. Two influential earlier systems are described in this section, CoNote which makes use of the web and CSILE which works on a local network. CSILE eventually developed into the still available Knowledge Forum <http://www.knowledgeforum.com>. Both make use of restricted groups in an educational setting.

**Davis, James R., and Daniel P. Huttenlocher. (1995). ‘Shared Annotation for Cooperative Learning’. *The First International Conference on***

***Computer Support for Collaborative Learning. Indiana Univ., Bloomington, Indiana, United States: L. Erlbaum Associates Inc., pp. 84-88.***

This article shows an interesting conceptual model for collaborative work through annotation, offering anchored discussions in documents. The authors present CoNote, a collaborative system that is based on shared annotation. First the system is described. CoNote is an online system that requires no additional client software, and functions on HTML and ASCII text. The annotations are anchored - although horizontally separated from the base text and thus interrupting the annotated text - and comments upon comments can be made. The annotations function much like a discussion forum: the annotations appear as links in a structured tree; the links contain meta-data: the title, author and date of creation; and creation of annotations is done by filling out a form. The annotations took the shape of questions and answers. The authors then briefly describe the conceptual model behind the system. The system can for instance be used by a group with a shared set of documents and users can have different roles. In the fourth section a trial during an introductory college computer science course (Fall 2004) is discussed. Findings were that students who performed less were helped by the annotations, that the students could answer each others questions correctly, that they expected fast responses because of the connection to the Internet and that the students conducted much work at home. Future research is said to be directed at refinement of the system and implementation in other settings.

**Scardamalia, Marlene, and Carl Bereiter. (1993). 'Technologies for Knowledge-Building Discourse'. *Communications of the ACM* 36.5: 37-41.**

This article shows nicely how education has been changing over the last decades, due to the widespread adoption of digital media. The authors first provide a theoretical background in education and software. They sketch the current educational situation and stress the importance of knowledge building over knowledge reproduction. They argue that the desktop metaphor of the personal computer, because it is intended for business use, hinders the educational possibilities of the machine. Consecutively, a framework for knowledge building is sketched, according to a constructivist view, where coherence and completeness are central concepts, built through social activity. In this global perspective, six features are added, such as source referencing in order to facilitate situating of information. The authors then describe their implementation of a second-order computing facility, computer-supported intentional learning environments (CSILE). The system itself is not based on documents provided, but allows students to make texts and comment on one another. The process is not described (or shown) in much detail however. CSILE was implemented in local networks of several grade schools and proved to be successful for the goals the authors had formulated. Note: CSILE eventually evolved into Knowledge Forum, which still exists: <http://www.knowledgeforum.com>.

## Academic use of Web 2.0

In recent years, a number of articles and reports have been published on scholars' attitudes and practices towards Social Media and Web 2.0. Some small-scale, others spanning five years of study, these show a largely coherent and perhaps not surprising image: a small group of academics is experimenting (in all academic disciplines), but most scholars are still apprehensive of the possible downsides and prefer 'traditional' academic publishing and peer review as long as there is no sound alternative - and many do not expect there to be one in the near future. Interestingly enough, the younger scholars often appear the most rigid, but this can be easily explained as they can (or will) take few risks in trying to obtain tenure or recognition.

**CIBER (University College, London). (2010). Social Media and Research Workflow.** <http://www.ucl.ac.uk/infostudies/research/ciber/social-media-report.pdf> (accessed 11 July 2011).

Report issued by Emerald Publishing Group to CIBER on Social Media use among scholars of several disciplines. The researchers focused on retrieving the survey from users of Social Media (n=1923) but compared it to a set of non-users (n=491), all geographically dispersed and from several disciplines. The findings suggest two broad kinds of Social Media user: one who conjointly uses microblogging, social tagging/bookmarking and blogging (and who is also likely to own an iPad); one who uses SM for sharing documents, organizing meetings and their calendars. The former is the least established; the newest Social Media are the least popular in general. Findings are similar to that of the Research Information Network (2011): interinstitutional collaboration is an important incentive (reported as peer pressure outside of the institution); SM acts as a *complement* to traditional publishing; lack of time and lack of knowledge on the benefits are important barriers; personal motivation is important. A difference with aforementioned report: users under 35 appeared to be more prone to use of Social Media, although the general use is not limited to that group. Other findings include: the scholars did not use niche tools especially developed for their purposes, but general tools like Skype, Wikipedia and Facebook; and a peculiar outcome: uptake is smaller in Asia and North-America than the rest of the world. (p.14) The questioned users also gave recommendations for publishers, they would like to have better access, and articles linked with data; and from libraries they requested easy full-text search. For a quick discussion see **Howard, Jennifer. (2011). 'Social Media Lure Academics Frustrated by Traditional Publishing'. *The Chronicle of Higher Education* 57.25: n. pag.** <http://chronicle.com/article/Leading-Humanities-Journal/123696/> (accessed 15 July 2011).

**Harley, Diane et al. (2010). *Assessing the Future Landscape of Scholarly Communication: An Exploration of Faculty Values and Needs in Seven Disciplines*. UC Berkely: Center for Studies in Higher Education.** [http://escholarship.org/uc/cshe\\_fsc](http://escholarship.org/uc/cshe_fsc) (accessed 19 July 2011).

700+ page report on a five-year qualitative research among scholars of mostly North-American elite institutes in seven disciplines (seven case studies in the report, chapter 2 through 8; reading chapter 1 is enough for a general overview). The scholars were selected through snowball sampling. The goal was to map scholars' uses, wants and possible models for (future)

scholarly communication. Over all disciplines, according to the authors, scholars tend to hold onto traditional publishing values, looking onto peer review as Churchill's democracy: it is seen as the least worse measure of quality and a filter for the amount of research available. Young scholars are the most rigid. The authors as a result have identified five key areas that need attention according to the interviewees (p. V), which after realisation would lead to a situation close to current practices, including peer-reviewed journals and tenure. Thus, Social Media are not seen nor wanted as an important part of scholarly communication. The discipline of Digital Humanities is mentioned as an exception several times. For a longer summary see: **Davis, Phil. (2010). 'Culture Trumps Technology: The UC Berkeley Scholarly Communication Report'. *The Scholarly Kitchen* 15 Feb 2010.** <http://scholarlykitchen.sspnet.org/2010/02/15/culture-trumps-technology/> (accessed 9 July 2011).

**Maron, Nancy L., and K. Kirby Smith. (2009). 'Current Models of Digital Scholarly Communication: Results of an Investigation Conducted by Ithaka for the Association of Research Libraries'. *Journal of Electronic Publishing* 12.1: n. pag.** <http://quod.lib.umich.edu/j/jep/3336451.0012.105?rgn=main;view=fulltext> (accessed 13 July 2011).

Association of Research Libraries research conducted by Ithaka on the use of digital scholarly resources. It is based on in-depth interviews with humanities, social sciences and STM scholars in the US and Canada. The researchers identified resources of which scholars report use, but limited to 'resources containing born-digital content by and for a scholarly audience', among which E-only journals, preprints, blogs and discussion forums; social tools for the general public like Facebook or Diigo were excluded. The article describes these eight types of resource, their role in academics, providing description and images of examples in all three academic areas. The scholars report that the resources need to 1) give access to current research 2) facilitate exchange among scholars and 3) supply useful co-location of works. STM scholars focused on the first, humanities and social science on the second. The authors draw several conclusions from the interviews, including: digital innovations are taking place in all disciplines; digital publishing in academia has a long tail (many niche publications); for a digital publication establishing credibility is important - many of the more frequently mentioned publications existed at least several years; and sustainability is a general problem. The authors conclude with a brief section on how librarians can use this information in their work of selection of materials.

**Procter, Rob et al. (2010) 'Adoption and Use of Web 2.0 in Scholarly Communications'. *Philosophical Transactions of the Royal Society A* 368.1926: 4039-4056.**

Findings of a report funded by the Research Information Network (RIN), based on qualitative and quantitative research among UK academics on Web

2.0.<sup>1</sup> The findings signal that adoption is modest: 39% non-users, 13% frequent users and 45% occasional users.<sup>2</sup> There is greater use among older age groups, more senior positions and males (although the last factor not convincingly so). The authors identify nine factors influencing adoption, many of which institutional. The most important are 1) local support, i.e. encouragement from within the institution - unfamiliarity often prohibits use and as researchers report lack of time as a reason for adoption, making encouragement from within the institution crucial and 2) bottom-up implementation instead of top-down, thus no imposition of tooling but service providing and information exchange. Another finding is that frequent and occasional users use Web 2.0 as a supplement rather than a replacement of traditional media. Lack of trust in non-peer reviewed resources is an important factor in this, among users and non-users. Collaborative research activities are also often an incentive for the uptake.

**Research Information Network. (2010). *If You Build It, Will They Come? How Researchers Perceive and Use Web 2.0.* <http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/use-and-relevance-web-20-researchers> (accessed 9 July 2011).**

Full report on which Procter et al (2010) have published results. Although conducted among UK researchers only, this report provides a wealth of information on scholarly communication and Web 2.0. It is well-structured and freely available online in a well-designed screen-friendly version. The report first defines contours of adoption. The authors signal that although scholars remain loyal to traditional forms of publication, they are not hostile towards the digital possibilities. Adaption is most likely when stimulated locally and when needed for interinstitutional collaboration. Social Media are seen as a supplement rather than a replacement for traditional research and publishing. Then the authors describe five case studies, among which arts-humanities.net (<http://arts-humanities.net/>) and PLoS (Public Library of Science, <http://www.plos.org/>). These indicate that their uptake is now in the hands of a small group of enthusiasts. The authors signal that growth of these platforms is important for their survival, but sustainability and stability need to be safe-guarded beforehand. In the final chapter, the implications are discussed for universities, funders and researchers, making recommendations for further adoption. University computing and information services are explicitly mentioned as important possible stimulators for the uptake of Web 2.0 tools.

### **Academic use of specific Social Media platforms**

As the general research reports on scholarship and Social Media and Web 2.0 show that uptake in universities is in its infancy, a perspective from the tools that are available currently might provide insight on future possibilities of supporting the academic workflow and communication. These originate in academia (Zotero) but more often in the trade or non-profit sector (Diigo, Twitter) or through collaborations (CommentPress). Trials have been conducted and research has been performed within

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<sup>1</sup> The full report is also included in this bibliography: Research Information Network (2011).

<sup>2</sup> The definitions of ‘occasional’ and ‘frequent’ are given in the original report.

universities and libraries that can unveil new opportunities for digitally supported research.

**Cohen, Daniel J. (2008).** ‘Creating Scholarly Tools and Resources for the Digital Ecosystem: Building Connections in the Zotero Project’. *First Monday* 13.8: n. pag.  
<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2233/2017> (accessed 13 July 2011).

