

## Scholarly, digital, open: an impossible triangle?

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Contemporary approaches to the digital transformation of practice in university research and teaching sometimes assume a convergence between the digital and openness. This assumption has led to the idea of ‘digital open scholarship,’ which aims to open up scholarship to participants from outside academic scholarly communities. But scholarship, digitality and openness exist in tension with each other – we can see the individual features of each, but we cannot make sense of the whole picture. It resembles an ‘impossible triangle’. Particularly confounding is the tension between digital scholarship and open knowledge, where the former is focused on the creation by specialist communities of knowledge of a stable and enduring kind, whilst the latter is characterised by encyclopaedic knowledge and participation that is unbounded by affiliation or location. However, we need not be permanently thwarted by the apparent impossibility of this triangle. It is a stimulus to look critically at the contexts of practice in which a relationship between scholarship, digitality and openness is sought. Constructive examples of such critique can be found in the emerging research field of literacy and knowledge practice in the digital university.

**Keywords:** open scholarship, digital scholarship, research, public engagement, literacy, digital university

### Introduction – the impossible triangle

In the United Kingdom (UK), the government department in charge of universities – the Department for Business, Innovation and Skills – has neither ‘university’ nor ‘education’ in its title. This is a reflection of a growing tendency for societies across the developed world to value higher education principally in terms of its contribution to economic wellbeing (see the discussions by Orr 1997 and Calhoun 2006). It goes hand in hand with increasingly strident demands for value for money wherever academic activity, including scholarship, is supported from the public purse. Traditionally, university faculties have exercised economic and organisational autonomy over their scholarly activities, reflecting a social consensus on the value and role of scholarship viewed as a ‘public good’ and necessarily independent of the ‘market, the polity, and fashion’ (Benkler 2008, p. 55). Characteristic of this broad notion of the university’s public mission are social benefits such as an ‘informed citizenry’ valuing critical enquiry, committed to public service and contributing to the ‘continuity and creativity of culture’ (Calhoun 2006, pp. 10–11). But the concept of public good can also be applied to the aggregation of private benefits, such as the skills, qualifications and

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career opportunities that universities are able to offer their students and their future employers (Calhoun 2006; Cowan, Cowan, and Llerena 2008). A national education policy that constructs the public good of the university primarily in the latter terms prioritises relevance and accountability and seeks to ensure these through quality assurance regimes in teaching, and quality assessment, impact and ‘public engagement’ criteria in research.

At the same time as this instrumental tendency has developed in the funding and administration of higher education, and perhaps partly in reaction to it, a counter-discourse of democratisation and openness has emerged amongst some higher education scholars and practitioners, which seeks to re-model scholarly communication and the practices of research, public engagement and teaching, around the open and ‘participatory’ practices of internet users (Jenkins *et al.* 2005).

Digital scholarship is more than just using information and communication technologies to research, teach and collaborate ... it is embracing the open values, ideology and potential of technologies born of peer-to-peer networking and wiki ways of working in order to benefit both the academy and society. Digital scholarship can only have meaning if it marks a radical break in scholarship practices brought about through the possibilities enabled in new technologies. This break would encompass a more open form of scholarship. (Pearce *et al.* 2010)

The emphasis on participation is not only resistance to the instrumentalism of the corporate university. It also reacts against the hierarchies and elitism of traditional academia, with its gatekeepers and its exclusionary literacy practices and strategies of preferment. ‘Digital scholarship’ conceived in this way, seeks a wider consensus on what knowledge is valued and valuable and a more inclusive approach to its construction (Anderson 2009; Weller 2011).

Digital technologies figure prominently in both the private benefit and public participation approaches to opening up the world of academic scholarship. Both perspectives tend to promote an idealised view of practice in research and teaching in which digitality and openness converge. A view grounded in the day-to-day experience of academic research communities, however, suggests that there are important variations in the way that the conditions of digitality and the principle of openness shape specific practice contexts, and that the enduring importance given to objectivity and the ‘scholarly record’ is often in tension with ideas about democratising scholarly knowledge.

This discussion focuses on the concepts of scholarship, digitality and openness, as three principles important to the development of practice in the university of the digital age. Rather than proposing an idealised model in which these factors converge unproblematically, however, the argument here is that they resemble an ‘impossible triangle’ (see Figure 1), which creates tensions in practice. This argument is based on accounts from the literature of digital and open scholarship and on examples from research that reports on the digital practices of scholarly communities. This research highlights some of the ways that digital tools are used by scholars and researchers to cement traditional disciplinary scholarly practice, as well as to develop new ways of collecting and analysing data and new systems for sharing that data and for communicating with other scholars and the general public about its collection and interpretation.