Discusses the Zotero Project (<http://www.zotero.org/>) developed by the Center for History and New Media (CHNM) at George Mason University. The author describes that the goal of the project was to combine the benefits of stand-alone applications with those of web applications in order to facilitate the academic research workflow. The author then discusses the benefits of Zotero and its development into the tool it currently is. He states that Zotero is built on the principles of academic research in general, integrative and part of a network of thought. The author stresses the underlying principles of Zotero - open source and open to external connections and intervention - as a facilitator of its success.

**Estelles, Enrique, Esther del Moral, and Fernando González. (2010).** ‘Social Bookmarking Tools as Facilitators of Learning and Research Collaborative Processes: The Diigo Case’. *Interdisciplinary Journal of E-Learning and Learning Objects* 6: 175-191.  
<http://www.ijello.org/Volume6/IJELLOv6p175-191Estelles683.pdf> (accessed 19 June 2011).

The authors start by describing general characteristics of Social Bookmarking Systems (SBS), selecting Diigo (<http://www.diigo.com>) as the best tool to facilitate teaching and learning and to support academic research. Diigo is an acronym for ‘Digest of Internet Information, Groups and Other stuff’. It allows users to bookmark and tag websites, video’s and other items, comment upon them and share this information with specific groups. The authors describe how Diigo facilitates individual and team work, its applications for learning and research; give examples of academic use - including a table with a sample of case studies; and compare Diigo to other SBS. The authors are extremely supportive of Diigo, which makes one of the most interesting parts of this article a SWOT-analysis. (p. 188)

**Fitzpatrick, Kathleen. (2007).** ‘CommentPress: New (Social) Structures for New (Networked) Texts’. *Journal of Electronic Publishing* 10.3: n. pag.  
<http://quod.lib.umich.edu/j/jep/3336451.0010.305?rgn=main;view=fulltext> (accessed 14 July 2011). Available in MediaCommons (including comments) through  
<http://mediacommons.futureofthebook.org/mcp/press/cpfinal/> (accessed 13 July 2011).

The author discusses a different model for digital publishing. The argument is built up from the perspective that experiments have relied too often on the metaphor of the codex and the incorrect notion of the single, isolated academic author and reader. Instead, the author states, the metaphor of the network, allowing for dialogue, is more efficient, with the blog as a good starting point. This has materialized in CommentPress, an open source

Wordpress theme and plugin. The author then describes several experiments with the model, conducted with the Institute for the Future of the Book: G4M3R 7TH30RY (the web version of the book *Gamer Theory* by McKenzie Wark, <http://www.futureofthebook.org/gamertheory/>) which was the basis for CommentPress; and consecutively two projects taken up to develop CommentPress further: Mitchell Stephens's article 'Holy of Holies' and a commentable version of the Iraq Study Group Report. The author then discusses the possibilities for academic publishing, noting that the use can be a labor-intense process for the author, for instance in keeping track of the comments.

The MediaCommons version of the article has not solicited many comments, perhaps because for first-time commentators they were moderated before being published; the comments are interesting however to scan: some are content-related, others involve for instance practical problems in installing CommentPress. Many are by the same author. An interesting detail: an error which still resides in the published paper is commented upon in the comments section of the MediaCommons version. (section 'operation iraqi quagmire')

**Greenhow, Christine. (2009). 'Social Scholarship: Applying Social Networking Technologies to Research Practices'. *Knowledge Quest* 37.4: 42-47.**

The article discusses the benefits and downsides of social bibliography sites or social bookmarking sites for education purposes, specifically CiteULike (<http://www.citeulike.org>) and Diigo (<http://www.diigo.com>). Benefits include a greater insight in one's 'own scholarly attitudes and practices' (p. 43), students learning from professors, connecting with them, getting a broader insight and being able to contribute themselves. Soft peer review is mentioned as another benefit: it shows (student) researchers which articles are popular and thus probably more valuable. A downside according to the author is the fact that because of a lack of peer review students need to read more critically to assess the value of a text. In Diigo, there is the possibility of annotation, making that assessment easier; another's annotations benefit critical thinking. The author concludes by stating that methods and principles need to be defined and that further research into the impact is necessary.

**Hammond, Tony et al. (2005). 'Social Bookmarking Tools (I): A General Review'. *D-Lib Magazine* 11.4: n. pag. <http://www.dlib.org/dlib/april05/hammond/04hammond.html> (accessed 14 July 2011).**

In 2005, a new class of social bookmarking tools was arising that catered more to academic needs, which meant the inclusion of metadata. In this article, such bookmarking tools are discussed. After a brief discussion of the origin of links, including taxonomies and bookmarklets, the authors describe the nature of tagging (participatory, bottom-up instead of a top-down process, a flat structure instead of hierarchical) and the reason for tagging - most tools discussed are bookmarking sites where users tag content by others intended for personal use. The authors then briefly identify benefits, such as being able to locate information in a smaller pool than the whole web; and a few issues, among which privacy. The authors have built link lists in

Connotea (<http://www.connotea.org/>) to demonstrate the usefulness of the tool. These provide invaluable information by following them now - several years after publication. The authors had used a complex tag to accompany the article to prevent others using the same tag for different topic. However, the tag they have chosen to accompany the article is not unique (anymore) and spamming appears to be an issue. The most useful lists in the current day are those that combine the tag with the references restricted by poster, in this case the references that were tagged by one of the authors of the article. This indicates the usefulness of a filter. The authors end with a summary of elements usually present in social bookmarking tools. An accompanying article focuses on one of the bookmarking tools mentioned, Connotea:

**Lund, Ben. et al. 'Social Bookmarking Tools (II): A Case Study - Connotea'. *D-Lib Magazine* 11.4 (2005) : n. pag.**

<http://www.dlib.org/dlib/april05/lund/04lund.html> (accessed 14 July 2011).

**Kjellberg, Sara. (2010). 'I Am a Blogging Researcher: Motivations for Blogging in a Scholarly Context'. *First Monday* 15.8: n. pag.**

<http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2962/2580> (accessed 13 July 2011).

The author first describes previous research on the motivation for blogging, which is a small base of research, often auto-ethnographic. The author states that it was possible to identify recurrent themes however, among which information or knowledge management, social purposes and expressing opinions. A qualitative research method was then employed, by conducting in-depth semi-structured interviews with twelve Swedish, Dutch and Danish blogging researchers in 2009, from a variety of disciplines, including humanities and STM who were selected through snowball sampling. The author has also used the blogs themselves in analyzing the interviews. From the material, six functions were distilled: disseminating content, expressing opinions, keeping up-to-date and remembering, writing, interacting and creating relationships (although not every blogger mentions them all). The author elaborates on these functions, using ample quotes from the interviews. Motivations for blogging were then extracted from the interviewees' statements on the functions: 1) sharing with others, 2) providing room for creativity and 3) feeling connected. Sharing (1) is not reserved for academic peers, especially in the STM sector, where people from the industry also follow the blogs. The mentioned creativity (2) originates from fact that the bloggers can write with less restriction than in articles, and can thus be used to develop and organize ideas. The bloggers mention strong personal motivations for keeping their blogs, even though they are not part of their academic publishing record and the researchers do not think it will aid their careers in the near future. A table shows the interplay of the functions and motivations and the intended audience (self or others).

**Priem, Jason, and Kaitlin Light Costello. (2010). 'How and Why Scholars Cite on Twitter'. *Proceedings of the ASIS&T Annual Meeting*. Pittsburgh, PA, USA.**

[http://www.asis.org/asist2010/proceedings/proceedings/ASIST\\_AM10/submissions/201\\_Final\\_Submission.pdf](http://www.asis.org/asist2010/proceedings/proceedings/ASIST_AM10/submissions/201_Final_Submission.pdf) (accessed 8 July 2011).

The authors conduct bibliometric analysis of Twitter (<http://twitter.com/>) feeds by a sample of 28 academics (faculty, postdocs or doctoral students) from the humanities, social sciences and sciences, selected through snowball sampling. 2,322 Tweets that contained direct or indirect links to a peer-reviewed scholarly article online were isolated and analyzed by both authors using open coding. The direct citations are called first-order, the citations which linked to an intermediary web page are second-order citations. The authors also conducted qualitative research by doing interviews. Reasons given for not citing directly are workflow and the existence of a paywall, which was supported by the quantitative data. Citing in Tweets is reported to be seen as part of an ongoing conversation. The participants favored the speed with which articles spread (also supported by the quantitative data). Moreover, the platform aided their daily academic process: Twitter functions as a filter and helps point to interesting articles. The authors conclude by stating that Twitter citations could be a valuable part of bibliometrics to supplement traditional citation analysis.

**Ross, Claire. et al. (2011). 'Enabled Backchannel: Conference Twitter Use by Digital Humanists'. *Journal of Documentation* 67.2: 214-237.**

The authors describe the possible benefits and downsides of using Twitter ([http://twitter.com](http://twitter.com/)) as a digital backchannel at conferences and show how the use of Twitter as a platform can enable better participation and communication among community members, thus to support communities of practice. As the Digital Humanities (DH) community is known as an early adopter of such technologies, tweets from three DH conferences from June through September 2009 were used. The Tweets were collected and archived by Twapper Keeper (<http://www.twapperkeeper.com>). The database was analysed using qualitative and quantitative methods. Automated analysis was hindered because of the use of abbreviations, different spellings, etc. due to the maximum length of a Tweet (140 characters). Tweets were categorized manually according to types of *user intention* for which the authors have developed their own categories: comments on presentations; sharing resources; discussions and conversations; jotting down notes; establishing an online presence; and asking organizational questions. (p. 219) Most of the Tweets fell into the category of 'jotting down notes', indicating that sharing is more important than collaboration. The findings also suggest that a minority of users generates a great proportion of the Tweets, whereas many users produce none or only one Tweet during the conference, indicating an unevenness of use. Regulation by the organizers of the conference (communicating a hashtag up front for instance) could improve this situation according to the authors. Consecutively, the users with the highest amount of tweets were sent an online survey, resulting in 11 responses, where the aggregation of proceedings for other attendees (through 'jotting down notes') was also mentioned as most important. The authors conclude by stating, among other things, that the backchannel of Tweets offer more than 'whispering in class' but that 'new, dedicated methodologies for the analysis and understanding of Tweet-based corpora are necessary'. (p.232)

**Yang, Stephen J.A. et al. (2011). ‘A Collaborative Multimedia Annotation Tool for Enhancing Knowledge Sharing in CSCL’. *Interactive Learning Environments* 19.1: 45-62.**

This article describes a Social Media tool that has been built in academia (within the discipline of Computer Supported Collaborative Learning) to support collaborative learning, PAMS 2.0. An overview of earlier research in and outside CSCL is first given, including several approaches to collaborative and cooperative learning. Then, PAMS 2.0 is described. PAMS 1.0 was not Web-based whereas this version is. Some features that are mentioned: PAMS 2.0 makes use of the Web Services Resource Framework technology (WSRF), which is XML-based; readers can annotate on document files and web pages - although they the latter have to be imported; it allows for role assignment; and it provides synchronous discussion possibilities next to the read/annotation space. Consecutively, an experiment is discussed. Two groups of student volunteers - one using PAMS, the other not - read, annotated and discussed materials during a semester, which they were tested on in five iterations. The students using PAMS performed equally to the other group at the beginning of the trial, but performed better at the end. The authors hope to implement the system on the Web. This article not only shows the possible benefits of this system, it also provides an indication of the possible benefit of using (semi-)commercial applications in educational settings, for instance Diigo. Not much research as yet has been done on such platforms.