Scholarship is discussed below from both institutional and individual perspectives. The view I am starting from is that ‘scholarship’ refers to a set of

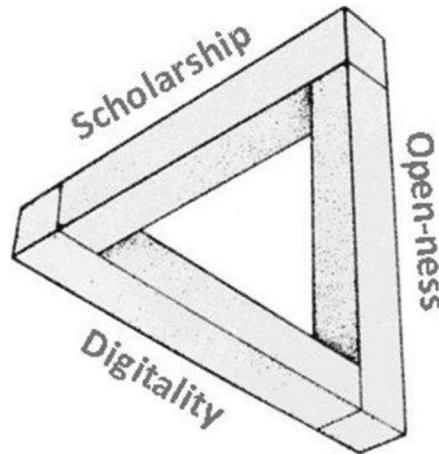


Figure 1. The ‘impossible triangle’ of scholarship, digitality and openness.

epistemological and ethical practices that underpin the social construction of an enduring record of objectively validated knowledge. By this definition teaching and learning is not scholarship, although it may draw on scholarship and be done by scholars. Similarly, ‘digital’ in this account refers not simply to the affordances of digital technologies but also to conditions of living, working, interacting, etc. that these technologies impose on us through their ubiquity and agencies (Latour 2005, p. 52; Savage, Ruppert, and Law 2010). ‘Openness’ is discussed below as both a philosophy and a set of practices – I start here from the idea that it has two principal meanings: one is the property of accessibility without qualification criteria (logistical, financial, credentialing etc.); the other is amenability to participation and appropriation, similarly without qualification criteria.

### Scholarly and digital

Academic institutions are not the only places where scholarship goes on. People do scholarly work in museums, research centres, hospitals, libraries, churches, government offices and in their own homes – applying rigorous theoretical, methodological and ethical criteria to the construction of new understandings, either for personal recognition, or for practical use, or simply for the satisfaction of curiosity. All the same, as Boyer (1990) and others have shown, it is in academic institutions, and traditional universities in particular, where we find scholarship in all its forms integrated into practice: pure research or ‘genesis’ scholarship; scholarship that integrates knowledge from different disciplines; scholarship that seeks to apply knowledge to real world problems or to transfer it for the benefit of non-scholarly communities; scholarship that is oriented towards developing effective teaching and learning.

Most commentaries on the nature of scholarship assume a universality to the concept, whatever form it takes in practice, see for example: Andresen (2000) on trans-disciplinary scholarship; Barker (2004) on the scholarship of engagement; Courant (2008) and Borgman (2007) on scholarship in the digital age. There is a consensus that all scholarship values critical reflection, the systematic and

cumulative aggregation of knowledge and understanding over time, distinct modes of operation relating to the gathering of evidence and the warranting of its reliability, and the ethic of enquiry as a primary motivation (Andresen 2000; Courant 2008; Cowan, Cowan, and Llerena 2008). These characteristics are held to distinguish the construction of academic scholarly knowledge from other kinds of knowledge production (factual knowledge, practical knowledge, common-sense, morality, the 'wisdom of crowds'). Academic scholarship also has a strong normative dimension and has historically been highly valued by society for its ethics as well as for its outputs (Andresen 2000; Boyer 1990).

However, it is also recognised that the same characteristics of scholarship interpreted by different disciplinary and subject communities can give rise to distinctly different forms of scholarly practice. Such differences have been explored from a number of different perspectives and the evidence is that there is a strong influence from disciplinary communities on characteristics of scholarly practice such as: the way literature is used and audiences are addressed (Bazerman 1981); the way work is organised (Palmer and Cragin 2008); the nature of engagement with transdisciplinary contexts (Becher and Trowler 2001); and the approach to teaching (Neumann 2001). These disciplinary influences persist when scholarly practice involves digital technologies too, as digital scholarship, as Pearce *et al.* (2010) and others have pointed out, is not just a matter of how scholars use generic ICT tools but how these tools become embedded in their social practices as well. 'Digitality' in this discussion thus refers to the use of digital tools by scholars to aid the kinds of deep thinking, deliberation and systematic analysis that their subjects and disciplines demand, and also to social practices around the management and preservation of digital data, the discovery of new or existing information by digital means, and digital research dissemination and scholarly communication in general.