**Sidebar: other Social Media platforms**

Some platforms have not been included in the previous list, but have interesting features and are worth looking into. The articles - which all but one originate from the trade sector - have been included separately in the bibliography.

<b>Platform</b>	<b>URL</b>	<b>Further reading</b>
Copia	<a href="http://www.thecopia.com">http://www.thecopia.com</a>	<p>Carmody, Tim. (2010). ‘Copia, Social Reading App/Network/Store, Comes Alive’. <i>Wired</i> 18 Nov.  <a href="http://www.wired.com/gadgetlab/2010/11/copia-social-reading-appnetworkstore-comes-alive/">http://www.wired.com/gadgetlab/2010/11/copia-social-reading-appnetworkstore-comes-alive/</a> (accessed 5 July 2011).</p> <p>Watters, Audrey. (2010). ‘New Social E-Reading Platform Allows Real-Time Discussions, Right On the E-Book’s Pages’. <i>ReadWriteWeb</i> 22 Nov.  <a href="http://www.readwriteweb.com/archives/new-social-e-reading-platform-allows-real-time-dis.php">http://www.readwriteweb.com/archives/new-social-e-reading-platform-allows-real-time-dis.php</a> (accessed 5 July 2011).</p>
Kobo reader	<a href="http://www.kobobooks.com">http://www.kobobooks.com</a>	Sorrel, Charlie. (2010). ‘Kobo Update Adds Social Features, Nerd-Friendly Stats’. <i>Wired</i>

		10 Dec. <a href="http://www.wired.com/gadgetlab/2010/12/ko-bo-update-adds-social-features-nerd-friendly-stats/">http://www.wired.com/gadgetlab/2010/12/ko-bo-update-adds-social-features-nerd-friendly-stats/</a> (accessed 5 July 2011).
Mendeley	<a href="http://www.mendeley.com">http://www.mendeley.com</a>	Hopkins, Curt. (2010). 'Mendeley Throws Open the Doors to Academic Data'. <i>ReadWriteWeb</i> 29 Apr. <a href="http://www.readriteweb.com/archives/mendeley-introduces-academic-catalog-search.php">http://www.readriteweb.com/archives/mendeley-introduces-academic-catalog-search.php</a> (accessed 15 July 2011).
Open Annotation Collaboration	<a href="http://www.openannotation.org">http://www.openannotation.org</a>	Hunter, Jane et al. (2010). 'The Open Annotation Collaboration: A Data Model to Support Sharing and Interoperability of Scholarly Annotations'. <i>Digital Humanities 2010: Conference Abstracts</i> . London, United Kingdom: Office for Humanities Communication; Centre for Computing in the Humanities. 175-178.
Readum	<a href="http://www.readum.com">http://www.readum.com</a>	Watters, Audrey. (2011). 'Long Live Marginalia! ReadSocial Brings Annotations to Digital Literature'. <i>ReadWriteWeb</i> 24 Mar. <a href="http://www.readriteweb.com/archives/love-live-marginalia-readsocial-brings-annotations.php">http://www.readriteweb.com/archives/love-live-marginalia-readsocial-brings-annotations.php</a> (accessed 5 July 2011).
Google Sidewiki and Reframe it	<a href="http://www.google.com/sidewiki">http://www.google.com/sidewiki</a> <a href="http://reframeit.com">http://reframeit.com</a>	Curtis, Benjamin. (2010). 'Google's Sidewiki and the Real Innovations'. <i>Medical Marketing and Media</i> 45.1: 31. <a href="http://www.mmm-online.com/googles-sidewiki-and-the-real-innovations/article/160456/">http://www.mmm-online.com/googles-sidewiki-and-the-real-innovations/article/160456/</a> (accessed 5 July 2011).  Lardinois, Frederic. (2009). 'Reframe It Brings Facebook, Twitter, & Web Luminaries to Its Annotation Tool'. <i>ReadWriteWeb</i> 30 Mar. <a href="http://www.readriteweb.com/archives/reframe-integrates-facebook-and-twitter.php">http://www.readriteweb.com/archives/reframe-integrates-facebook-and-twitter.php</a> (accessed 7 July 2011).

### Collaborative reading using e-reading devices

Much academic research has been done on the use of e-reading devices and their merit for academic work, but the relative novelty of *shared* annotation precludes interesting findings on that particular topic. On the iPad, which offers many tools for collaboration, like iAnnotate, academic research on the topic as yet is hard to find.

**Weisberg, Mitchell. (2011). 'Student Attitudes and Behaviors Towards Digital Textbooks'. *Publishing Research Quarterly* 27.2: 188-196.**

Report on a two-year study among students on e-reading devices. The study was conducted at Sawyer Business School of Suffolk University in Boston, Massachusetts. This research shows that when readers make long-term use of a e-reading device, adoption becomes more likely. Annotation possibilities were seen as an important aspect. Especially the tablet was seen as an interesting option for reading - and these allow for collaborative reading, although the study does not report on this opportunity.

Other researches mention the strain of annotation and highlighting - and thus never get to the social part of annotation - if it was available at all in the chosen device at that time, see for instance:

- 'E-Readers Advance in Academe: A 'Chronicle' Survey'. (2010). *The Chronicle of Higher Education* 56.38: n. pag. <http://chronicle.com/article/E-Readers-Advance-in-Academe-/65885/> (accessed 15 July 2011).
- Gielen, Nina. (2010). 'Handheld E-Book Readers and Scholarship: Report and Reader Survey'. *ACLS Humanities E-book*: n. pag. <http://www.humanitiesebook.org/heb-whitepaper-3.html> (accessed 19 July 2011).
- Stein, Scott. (2009). 'Do Kindles (and Other E-readers) Need Better Ways to Annotate?' *CNET News* 30 Sept. [http://news.cnet.com/8301-17938\\_105-10363642-1.html](http://news.cnet.com/8301-17938_105-10363642-1.html) (accessed 15 July 2011). (mentions *The E-reader Pilot at Princeton*. New Jersey: Princeton University, 2009. <http://www.princeton.edu/ereaderpilot/> [accessed 1 July 2011.]).

**O'Donnell, James J. (2010). 'Do You Like Your E-Reader? Six Takes from Academics'. *The Chronicle of Higher Education* 56.38: n. pag.**

<http://chronicle.com/article/Do-You-Like-Your-E-Reader-/65840/> (accessed 14 July 2011).

Six academics describe the use of their e-readers, which are in this case Kindles and iPads. All describe the Kindle as no more than a possibility to replace a stack of leisure reading with a single small device. The iPad is mentioned as having more opportunities for scholarly work, but still wants improvement. Collaboration or sharing is not mentioned. One researcher remarked that a barrier in doing research with the iPad is the impossibility to annotate copyrighted digital documents.

**'The iPad for Professors: Evaluating a Productivity Tool After One Year'. (2011). *The Chronicle of Higher Education*: n. pag.**

<http://chronicle.com/article/article-content/126885/> (accessed 14 July 2011).

Six scholars evaluate the use of the iPad (first version) for scholarly purposes. Many mention note-taking and being able to synchronize documents to several devices. Collaborative work or sharing is hardly mentioned, although one scholar describes using Dropbox (<http://www.dropbox.com>) and iAnnotate (<http://www.ajidev.com/iannotate/>) for receiving and grading student work (and then returning them through Gmail).

**Wang, Tricia. (2010). 'My New Academic Workflow With My Ipad, iAnnotate, Mendeley & Dropbox'. *Cultural Bytes*. <http://culturalbyt.es/post/1125482840/workflow> (accessed 11 July 2011).**

This is a blog post by an academic, Tricia Wang, which provides a nice case of the use of a device (the iPad) combined with several Social Media tools for performing research. The article contains several images of the author's work process.

### **Referencing and soft peer-review**

Peer review is central to academic recognition and it is one of the main concerns when Social Media and online publishing are discussed: how does one guarantee quality, that is to say filter information without it? This section includes an essay confronting this issue and an article that proposes to include Web-based metrics to obtain recognition.

**Priem, Jason, and Bradley M. Hemminger. (2010). 'Scientometrics 2.0: Toward New Metrics of Scholarly Impact on the Social Web'. *First Monday* 15.7: n. pag. <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2874/2570> (accessed 13 July 2011).**

An alternative model for measuring academic impact is suggested, including Social Media data but still built around single article reference. First, the authors offer a quick discussion of existing models, the most important of which is the Journal Impact Factor (JIF) which is used by tenure committees but only measures the impact of journals as a whole. In the third section, tables are presented with practical overviews that can serve as a basis for scientometrics: 1) an overview of several types of Social Media, aimed at the general and specifically at the academic public (often in science); 2) an overview of research recommending and discussing webmetrics. The authors consecutively supply a list of data sources explaining why and how these can be used for scientometrics and what the pitfalls are. This list includes reference managers, comments on articles, microblogging and blogging. In the conclusions, the application of scientometrics is discussed cautiously. The main uses described are evaluation, filtering and study and mapping of scholarship. The authors end with a discussion of the limitations and opportunities, encouraging new research.

**Fitzpatrick, Kathleen. (2009). 'Peer-to-Peer Review and the Future of Scholarly Authority'. *Cinema Journal* 48.2: 124-129.**

In developing the online scholarly publishing network MediaCommons (see <http://mediacommons.futureofthebook.org/>) with the Institute of the Future of the Book, the author was often questioned about peer review, as the articles shared through this platform will not be peer-reviewed in the traditional sense. The topic of digital scholarly peer review is addressed in this essay. The author first notes that on the Web in general, the shift in authority towards decentralization is accepted, but that in academia scholars are not willing to consider such a notion for intellectual authority, resulting in the risk of becoming completely detached from the non-academic world. The downsides of peer review are explained, for instance how the system sustains itself and the author then offers online peer-to-peer review as an

alternative, where filtering replaces gatekeeping. The author concludes by stating her hopes that a community surrounding projects like MediaCommons can set the parameters for such a system in such a way that current systems can learn to adhere to this type of review.