Digitality in scholarship is enabled by Library Studies, Information systems and Social Informatics research communities whose work focuses on the design, development and use of digital data analysis and visualisation tools, repositories and archives, online journals and other digital fora for facilitating scholarly communication and extending access to, and the sharing of, data within scholarly communities (Borgman 2007; Palmer and Cragin 2008). These scholarship support communities are in a good position to reflect on changing digital practices of disciplinary communities, and on the synergy, or otherwise, between these practices and the digital environments in which they are embedded. Recent surveys of academic uses of digital tools and environments carried out by the Ithaca Trust (<http://www.ithaka.org/>) for these scholarly support communities present a useful picture of similarities and differences in the relation of different disciplines to the use of the digital. The evidence I will use here comes from two surveys funded by JISC (UK) and the National Endowment for the Humanities (USA) to explore the digital support needs of university researchers in chemistry and history, respectively. The chemistry survey (Long and Schonfeld 2013) interviewed 60 academics and 'support professionals' (librarians, IT support staff etc.); the history survey (Rutner and Schonfeld 2012) interviewed 63 academics, graduate students and support professionals.

These surveys found that chemistry and history scholars both have a need for support in managing proliferating digital sources of primary and secondary data, but the nature of this need differs between the disciplines. For the historians, it is a matter

of getting ‘intellectual control’ of the data sources in order to organise them into a narrative (Rutner and Schonfeld 2012, p. 3). For the chemists, it is how to keep up with all the relevant work being done in their area of specialisation (Long and Schonfeld 2013, p. 23). Both groups of scholars publish their work, but chemists tend to publish more frequently whereas historians publish at greater length so they have somewhat different takes on the common problem of establishing full coverage of the most relevant sources of information. This is a situation that digital technology has ameliorated, by making information easier to find, and exacerbated, by making more of it available. Both chemists and historians are making increased use of digital ‘finding aids’ working with specialised databases of literature and data analysis, but differences in practice emerge in the use that history scholars also make use of the ‘open web’ to find public and institutional archives, and Google Books (Rutner and Schonfeld 2012, p. 17), reflecting their field’s traditionally reliance on books and monographs to disseminate their studies. Chemistry scholars, on the other hand, usually start with a chemistry-specific resource and resort to Google only if they cannot find what they are looking for, and need to reconceptualise the query (Long and Schonfeld 2013, p. 25).

Differences also emerge around who the scholars get support from and who they collaborate with – another set of practices being impacted upon by conditions of digitality, as research support professionals themselves become increasingly specialised. Much of the specialisation is concerned with the monitoring and recording of data collection. Chemists are increasingly working in research groups, either in laboratory conditions (what they call ‘wet chemistry’), or with computational tools (Long and Schonfeld 2013, p. 21). Their collaborative relationships are with technicians, assistants and students, and other researchers, sometimes from other science disciplines. The collective nature of the work presents a challenge to the communication of information about processes across a wider community. Digital knowledge management tools, such as electronic lab notebooks, have been developed for this purpose, but according to Long and Schonfeld (2013), are not very systematically used (p. 12). One reason for this is that the tools are often not suitable for use in wet chemistry conditions, but perhaps more relevant is the lack of a culture of research data sharing in the discipline partly due to the extreme specificity of experimental processes and types of analysis, and the scholars’ conviction that only they can understand their own data (Long and Schonfeld 2013, p. 16). For chemists, new research approaches are emerging in the digital marking-up and archiving of raw data, rather than in the development of tools for discovery, as this is increasingly required for the larger cross-institutional and cross-discipline projects that are developing in this field (p. 33).

For historians, who still tend to work as lone scholars, librarians and other research support professionals tend to be the primary collaborators (Rutner and Schonfeld 2012, p. 30). Historians use archives as a principle source for data and the relationships they build with the archivists and librarians who are specialised in their areas are ‘critical’ to their work (Rutner and Schonfeld 2012, p. 8). As historical archives contain fragile physical artefacts, accessing them has traditionally involved history scholars in travel in order to collect data. The accuracy of digital finding aids in identifying appropriate archives, and the expertise of archivists in directing scholars to the most relevant artefacts has been a key factor in the cost-effectiveness of this kind of research (Rutner and Schonfeld 2012, p. 40). The development of

digital photography has also had a major impact on this practice, negating some of the need for travel to sites where archives are stored, and altering the nature and role of textual transcription of artefacts (Rutner and Schonfeld 2012, p. 13).

Digital photography in history scholarship is an example of the way that new technologies can impact on established research paradigms. Rutner and Schonfeld (2012) argue that whilst scholars are 'thrilled' to be able to interact with artefacts from their own homes and offices (p. 12) the use of cameras also presents a challenge in that it can turn a visit to an archive from an interpretative intellectual engagement into a 'data collection' activity, which can significantly alter the analytical process, especially as digital photography software does not yet offer the affordances for extensive metadata and textual transcription which have conventionally played a central role in the collection of historical primary data (p. 13). Other new digital approaches to research in History are emerging in the use of Geographic Information Systems (GIS) to incorporate map data, and data mining census databases or text corpora. Rutner and Schonfeld (2012) report reflections from some of their interviewees on the time and complexity that these tools add to the research process (p. 31).

What characterises the relation between scholarship and digitality, viewed from the perspective of these chemistry and history scholars, then, is both increasing epistemic complexity generated by the use of new and more powerful tools, and increasing social complexity arising from the expansion of specialist communities to include research support professionals themselves specialised in the digital dimension of disciplinary enquiry.

### **Scholarly and open**

Openness is a core ethical principle of scientific scholarship – a deeply rooted social philosophical value system promoting the ideal of common access to knowledge in all its forms, going back, according to Borgman (2007), to St. Augustine, Francis Bacon, Thomas Jefferson and Robert Merton. A key principle in scientific openness is that scholars give up the right to intellectual property on their discoveries in exchange for social recognition as the discoverer (Merton 1988). The discovery itself becomes the property of the scientific community, the discoverer gains in reputation and prestige. This principle has underpinned the use of public funds to support university research and the building of academic reputations through publication. The recent concentration of the most widely read and prestigious journals into the hands of a small number of publishers, however, threatens this ideal, because it allows those publishers to price the most up-to-date scientific knowledge beyond the reach of all but the richest institutional libraries (Cope and Kalantzis 2009; Modern Language Association 2002; Weller 2011).

This situation was addressed in the Budapest Open Access Initiative (2002) which sought to promote the free availability of academic scholarship via the Internet. Research funding bodies have now begun to address the restoration of 'open science' through new funding models which are intended to make journal articles more accessible to individual readers who may not have institutional affiliations, and also to open public access to research data from projects that have been publically funded, and where there is high public interest, for example, relating to health and the environment. The UK government has accepted the findings of a

working group (The Finch Report 2012) which advises support by funding bodies of a system by which the producers of scholarship (e.g. the universities, supported by the funding bodies) themselves pay for its publication, which is then free to readers. Developments in digital publishing have further enabled this process through the establishment of institutional open repositories, improved self-archiving by individual scholars, and a proliferation of online open access journals all of which have considerably expanded the possibility of general access to on-going scholarship (see the Online Directory of Open Access Journals, and the Open Archives Initiative, plus a more detailed account of these developments in Cope and Kalantzis 2009).

The extent to which new practices of open publishing and data sharing are actually being taken up across academic disciplines and scholarly communities is less clear. Whilst significant numbers of scholars have shown themselves, in surveys, to be amenable to the idea of publishing in open online journals (e.g. Howard 2013), there is as yet little evidence of these journals developing significant impact factors or other forms of clout in the matter of individual academic reputations, as can be seen from the Ithaca chemistry and history surveys and other literature (Esposito 2013).

The Ithaca surveys suggest disciplinary differences in scholars' attitudes to openness in practice. The chemistry survey, for example, suggests that research assessment exercises and tenure review processes have created a bias against open access journals in chemistry by focusing researchers' attention on impact factors (Long and Schonfeld 2013). Whilst chemists are keen to share their publications within the discipline they are not convinced that the public needs access to their articles, because unlike research published in some other fields, it is difficult or impossible for the general public to understand it (Long and Schonfeld 2013). Historians, on the other hand, are interested in reaching a variety of audiences, including scholarly and public alike (Rutner and Schonfeld 2012). The survey found that some history scholars (mainly those engaged in digital scholarship – a minority of the respondents) consider themselves to be 'public historians.' Public history, and at the very least a commitment to making historical scholarship accessible to a public audience (as opposed to a scholarly audience), came forth as a clear motivator for these scholars. Where scholars are using public information, or publicly generated sources as a source for their scholarship, they often feel a commitment to share the output of their work with public in an open, accessible way. Overall, however, scholars in both these disciplines still perceive barriers to publishing their most academically important work openly (Long and Schonfeld 2013, pp. 12–13; Rutner and Schonfeld 2012, p. 37) even where there may be a trend towards more open practices in intra-disciplinary communication.