## 2. Scholarly use of Social Media by non-academics

Where in the use of the Web and Social Media many academics express concern, another opportunity is recognized: the possibility to engage a wider audience. In this second part of the bibliography, the possibilities of such an engagement are explored. First there is a theoretical focus where researchers - for different reasons - argue the benefit or even necessity of employing Web 2.0 strategies to include the public in the academic knowledge system. In the second section, examples of the employment of Social Media - thereby including the products and help of a wider audience - are given, including discussion on the benefits and downsides and possible strategies for improving these tools.

### Theoretical background

The articles in this section have different backgrounds which the authors have used as a base: industry, (global) education and university, but all have in common that they advocate a university model based on the Web 2.0 model and/or technologies in order for the university to survive as a knowledge producer in a fast-changing world.

**Brown, John Seely, and Richard P. Adler. (2008). 'Minds on Fire: Open Education, the Long Tail, and Learning 2.0'. *Educause Review* 43.1: 16-20,22,24,26,28,30,32.**

[http://webpages.csus.edu/~sac43949/PDFs/minds\\_on\\_fire.pdf](http://webpages.csus.edu/~sac43949/PDFs/minds_on_fire.pdf) (accessed 19 July 2011).

The authors argue that because of the rising demand for higher education, it is near impossible to meet the global demand in the future, at least if this demand needs to be met by building brick-and-mortar institutions. The solution is seen in access through the Internet, but more importantly Web 2.0 technology: participatory resources that can support different types of learning, according to the authors. The notion of social learning is employed to support this claim, where 1) the way something is learned - collaboratively - is becoming more important than what is learned, countering the Cartesian view of knowledge and learning based on knowledge transferal; 2) learning to be a *participant* in the field is included in the learning process. The authors point to the open source software community as an example of how new-comers learn through participation and mention that this model is incorporated by other communities such as Wikipedia, stressing the importance of the visibility of the creation process. The authors then continue to describe some examples of formal and informal social learning based on the first type of social learning, using SecondLife and Social Media in general. Consecutively some projects are described based on the second type of social learning, where content and community are used as equal parts in the learning process. One example is The Decameron Web by the Italian Studies Department at Brown University, where students can find source materials, but also can emulate on established researchers' work and submit their own contributions. The authors argue that learning will develop into

Learning 2.0, where students will not only learn in college, but during their whole life according to a demand-pull principle instead of supply-push, connecting to niche communities of people with the same interest, where they will engage in informal learning. The Open Educational Resources movement, together with eScience, eHumanities and Web 2.0 resources provides a base for 'Open Participatory Learning Ecosystems' in which people can continue to take part, also from outside an institution. The authors state that reflective practicums in formal and informal learning institutions can help shape such ecosystems.

**Nikolov, Roumen. (2009). 'Towards University 2.0: A Space Where Academic Education Meets Corporate Training'. Arnhem, The Netherlands: IPROF-09: ICT Professionalism: a Global Challenge. <http://hdl.handle.net/10506/136> (accessed 15 June 2011).**

This (for many research universities daring) framework for institutional change in university builds on Web 2.0 and Enterprise 2.0 strategies. The author first sketches the environment of the developments: the economic importance of knowledge, including the Lisbon strategy to forward Europe in the global economy; the adaptation and integration of e-learning, where the increase of ICT in higher education has led to new pedagogy models and embedding of e-learning; current university models, where the Corporate University is explained in more detail; and lastly, Web 2.0 and Enterprise 2.0. Enterprises have acknowledged the importance of Web 2.0 technologies and have thus incorporated them, because these technologies provide 'opportunities for company improvements in the area of innovation, collaboration, knowledge sharing, using collective intelligence and searching and discovering'. (p. 4) Part of these developments is the emergence of 'ideagoras', Web 2.0 based environments where researchers and developers can collaboratively innovate. On the bases of these developments and models, the author builds a model of University 2.0. It means an adaptation of a large part of the principles of the Enterprise 2.0 model and thus the integration of Web 2.0 technologies and applications. An application is found in the concept of the Community of Practice (see Wenger 1998), upon which the university should build and maintain a community in order to collaborate with the industry. In the final section, the implementation of such a strategy at the University of Sofia is briefly explained, which is partially based on the European e-Competence Framework (2008).

**Unsworth, John. (2008). 'University 2.0'. *The Tower and The Cloud. Higher Education in the Age of Cloud Computing*. EDUCAUSE. 227-237. <http://www.educause.edu/thetowerandthecloud> (accessed 15 July 2011).**

In this essay, the author argues that universities need to rethink their strategies to perform their core business of cultivating knowledge. Using a nineteenth century article on the distribution of books through railroads, the author distills the concept of 'information friction', which - explained roughly - describes impeding factors on the distribution of information and the positive effect of a new technology. The author sees universities as monolithic, slow organizations that impede innovation and need to learn from Web 2.0 strategies. He advocates 'seamy' systems (as opposed to seamless): top-down, small-scale, non-finalized tools that encourage users to

think about information processing. Examples he uses are BibApp - for building publication networks based on one's own faculty staff, available through <http://bibapp.org/> - and BRAIN, 'a peer finder for institutional repositories', which is of his own making. (p. 233). The end user is crucial in making the latter operable, as demander and supplier of content. The author argues that if universities makes its information accessible properly, users (including non-academic) will build upon this knowledge by building tools to provide different kinds of access, through apps for instance. In the conclusion the author repeats part of a fifteen-year-old lecture in which he stated that the university should not wait for the public to come, but to actively engage it by meeting in their own environment - if it is not already too late.

**Wenger, Etienne. (1998). 'Communities of Practice: Learning as a Social System'. *Systems Thinker* 9.5: 1-10.**

<http://www.open.ac.uk/ldc08/sites/www.open.ac.uk.ldc08/files/Learningasasocialsystem.pdf> (accessed July 18, 2011).

Theoretical article that describes the often-used concept of Community of Practice (CoP). Although the concept was designed for use in business practices, it is particularly useful in describing online communities; the identity of the CoP is shaped by the contents of what the members share, thus by knowledge, and not by the institution or other official affiliations or even shared tasks. Although these communities grow naturally, organizations can influence them. Five strategies of nurturing the community are described.

Cambridge et al. (2005) have written a brief design guide to form and sustain communities of practice in Higher Education:

**Cambridge, Darren, Soren Kaplan, and Vicki Suter. (2005). *Community of Practice Design Guide: A Step-by-Step Guide for Designing & Cultivating Communities of Practice in Higher Education*. Educause.**

<http://www.educause.edu/ELI/CommunityofPracticeDesignGuide/160068> (accessed 18 July 2011).

## Examples

**von Ahn, Luis, et al. (2008). 'reCAPTCHA: Human-Based Character Recognition via Web Security Measures'. *Science* 321.5895: 1465-1468.**

[http://www.cs.cmu.edu/~biglou/reCAPTCHA\\_Science.pdf](http://www.cs.cmu.edu/~biglou/reCAPTCHA_Science.pdf) (accessed 18 July 2011).

The prime author has done much research on the employment of 'wasted' human processing power'. In this article, reCAPTCHA (now acquired by Google: <http://www.google.com/recaptcha>) is described, a system that uses human processing power to help transcribe digitized textual archival material where OCR has failed. CAPTCHAs (completely automated public Turing-test to tell computers and humans apart) are used on websites to prevent machines from automatically filling out forms. Computer-generated strings of letters and digits, which are also distorted by the computer to make them illegible for machines, are shown which the reader then needs to replicate to prove she is human. In reCAPTCHA, next to one string of computer-

generated content, scanned words from archival documents are inserted - which two OCR systems have failed to recognize. Thus, free human transcription of words is provided. The workings of the system are first explained in a clear and detailed fashion. Empirical research proves that 1) archival documents can be transcribed with a 99.1% accuracy using reCAPTCHA; 2) reCAPTCHAs are better at preventing computers to read their contents than (computer-generated) CAPTCHAs are. This is a good example of the useful employment of non-expert knowledge for problems that are generally solved by experts, but that can be performed on a much larger scale than would have been possible without such application.

**Brumfiel, Geoff. (2009). ‘Breaking the Convention?’ *Nature* 459.7250: 1050-1051.**

A brief discussion of the downside of direct digital publishing during science conferences. The boundaries between researchers and journalists blur, as often anyone can get access to streaming video during conferences, Twitter feeds, etc and publish on this information. Raw data might become publicly available before intended. The author discusses means of prevention, but also points to the possible benefit.

**Cohen, Daniel J. (2009). ‘Engaging and Creating Virtual Communities’. *Proceedings of the Cultural Heritage Online Conference. Florence, Italy. 28-32.* <http://www.rinascimento-digitale.it/eventi/conference2009/proceedings-2009/Proceedings-part1.pdf> (accessed 18 July 2011).**

In this conference paper, the author describes the use of virtual communities to aid scholars in conducting research. Some examples are mentioned that allow for varied engagement of non-academics. Digital Humanities Now (<http://digitalhumanitiesnow.org/>) for instance, is mentioned as a platform where the social media buzz in Digital Humanities is aggregated. More active engagement can be found in Galaxy Zoo (<http://www.galaxyzoo.org/>, now the second version), where amateur astrologers identify galaxies and planets. Steve (<http://www.steve.museum/>) is an amateur tagging tool used by cultural heritage institutions for the tagging of art works. The author mentions that communities develop without deliberate intention from organizations themselves and that they can be very useful to research; that is, for ‘secondary products of scholarship’, like classification and providing context. (p. 31) The author ends on the note that cultural heritage institutions will need to learn to curate virtual communities around the physical objects they normally curate.

**Fernheimer, Janice W., Lisa Litterio, and James Hendler. (2011). ‘Transdisciplinary IT texts and the Future of Web-Scale Collaboration’. *Journal of Business and Technical Communication* 25.3: 322-337.**

Through the concept of IT texts (‘the blend of IT and texts’, introduced in 2001), including for instance e-mail and reading on a portable device, the authors suggest a transdisciplinary approach to problem-solving. This article gives an interesting example of the application of Web 2.0 to facilitate large-scale collaborative networks that include the general public. The authors first discuss the importance of transdisciplinary collaboration for societal

problem-solving. Consequently, a two-day workshop on web-scale collaboration is described, where three groups (each discussing an issue in STM, humanities or social science) discussed the conditions of such collaboration and gave examples of IT texts that could be of use. CommentPress and Wikipedia were mentioned for instance in a group focused on the topic of scholarly data. All groups defined five heuristics for suitable platforms, among which providing incentives to attract user participation and mechanisms for ensuring privacy and dedicating ownership. Three examples of IT text for transdisciplinary collaboration are discussed: Wikipedia (<http://www.wikipedia.org/>), Galaxy Zoo (for identifying galaxies, <http://www.galaxyzoo.org/>, now the second version) and reCAPTCHA (which aids in deciphering words of difficult to read archival material, see Von Ahn et al. (2008), <http://www.google.com/recaptcha>). The authors conclude by recommending the continuance of transdisciplinary workshops and further development of heuristics.

**Guy, Marieke, and Emma Tonkin. (2006). ‘Folksonomies: Tidying up Tags?’ *D-Lib Magazine* 12.1: n. pag. <http://www.dlib.org/dlib/january06/guy/01guy.html> (accessed 11 July 2011).**

Although this article is not explicitly on academic and non-academic *scholarly* use of Social Media, folksonomies are a good example of how expert and non-expert users document objects of interest, guiding access to information, as opposed to sole expert classification in for instance libraries. The authors suggest opportunities to ameliorate tagging, based on a research sample of delicious (<http://www.delicious.com/>) and Flickr (<http://www.flickr.com/>), from the side of the user as well as the system’s creator. They discuss the possible consequences of for instance automated tag suggestion, opportunities for discussion among users and offering a rule set to users, suggesting that too much intervention might impoverish the tag set; thereby implicitly supporting the possible benefit of using a system which includes non-experts.

**Hendry, David G., J.R. Jenkins, and Joseph F. McCarthy. (2006). ‘Collaborative Bibliography’. *Information Processing and Management* 42.3: 805-825.**

The authors signal the potential wealth of Internet resources, which they identify as bibliographies. They have indexed a number of resources, including for instance Google Zeitgeist (<http://www.google.com/press/zeitgeist/>), Yahoo Groups (<http://groups.yahoo.com/>) and Slashdot (<http://slashdot.org/>) upon which they have expanded a traditional conceptual model for bibliographies to include participation. The authors suggest several new research topics emerging from their work, including amateur bibliographers and professional intermediation.

**Mollet, Amy. (2011). ‘Taking a Leaf Out of Poliakoff’s Book: Embracing New Online Platforms Is Necessary for the Positive Survival of Academic Impact and Debate’. *Impact of Social Sciences* 9 June.**

<http://blogs.lse.ac.uk/impactofsocialsciences/2011/06/09/poliakoff-gearty-online-academic-impac/> (accessed 15 July 2011).

The author briefly discusses two academic researchers, Martyn Poliakoff (Professor of Chemistry at the University of Nottingham) and Conor Gearty (Professor of Law at the London School of Economics) who have successfully employed social media to extend their audience to the wider public. The blog (Impact of Social Sciences by the London School of Economics and Political Science) provides other examples of academics reaching out to the public as well as discussions on the topic.

**Purdy, James P. (2010). 'The Changing Space of Research: Web 2.0 and the Integration of Research and Writing Environments'. *Computers and Composition* 27.1: 48-58.**

This article is aimed at reforming student composition education, where students generally are presented with an artificial distinction between research and writing (and between doing research and Web 2.0). The author uses a combination of four Web 2.0 platforms to show how students can be taught a more realistic image of composition: Wikipedia (<http://www.wikipedia.org>), JSTOR (<http://www.jstor.org/>), ARTSTOR (<http://www.artstor.org>) and del.icio.us. (now called 'delicious', <http://www.delicious.com/>). Each of these websites is explained as having affordances for either research, writing or a combination of both and the author expands on the teaching possibilities for each of them. The importance is stressed of connecting Web 2.0, which students are familiar with, to academic research, offering students - and non-academic researchers - an opportunity to relate more easily to this type of research. Moreover, the focus in teaching should shift from consumption (what have others written on the subject?) to the production side (what do I have to say about this?). The author also argues for students to be better taught how to discern quality on the Internet, rather than forcing them to read only materials that are available through the library. In the conclusion, the author focuses on the academic Web 2.0 counterparts for providing - for instance - annotation possibilities and urging composition teachers to teach students how to become - and see themselves as - 'capable knowledge producers', using the affordances of Web 2.0.

**Santo, Avi, and Christopher Lucas. (2009). 'Engaging Academic and Nonacademic Communities Through Online Scholarly Work'. *Cinema Journal* 48.2: 129-138.**

The authors have conducted an informal online survey through the MediaCommons e-mail list and the Cultural Studies listserv on practices and attitudes towards engaging non-academic communities through online scholarly work. Some of the outcomes are described, for instance the gap between the interest in engaging non-academics and actual practices. Many scholars prefer to engage other academics and students first and are not completely comfortable with sharing unfinished work online, although 46% of the respondents report maintaining blogs. In the final section, possibilities for engaging the non-academic community are mentioned - including existing examples - and the authors stress the importance of making an effort to do so. The benefit of this engagement is mentioned briefly: education and

perhaps in the best case scenario, aid from the non-academic community in knowledge construction. The authors find that the Web is starting to be used to disperse scholarly discourse more widely and encourage scholars to take risks.

**Shanahan, Marie-Claire. (2010). ‘Changing the Meaning of Peer-to-peer? Exploring Online Comment Spaces as Sites of Negotiated Expertise’. *JCOM : Journal of Science Communication* 9.1: n. pag. <http://jcom.sissa.it/archive/09/01/Jcom0901%282010%29A01/> (accessed 15 July 2011).**

The author has performed linguistic discourse analysis on the comments section of three health science articles in a newspaper to find whether experts, either personal or scientific, interact with one another. The small sample indicates that the origin of personal experience needs to be given or else is demanded, whereas scientific expertise is assumed with the use of a certain type of discourse. The author notes that the personal and scientific experts commented within their peer-groups and where they did interact (in one case), the personal experts ‘scientised’ their language use. Since the origin of scientific expertise was rarely explicitly mentioned, it is not certain whether the scientific experts are academics or not. It is an interesting article however, as it points to the notion that linguistic markers of (a lack of) academic education have a great influence on the interaction between commentators; and possibly disproves (although the sample is small) the fact that a shared discussion space automatically allows for connection between different communities of practice.

### **3. e-Reader Hardware and Related Electronic Reading Tools**

Supplementing the above, this review of electronic reading environments and tools is meant to provide a baseline for understanding new e-Reader hardware and software. Although it is striking in one sense how little seems to have changed in a decade – for example, the vast majority of scholarly ‘reading tools’ that have been developed or theorized are either annotation systems or lookup engines – new file formats and commercial testing grounds are rapidly accelerating this work.

#### **e-Reader Hardware**

##### ***Sony Reader***

The first ‘modern’ dedicated e-Reader platform was the *Sony Reader*, released through Borders booksellers in the United States in September 2006. It featured a greyscale screen similar to that of the first- and second-generation iPod and iPod Mini, and was a surprisingly multi-functioned device, able to play MP3 audio and natively display PDF, ePub, Mobipocket, and MS Office document formats. Of these, PDF support was handicapped by the device’s low refresh rate, which made horizontal scrolling of documents that did not conform to the screen width very inconvenient. Sony also introduced their own proprietary eBook format, called *BBeB* (‘Broadband eBook’), though it was not very successful, probably due to an inability to purchase content on-the-go without using a PC as an intermediary. Newer revisions of the device are now on sale in the US, UK, and Canada, but support is flagging.

### ***Amazon Kindle***

In November 2007, twelve years after they sold their first physical book over the internet, Amazon.com gave the e-Book a gargantuan, consumer-grade push, in the form of their Kindle. The device was only on sale in the United States until late 2009, when it was gradually introduced into hundreds of other markets worldwide. The Kindle's loudest boast, and perhaps its entire *raison d'être*, was a screen made from the revolutionary Vizplex, brainchild of Cambridge, MA startup E-Ink. Without a backlight, Vizplex is easier on the eyes; with the help of a technique called electrophoresis, Vizplex displays can freeze, without any power consumption, until a user presses the 'next page' button. Now, a revision of Vizplex is used in every major commercial e-Reader, and is arguably the single greatest advantage of using a dedicated device.

Its other greatest innovation, and almost certainly its financial triumph, is the ease with which it allows users to download and purchase content on-the-fly without the use of a tethered PC. Amazon's Kindle is still the only device to provide free wireless 3G access to all users for the purpose, and the only device *not* to support the open *ePub* document format, in a relatively transparent effort to push its own DRM-secured, proprietary eBooks<sup>3</sup>. Despite this, Amazon has been successful in part because their content library is the undisputed largest, and with their considerable resources will likely remain so. The Kindle is also the only dedicated e-Reader device to include a full physical keyboard, which some users may prefer for text entry when searching or annotating content.

Because the Kindle was for a good while the market leader, it was they who addressed many of the growing pains of e-Readers, and in some cases – such as the provision of page and line numbers for scholarly use of texts, as would be present in physical editions – they still provide the best solution. In early 2011, Amazon released an Application Development Kit (ADK) for third-party developers to build software specifically for its dedicated Kindle device, though it remains in closed beta.

### **Barnes & Noble Nook**

Barnes & Noble booksellers' *Nook*, released in November 2009, runs on a variant of Google's Android smartphone platform, thus alleviating the need for a proprietary Application Development Kit. Unlike the Amazon Kindle, it supports *ePub* content and does not have a full keyboard. There is also a version of the Nook with a colour display – named, appropriately, the *Nook Color* – which is unique among dedicated e-Readers and may be ideal for heavily illustrated content. Beyond this, though, newer iterations of the device have made it very similar, both ergonomically and feature-wise, to the Kindle, with Barnes & Noble's selection of available content impressive in its own right.

### **Kobo**

The Kobo, developed by an independent Toronto-based firm in 2010 and marketed primarily through the US *Borders* bookstore chain and *Chapters* in Canada until the former's recent bankruptcy, was initially much less expensive than its competition (at \$149 CAD), and served as a budget alternative to the Nook and

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<sup>3</sup> Although ePub was designed to support DRM, its security was compromised by hackers in 2009 and the ePub consortium has not made any attempt to circumvent their efforts since.

Kindle until it effectively drove down the cost of all three devices. It, too, has become strikingly similar to its brethren on modern revisions, offering a near-identical feature set to the Nook (including ePub) and a notably better selection of Canadian content. The Kobo's ADK is expected to be released in mid-2011.

### Apple iPad and other mobile devices

Apple's iPad is, of course, a multifunction device, and *not* a true dedicated e-Reader insofar as it does not use Vizplex display technology (as would be inappropriate for other content displayed on an iPad). It has, however, garnered an extraordinary amount of developer interest for its novel form factor, and in fact all of the manufacturers of dedicated e-Reader hardware now provide an iPad app<sup>4</sup> which provides most or all of the functionality of a dedicated device.

Per the current software market, supplemental reading tools such as annotation are typically handled by third-party application developers<sup>5</sup>, and may not necessarily be compatible with the more straightforward reading environments of the Kindle/Nook/Kobo apps. For example, the Kobo iPad app has been criticized for deleting all stored annotations whenever the software is updated and the user's library is refreshed, making it apparent that so-called 'active reading' has not been a priority for the application's developers. There has been a clear focus on the provision of reading statistics and other metrics, as evidenced by the graphical breakdown below

Google's Android smartphones have generally received comparable development attention, and benefit from Google's comparatively relaxed stance on allowing unlicensed content which need not originate from a trusted source. However, still more novel eBook applications which would be not possible on dedicated hardware are for the most part being developed only for the iPad, notably an interactive *Alice in Wonderland* Storybook (<http://itunes.apple.com/us/app/alice-for-the-ipad/id354537426>) and the *LiquidText* reading environment (<http://liquidtext.net/>), which is discussed at length elsewhere in this document.

### Related Electronic Reading Tools

**Graham, J. (1999). The reader's helper: a personalized document reading environment. *Proceedings of the ACM CHI Conference*. ACM, New York. <http://doi.acm.org/10.1145/302979.303139> (accessed 20 July 2011).** Documents a shift in reading styles over two centuries away from sequential, complete reading and toward skimming and searching for relevant information, with increasing demand for need of more efficient methods of extracting relevant information from documents. Presents a new document reading environment, Readers Helper, which supports the reading of electronic and paper documents; it analyses documents and produces a

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<sup>4</sup> Along with, it is worth noting, applications for the iPhone, Android, and Windows/Mac OSX desktop platforms.

<sup>5</sup> The apparent leaders in annotation functionality as of Summer 2011 are *iAnnotate* on iPhone or iPad and *RepliGo* on Android or Blackberry. *RepliGo* deserves further praise for its ability to reformat PDF documents into a single-screen view for easier browsing on a mobile device – a powerful and rare feature.

relevance score for topics of interest, to help the reader decide whether the document is actually worth reading in full or skimming. Also automatically highlights topic of interest phrases, and presents an information visualization tool that presents a dynamic representation of the document to aid in navigation.

**Hornbæk, K., & Frokjær, E. (2001). Reading of electronic documents. *Proceedings of the ACM CHI Conference.***

These two relatively early studies of electronic reading environments have an interesting commonality: they are both designed to help the reader get some information out of the way. Whereas Graham's 'Reader's Helper' allows users to browse thumbnail selections of other documents related to the one they are currently viewing, Hornbæk and Frokjær's prototype allows users to minimize selections of the active text, performing a sort of reverse-highlighting that they call a fisheye view. Modern readers should take note that concerns about information overload have stood in opposition to our striving for intertextuality for at least a decade hence.

**Cadiz, J. J., Gupta, A., & Grudin, J. (2000). Using Web annotations for asynchronous collaboration around documents. *Proceedings of the ACM Conference on Computer Supported Cooperative Work.***

This is among the earliest comprehensive work on asynchronous web document annotation, reporting on the inter-office use of a Microsoft Word 2000 plugin, and the majority of its points still hold up well today. It is curious, however, to note that they claim 'virtually all commercial document-processing packages (e.g., Microsoft Word, Lotus Notes) support some form of annotations'. While this has indeed been true of word processing software for the decade-plus that the authors claim, this only serves to make more obvious the degree to which PDF and web annotation have lagged behind. We have, however, hardly lacked for advancements in eleven years. In a time before ubiquitous cloud server architecture, the annotation environment described by the authors more closely resembles an asynchronous chat log containing symbolic links to a particular document than the 'living' documents that have been theorized since. What this may tell us, however, is that simple online chats are officially of the 'want to happen' persuasion – in the 'information wants to be free' sense – and any way that we can sustain them is nevertheless useful. Indeed, the frequency with which users annotated documents appeared to follow a common power law, as with many other collaboration systems.

**Dyson, M. (2001). The influence of reading speed and line length on the effectiveness of reading from screen. *International Journal of Human-Computer Studies*, 54(4), 585-612.**

While not about electronic reading *tools* per se, this landmark article from a decade ago still contains one of the most comprehensive treatments of how digital document layouts affect reading speed for a varied audience. The author begins by reviewing reading research from the 1950s through the 1970s which assessed the tradeoff in reading speed versus comprehension, and notes that a range of 55 to 70 characters per line was and remains something of a sweet spot for monospace and variable-width fonts alike.

Curiously, longer line lengths of up to 100 characters seem to be better for the express purpose of skimming, and, of course, the idea that there can be more than one optimal document layout strongly reinforces the advantages of reflowable text. In 2001, this finding stood in opposition to her participants' apparent preference for paginated, rather than scrolling documents, as the de facto paginated document, PDF, only supported a fixed document layout. Now, new formats such as *ePub* appear to combine the best of both worlds.

**Baumer, E., Sueyoshi, M., & Tomlinson, B. (2008). Exploring the role of the reader in the activity of blogging. *Proceeding of the 26th ACM CHI Conference.***

This article, while not about a reading tool or tools *per se*, provides an excellent thinking-through of the affordances of reader discourse in electronic documents. The authors begin by noting that the shift in literary theory of the 1960s and 70s toward analyzing the reader's response to literature has not quite been carried through to our study of digital media. In order to understand the behaviour and expectations of blog readers, they conducted an ethnographic study of fifteen participants, which revealed that blog reading is a deeply habitual process – simultaneously productive and time-wasting – and that blogs unsurprisingly command an enormous degree of authenticity relative to other written media. The study also suggests that the 'non-chronicity' of blogs was somehow special, in that posts have a clearly defined *sequence* of following one after another, this is the full extent to which blogs have any relevant temporality. The authors believe that these factors should be taken into account in the design of new and novel reading tools.

**Milne, D., & Witten, I. H. (2008). Learning to link with Wikipedia. *Proceedings of the 17th ACM Conference on Information and Knowledge Mining.***

This paper reports on an ongoing project in automatically parsing and embedding noun-phrase links in web pages, using Wikipedia as a reference. Linking with Wikipedia – or, as the authors say, 'wikifying' pages – has so far succeeded where similar projects have failed, thanks to Wikipedia's breadth and (supposed) impartiality. For example, where similar lookup engines might require a great deal of editorial effort to create a functional 'dictionary' and attempt to use the long-standing WordNet lexical database for disambiguating word meanings, Wikification gets by on statistical relevance judgments, using one of the largest such databases in existence (dwarfing WordNet's coverage of noun phrases). In this paper, the authors explain in detail their method for making these relevance judgments, noting with amusement that the overall machine-derived statistical relevance for their results is somehow identical to that of the aggregate relevance judgment of their user study participants – 79%.

**Olive, T., Rouet, J.-F., François, E., & Zampa, V. (2008). Summarizing digital documents: effects of alternate or simultaneous window display. *Applied Cognitive Psychology, 22(4), 541-558.***

This curious paper is unlike the majority of reading environment design studies in that it rejects the notion that an optimal reading environment is

likely to be ‘designed’ at all. Rather, it supports the notion of reading environments being assembled post-hoc by the user – grouping various tools, in various different applications, wherever happens to be most convenient – and in so doing, reinforces the advantages of narrow, single-column document layouts that can be made to accommodate as much marginalia as possible. Curiously, in the three years’ eternity such this work was published, new dedicated devices have begun to wrest back away users’ ability to multitask as they see fit, though it is worth noting that most e-Reader applications (along with many legacy Oxford journal reading environments) have opted for smaller-than-A4 page layouts.

**Qayyum, M. A. (2008). Capturing the online academic reading process. *Information Processing & Management*, 44(2), 581-595.**

This article, an extension of the author’s dissertation work, reports on the electronic document reading, sharing, and interaction habits of graduate students. He found that the vast majority of annotations fall into just two categories – underlined or highlighted text, and anchor points for some marginalia. Either selection of text (in the first case, the original author’s; in the second, the reader’s) could be indexed by a sufficiently powerful reading environment and presented to the reader or readers as a table of contents of notes. One finding from this study which seems all too logical and subverts a key assumption of open online annotation systems is that many individuals do *not* want to inherit an already-annotated document, even less so if the prior annotator is anonymous. While we can learn much from the wisdom of crowds, we seldom sit out to read a self-contained document with these crowds in mind, as doing so can be confusing or overwhelming. It is thus a sensible assumption that the annotation layer should be secondary to the original text in a well-designed reading environment – and worth considering when this assumption may *not* hold true.

**Siemens, R., Leitch, C., Blake, A., Armstrong, K., & Willinsky, J. (2009). It May Change My Understanding of the Field: Understanding Reading Tools for Scholars and Professional Readers. *Digital Humanities Quarterly*, 3(4).**

The authors report on a study of user opinions on using the scholarly article reading tools embedded within the Public Knowledge Project’s *Open Journal Systems*. According to the authors, the single most interesting finding from this research was that the reading tools were overwhelmingly found to be better at locating articles within their respective scholarly context than actually assisting with individual readings. The most likely reason volunteered for this is that there are simply not many productive ways that software can intervene in readers’ variously idiosyncratic means of interacting with isolated documents (with the exception of annotation, which not well-supported by Open Journal Systems at the time of the study). Indeed, their think-aloud protocol evinced almost as many descriptions of individual reading processes than commentary on the tools themselves. Among the tools that did work well was an engine for discovering authors’ related work, assisting in readers’ credibility judgments of authors whom they had not previously been introduced to (and all the more so in the context of Open Access). Among those that did not work well for many readers were

broader-scale ‘find more like this’ options, usually because the article metadata which was mined for search terms was insufficient to compete with the relatively trivial alternative of readers formulating their own Google Scholar search.

**Kamil, M. L., & Moje, E. B. (2011). *The Handbook of Reading Research* (p. 1040). Taylor & Francis.**

This lengthy volume, while not about electronic reading per se, is a comprehensive single source for much of what we currently know about the reading process from the perspective of education. The book’s short first chapter deals with how controlled reading studies are best conducted, in both an ethnographic and computational context. After this, the book turns to focus entirely on the reading process itself: in the second chapter, through the life cycle; in the third, at various levels of linguistic depth; and in the fourth, in the teaching and learning of reading. The fifth and final chapter, also the most diverse, deals with many sociocultural facets of reading – such as how popular culture has altered our approach to language and literacy, how second languages are learned, and how literacy can thrive in informal contexts. The lattermost is perhaps of particular note for reading specifically non-academic content on the web.

**MacFadyen, H. (2011). *The Reader’s Devices: The affordances of e-Book readers*. *Dalhousie Journal of Interdisciplinary Management*, 7(1).**

This article, a polite lamentation of sorts on what it is we are gaining and losing by migrating away from paper toward digital documents, begins with a telling anecdote: a search of the Google Books corpus reveals that there were relatively few published references to the wonderful smell of books prior to 1990, after which mounting concerns about the disappearance of this smell made them more and more prevalent. The author reviews the abortive (and variously worrying, for still-relevant reasons ranging from deprecated libraries to privacy concerns) attempts at popularizing e-Books prior to Amazon’s Kindle, which is ‘as much a device used to buy books as it is a device used to read books’. She believes, however, that the somewhat collapsed physical extension of e-Books – a ‘brown paper wrapper’ on the bus, containing entire libraries – will eventually speed the intellectual work of readers working across multiple texts and wanting to copy and paste at will, though she seems to believe unequivocally that we are not there just yet.

**Marshall, C. C. (2010). *Reading and Writing the Electronic Book* (p. 185). Morgan & Claypool Publishers.**

Cathy Marshall’s *Reading and Writing the Electronic Book*, from the excellent *Synthesis Lectures* (‘on Information Concepts, Retrieval, and Services’) series, is an exhaustive and readable review of research on interacting with electronic documents over the past two decades. The introduction is a retrospective approach to how reading has changed with the advent of hypermedia. There is a review of the long relationship between typography and reading behaviour, and entire chapters on annotation and social reading. After a brief discussion of how reading is best understood and studied, the book’s second half focuses largely on metadata, text markup, and other issues concerning file formats. Although the book’s relatively recent

publication date makes the absence of any discussion about modern platforms such as the iPad or file formats such as *ePub* all the more disappointing, and there are some subjects (such as DRM) which the author is unable and perhaps justifiably unwilling to give full recognition in the allotted space, this is very probably the most comprehensive review of electronic reading, as a process and a history, currently available.

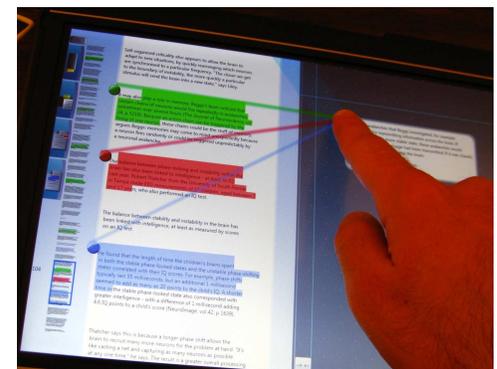
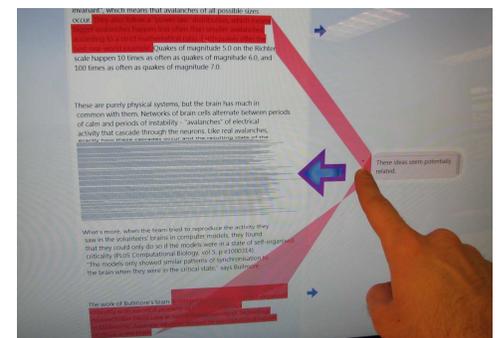
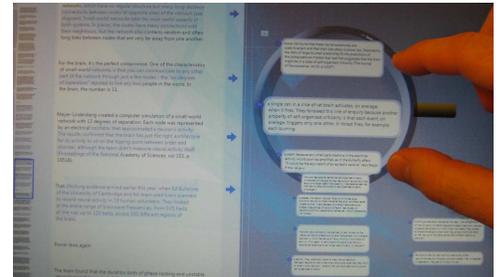
**Tashman, C. S., & Edwards, W. K. (2011). LiquidText: A Flexible, Multitouch Environment to Support Active Reading. *Proceedings of the ACM CHI Conference*. <http://www.cc.gatech.edu/~keith/pubs/chi2011-liquidtext.pdf> (accessed 10 July 2011).**

This very promising report on a prototype active reading system for tablet devices was presented at the 2011 ACM CHI (Computer-Human Interaction) conference in anticipation of the software's release later this year. The authors detail a user study which was designed with the express purpose of determining which

components of active reading (annotation being the obvious long-standing example) are still better-supported by pen and paper than they are in electronic reading environments. Their findings, on which their system design is predicated, are summarized as follows: the messiest and most valuable insights are usually located in a cross-document context, not in a single PDF or Word file but in the margins of Powerpoints and email threads. As such, LiquidText is being built to preserve the context of text snippets once they have been dragged and dropped (or, as per the tablet paradigm, pinched or pulled) out of their original home, while still allowing them to be dynamically re-formed elsewhere, and highlighted or bookmarked accordingly. Some exemplar screenshots are attached.

**Thayer, A., Lee, C. P., Hwang, L. H., Sales, H., Sen, P., & Dalal, N. (2011). The imposition and superimposition of digital reading technology. *Proceedings of the ACM CHI Conference*.**

This article recounts the trials and tribulations of the University of Washington's Amazon Kindle DX pilot program for students. Like many articles reviewed here, it mentions the XLibris digital paper prototype (Fuji-Xerox, Palo Alto) of years prior as the high bar to beat in the field, despite the fact that it was never widely adopted. The authors of this article are quite critical of the Kindle DX, noting that the degree to which students expect to be able to skim physical textbooks is totally unlike their expectations of speed-reading PDFs which are usually read on screen, and the Kindle is not up to this task. In addition, the Kindle was found to be poorly-suited to both



horizontal scrolling and annotation (both of which have been addressed in later revisions of the hardware). Kinesthetic clues such as flipping to a dog-eared corner halfway through a textbook were also badly missed, and some complex illustrations were evidently not rendered properly. The researchers conclude somewhat unequivocally that this incarnation of the Kindle is not nearly as well-suited to multimodal academic reading as its consumer success might suggest.

## **Appendix 2: Social Networking Tools for Professional Readers in the Humanities** (A whitepaper survey, carried out by Cara Leitch for the ETCL [-2009])

### Introduction: Responding to the Needs of Professional Readers in the Humanities

The key activities of professional readers in the humanities include: evaluating the scholarly value of research material, communicating with other scholars, and managing physical and electronic collections of research material. In our recent study of expert readers and their experience with the Open Journal System, we observed that participants were most satisfied with the online reading tools when they modeled existing reading strategies. Participants expressed dissatisfaction when the online reading tools proved less effective than their existing strategies.

As expert readers also become expert at using online tools, they will demand an even higher level of sophistication from an online reading environment. Professional readers are becoming increasingly aware of the potential of social networking tools as scholarly research tools. A successful online reading environment would integrate social networking tools in a way that extends readers' existing strategies. The value of such an environment to the professional reader would be that he or she would not have to use a variety of disjointed tools. Instead, he or she would be able to perform the same tasks from within the reading environment. To date, no one social networking tool models all three main aspects of readers' existing strategies.

### Social Networking Tools: An Overview

'Social software' refers to 'software which supports, extends, or derives added value from human social behaviour' (Coates qtd. in boyd 'The Significance of Social Software' 16; cf. Ridings and Gefen; Cohen and Clemens; Horizon Report 2007). Donath and boyd write, 'underlying all the networking sites are a core set of assumptions -- that there is a need for people to make more connections, that using a network of existing connections is the best way to do so, and that making this easy to do is a great benefit' (71). The common factor among almost all social software is the idea of sharing (Gross and Acquisti 71). What exactly is being shared differs from network to network but almost all provide tools to create and maintain an identity, connect with other users, exchange information, and classify/sort that information.

Wellman et al. suggest that 'on-line relationships are based more on shared interests and less on shared social characteristics' (231) while Donath and boyd note 'to turn an encounter into a connection, there generally must be some common ground' (77). The New Media Consortium refers to the internet as a 'third place' after home and work 'where people connect with friends, watch television, listen to music, build a sense of togetherness with people across the world, and provide expressions of ourselves . . .' (3). According to Ellison, Steinfeld and Lampe, this 'third place' does not weaken offline social ties, rather 'may indeed be used to support relationships and keep people in contact, even when life changes move them away from each other' (n.p).. Ellison, Steinfeld and Lampe also note, 'in addition to helping student populations, this use of technology could support a variety of populations, including professional researchers, neighborhood and community members, employees of companies, or others who benefit from maintained ties' (n.p)..

### Specific Social Networking Tools Relevant to Professional Readers' Existing Strategies

### Evaluating: Identity Presentation Tools

The ability to create and maintain an online identity is one of the key features common to social networking tools. Boyd writes

Social network sites are based around profiles, a form of individual (or, less frequently, group) home page, which offers a description of each member. In addition to text, images, and video created by the member, the social network site profile also contains comments from other members and a public list of the people that one identifies as Friends within the network. ('Why Youth' 123)

Pew Internet's 'Digital Footprints' study reports that 'one in ten internet users have a job that requires them to self-promote or market their name online' (iii) and 'voluntarily posted text, images, audio, and video has become a cornerstone of engagement with Web 2.0 applications. Indeed, being 'findable and knowable' online is often considered an asset in participatory culture where one's personal reputation is increasingly influenced by information others encounter online' (4). Girgensohn and Lee suggest that one of the benefits of creating and maintaining a profile on a social networking site is the opportunity to create a 'persistent and verifiable identity' (137) while Boyd and Ellison note, 'what makes social network sites unique is not that they allow individuals to meet strangers, but rather that they enable users to articulate and make visible their social networks' (n.p).. Given the importance expert readers place on markers of authority such as credentials and past publications, it is in the individual's best interest to exert some control over his or her online identity. Creating and maintaining an online profile would help give humanities scholars this control and would allow them to include the kind of information expert readers use when evaluating the value of research material. In their discussion of Peers, a social networking application created and used by design and consulting firm Avenue A | Razorfish, Cohen and Clemens focus on the ability of social networking tools to foster collaboration. Like most social networking tools, Peers gives users the ability to create profiles, share information, and collaborate on projects. Users also have the ability to rate projects posted by other members in the same discipline. Cohen and Clemens write, 'in this structure for presenting individual work, the standard for quality work naturally becomes higher. Work deliverables that were prior routine now become viewable, visible and available to a highly critical audience' (254). Cohen and Clemens emphasize is on the influence the peer-rating system has on quality of work. A rating system in a reading environment for expert readers would have a slightly different focus. At the site Faculty of 1000, scientists rank research articles in order to highlight the best of new research. For expert readers in the humanities, a rating system would help readers evaluate the scholarly importance of an article and assess the relevance and trustworthiness of its author. If ratings were incorporated into an author's online profile, readers would have ready access to information about an author's recent publication history and information about how well his or her research has been received.

### Communicating: Commenting Tools

Expert readers learn about new ideas and develop existing ones by engaging in scholarly communication with their peers and colleagues. Online, these readers participate in online forums, email listservs, and use commenting tools on blogs and other social networking sites. Kathleen Fitzpatrick writes

Scholars operate in a range of conversations, from classroom conversations with students to conference conversations with colleagues; scholars need to

have available to them not simply the library model of texts circulating amongst individual readers but also the coffee house model of public reading and debate. This interconnection of individual nodes into a collective fabric is, of course, the strength of the network, which not only physically binds individual machines but also has the ability to bring together the users of those machines, at their separate workstations, into one communal whole. (n.p).

Hoadley and Kilner write, ‘knowledge-building communities are a particular kind of community of practice focused on learning. Based on scholarly communities, knowledge-building communities take as an explicit goal the development of individual and collective understanding’ (32). They describe conversation as the method by which information becomes knowledge (33). An online community that models a community of practice combines content with communication. Social networking applications provide tools to facilitate both information sharing and dialogue.

Noah Wardrip-Fruin recently participated in an experiment using CommentPress and the blog *Grand Text Auto* to explore how social networking tools might be used in the peer-review process. In January 2008, Wardrip-Fruin released the manuscript of his forthcoming book, *Expressive Processing*, to members of the *Grand Text Auto* community. Using CommentPress, community members were able to comment on the text paragraph by paragraph. In his introduction to the experiment, Wardrip-Fruin observes ‘I soon realized that blogs . . . contain raw research, early results and other useful information that never gets presented at conferences’ (*Expressive Processing: An Experiment in Blog-Based Peer Review* Grand Text Auto 22 Jan. 2008). By using CommentPress to collect early reviews of his manuscript, Wardrip-Fruin has been able to engage with the scholarly community in a new and less formal way. The editorial suggestions made in the comments do not carry the weight of traditional peer review, but they provide an interesting interim step between private circulation of a manuscript in process and official submission of a manuscript to a publisher for peer review.

In a follow-up conversation between Wardrip-Fruin, Ben Vershbow from the institute for the Future of the Book (creators of CommentPress), Doug Sery of MIT Press (publishers of Wardrip-Fruin’s book) and Don Waters of the Andrew W. Mellon Foundation, there is an attempt made to clarify the role of open peer review in the publishing process. Waters writes, ‘there is a sense in which the experiment is not aimed at ‘peer review’ at all in the sense that peer review assesses the qualities of a work to help the publisher determine whether or not to publish it. What the exposure of the work-in-progress to the community does, besides the extremely useful community-building activity, is provide a mechanism for a function that is now all but lost in scholarly publishing, namely ‘developmental editing’ (‘Developing Books in Networked Communities’).

The use of CommentPress as an editing tool suggests a number of applications for an online reading tool. Larry Sanger writes, ‘strong collaboration -- which is made possible on a wide scale by the Internet -- goes one step further. Not only are there multiple authors, and not only are those people each others’ editors, but there is no set group of people who are the authors and editors of the work’ (n.p). Rather than being used only to leave notes or comments on material that has already been published, readers could participate in the development of works in progress and, in turn, benefit from the participation of other members of the scholarly community.

The ability to leave a paragraph-specific comment rather than a comment at the end of a text makes CommentPress a useful annotation tool. Authors could invite

community members to clarify aspects of his or her work that reflect their field of expertise. This makes possible a fluid, up-to-date system of reference that goes beyond the citation of published material. Readers could use CommentPress to leave questions or comments that are tied to specific passages in a text. Multiple users could engage in multiple conversations around different points in the text rather than in one long, threaded conversation at the end of the text. This kind of communication system combines the reach of global community with the specificity of local conversation.

#### Managing: Reference Management Tools

Searching, retrieving, classifying, and organizing research material is a primary activity of professional readers. Expert readers employ a variety of strategies ranging from simple filing systems to elaborate systems of classification and storage. Reference management tools such as Zotero, Citeulike, and Connotea allow users to find, store, and organize research materials online. This kind of organization system has the benefit of giving the user access to his or her research material from any computer connected to the internet.

The use of folksonomy tagging in reference management tools can improve on a reader's existing research strategies by providing him or her with a flexible and easily accessible way of organizing research according to his or her own criteria. These tools also allow users to share research collections with colleagues and find material relevant to their interests in other collections. Alexander describes the role of social bookmarking in higher education as a tool for 'collaborative information discovery'. He identifies a number of benefits to using social bookmarking: 'finding people with related interests can magnify one's work by learning from others or by leading to new collaborations. . . [and] the practice of user-created tagging can offer new perspectives on one's research, as clusters of tags reveal patterns (or absences) not immediately visible . . .'. (n.p).. User incentives for tagging include the ability to quickly retrieve research material, to share relevant material with colleagues, and to express an opinion or make a public statement about one's interests (Marlow et al 34-35).

#### Conclusion

One of the challenges faced by expert readers is that more and more of their reading and research is being conducted online. Rather than replace expert readers' existing strategies, a successful online reading environment would extend and improve those strategies. The use of social networking tools would contribute to this extension and improvement, particularly in the key areas of evaluation, communication, and management of resources.

#### **Guide to Selected Social Networking Sites and Tools**

CiteULike ([www.citeulike.org/](http://www.citeulike.org/)) is a tool based on the principle of social bookmarking, aiming to promote and develop the sharing of scientific references amongst researchers. In the same way that it is possible to catalog web pages (with Furl and del.icio.us) or photographs (with Flickr), scientists can share information on academic papers with specific tools (like CiteULike) developed for that purpose. The website is sponsored by the publisher Springer Science+Business Media. Richard Cameron developed CiteULike in November 2004 and in 2006 Oversity Ltd. was established to

develop and support CiteULike. When browsing issues of research journals, small scripts stored in bookmarks (bookmarklets) allow one to import articles from repositories like PubMed, and CiteULike supports many more. Then the system attempts to determine the article metadata (title, authors, journal name, etc). automatically. Users can organize their libraries with freely chosen tags and this produces a folksonomy of academic interests. (From Wikipedia).

Faculty of 1000 ([www.f1000.com](http://www.f1000.com)) is a research tool designed to help scientists find and assess scholarly articles. Individual scientists select, rate, and classify research articles. Those ratings are published alongside comments from the reviewers. Users of Faculty of 1000 can browse highly-rated articles, search using specific criteria, and sign up to be notified by email when new research is published.

Flickr ([www.flickr.com](http://www.flickr.com)) allows users to upload, store, classify, and share photos. Photos are classified using tags that make it possible for other users to search photo collections. Community is encouraged through the formation of interest groups.

Flock ([www.flock.com](http://www.flock.com)) is a web browser that integrates features of social networking tools. From within the browser, users can access information from a number of social networking sites, including Facebook, flickr, Twitter, blogger, and WordPress blogs. While using Flock, the user is connected to his or her social network without having to visit each site individually. The user receives constantly updated information about his or her contacts. In addition, Flock facilitates information sharing by allowing the user to email or message contacts, update a blog, and upload material from the browser toolbar. Flock is highly customizable; every user determines what information is displayed in his or her social browser.

H2O Playlist ([h2obeta.law.harvard.edu/home.do](http://h2obeta.law.harvard.edu/home.do)) is a service hosted by the Berkman Center for Internet and Society at Harvard Law School. The purpose of H2O Playlist is to facilitate the sharing of information in the form of course syllabi and reading lists. Educators and students using the site are encouraged to communicate with others in order to learn more about their field of study. Users categorize their 'playlists' using tags in order to facilitate searching.

iLeonardo ([www.ileonardo.com](http://www.ileonardo.com)) allows users to create online collections called Notebooks where they can store information in a variety of forms. Notebooks can be shared with other users and users can help create large, public repositories of information. Users can create and maintain profiles that show the user's recent activity alongside personal information. iLeonardo is currently in private Beta.

LinkedIn ([www.linkedin.com](http://www.linkedin.com)) is a social networking site geared to professionals. It provides an opportunity for networking within a structured environment. Users create a profile and a network made up of their business and personal connections.

Lyceum ([lyceum.ibiblio.org](http://lyceum.ibiblio.org)) works with the WordPress publishing platform to create stand-alone, multiuser blogs. A multi-user blog facilitates communication within groups and with those outside the group. Each user can create his or her own individual page and contribute to the group blog.

- MySpace ([www.myspace.com](http://www.myspace.com)) is popular with young adults, and resembles Facebook in that it is a social networking site used primarily for personal expression and communicating with a social group.
- NatureNetwork ([network.nature.com](http://network.nature.com)) connects scientists from around the world in an online environment that facilitates information sharing and collaboration. Users can create and maintain an individual or group profile, create connections to other users, communicate with other users through blogs, and access information about upcoming events. In addition to fostering global communication, Nature Network also focuses on creating local networks. Currently, there are local networks for Boston and London.
- NoseRub ([www.noserub.com](http://www.noserub.com)) allows users to combine information from a number of social networking sites into one application. Rather than a service or application, NoseRub is a protocol that can be adapted by the individual user and run on his or her own server. An example of what can be done with NoseRub is available on their website.
- Pownce ([www.pownce.com](http://www.pownce.com)) is a social networking tool that allows users to share information, including images, text, and links. Unlike other social networking tools, Pownce is a desktop application. Users do not have to be using a web browser in order to use Pownce.
- PulseWire ([www.worldpulsemagazine.com/pulsewire](http://www.worldpulsemagazine.com/pulsewire)) is currently in development, and will provide an interactive community for women around the world. It is designed to facilitate information sharing and communication.
- RentAThing ([www.rentathing.org](http://www.rentathing.org)) is designed to facilitate resource sharing by measuring and communicating information about a user's reputation. A high reputation score tells lenders that the borrower is considered trustworthy. Users build reputation scores by providing collateral and references from other users.
- Twitter ([www.twitter.com](http://www.twitter.com)) is a 'micro-blogging' service that facilitates social networking through the exchange of short status messages. Twitter has been adopted as a communication tool by political candidates, demonstrating that a social networking tool can be expanded beyond its original purpose. Rather than sharing personal updates (I am hungry), some Twitter users are now using the tool to share information about upcoming events (Meeting Monday at 11:30) and as a reminder service (Don't forget to attend Monday's meeting).
- Writeboard ([www.writeboard.com](http://www.writeboard.com)) is an online writing environment that allows users to create, edit, and share web-based documents. Invitations to collaborators are sent through email. Users can track changes to a text as they edit as well as compare two versions of the same text.
- Zotero ([www.zotero.org](http://www.zotero.org)) is an extension for Firefox that allows users to manage research collections from within their browser. One of Zotero's most important features is its ability to automatically identify and capture citation information on a web page. Users can then capture citation information, classify it using tags, and generate citations. Future developments of Zotero will include the ability to share collections with other users and to receive information about new material as it becomes available.

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