Similarly, there is little evidence that open access publishing is having an effect on the engagement of informed non-scholars in academic scholarship communities. Public engagement was signalled by Boyer in an extension of his framework to incorporate scholarship which has 'a reciprocal, collaborative relationship with a public entity' (Boyer 1996), but perhaps because this is necessarily focused on 'relevance and effectiveness rather than criteria of value neutrality and objectivity' (Barker 2004, p. 125) there has been limited recognition of this kind of work in the creation of scholarly reputations (see Ellison and Eatman 2008). Engagement through relevance implies public participation in, and contribution to, scholarship not simply the public use of scholarly outputs (Barker 2004, p. 126), but practical contexts in which this can go on are also limited. History, as we have seen, is a

discipline which has some synergy with more general public interests, as do other subject areas in the humanities and arts. Chemistry, on the other hand, does not, and the same might be said for some other ‘hard’ science and mathematical fields. Lievrouw (2010, p. 30) provides a comprehensive account of developments in ‘citizen science’ in which she observes that certain areas of scientific research which involve observational, detail-driven, data collection activity, such as astronomy, have a history of involving amateur or non-institutional scientists. She also notes, however, a counter-trend to the ideal of public participation, in the efforts of institutions, including universities, to control the dissemination of scientific knowledge through ‘... increasingly restrictive limits on prior publication, publication embargoes, rights, agreements for online journals, digital rights management technologies ...’ (p. 33).

Nevertheless, UK government and funding council priorities in the United Kingdom have quite strongly promoted the idea of public engagement in science in particular, for reasons of both accountability and public education, following controversies over publicly funded research in the climate and bio-technology sciences (see Holliman 2011 on the ‘climategate’ controversy). The National Council for the Co-ordination of Public Engagement has a number of case studies (NCCPE 2013) where university researchers, mainly post-doctoral or early career academics, have deliberately set out to involve schools and other interested communities in investigations of a scientific nature. These tend to go on in subject areas where data can be collected by fairly straightforward observation and practical or hands-on activity, which favours natural sciences and local history projects. There is also an emphasis on the simplification of specialist language in order to communicate with people who have no prior understanding of the knowledge area, a requirement which must incline the academics’ own engagement away from the methodologies of scholarship and towards those of teaching.

The relation between scholarship and openness in practice, therefore, is at its least problematic when it is to do with expanding channels of communication amongst scholars themselves and their professional support communities – an already identified and engaged constituency – rather than any deliberate engagement of the non-scholarly public. To employ a distinction made by Lievrouw and Carley it is focused on the ‘conceptualisation,’ rather than the ‘documentation’ or ‘popularisation’ phases of the scholarly process (Lievrouw and Carley 1990) – a focus that requires a pre-existing level of engagement and understanding on the part of participants.

### **Digital and open**

It has been argued that digitality has an in-built relation to openness, because of affordances such as replicability, mutability, portability, etc. which mean that artefacts can be ‘non-rival’ and can be possessed, shared, used and modified by any number of people simultaneously (Boyd 2010; Jones 2013). The two ‘paradigms’ for open knowledge construction in the digital domain are probably still Wikipedia and blogging (Beer and Burrows 2007; Benkler 2006). Wikipedia combines the characteristics of universal accessibility, volunteerism, collaborative authorship and consensus building, with a growing authority as a source of reliable information. Blogging combines the same accessibility and volunteerism with an increasing

influence on the building of personal and community reputations. Other initiatives that have been presented as models of digital open knowledge-communities have involved collaborative fiction-writing, news-commentary, link building, photograph and video repositories, and numerous projects from software engineering, such as the development of open source operating systems, etc. (Benkler and Nissenbaum 2006). In many of these online activities, universal openness is modified by some degree of implicit or explicit community gate-keeping as is the case with disciplinary communities of scholars.

A developing feature of digital openness is the emphasis on universal participation as well as access (Jenkins *et al.* 2005), which has found new paradigms in social media such as YouTube, Twitter and Facebook. Open online participation is now routinely associated with the democratisation, de-institutionalisation and individualisation of knowledge. Theorists of this perspective in educational and scholarly contexts (Anderson 2009; Katz 2010; Weller 2011) see practices that have developed in large scale, informal online communication as enabling new forms of public engagement, and as the breeding ground for a radical new epistemology of scholarship, as we saw in the quote from Pearce *et al.* (2010) in the introduction to this paper. New paradigms for knowledge construction (visualisation, crowd sourcing, social networking) that blur the boundaries between discovery and communication and publication are presented as a challenge to the authority of academic gatekeepers (Jensen 2007; Katz 2010). Jensen, who characterises expertise on the internet as 'authority by applause and popularity' (p. 36), predicts the increasing use of automatically generated metrics to record and objectively evaluate the status and/or prestige of authors, commenters, reviewers, publishers, citations, links, textual context etc. as an indication of the coming sophistication of the web-based assessment of authority and reputation (p. 40).

Lievrouw (2010), Borgman (2007) and Weller (2011) all discuss open participatory practices in observation-intensive explorations in astronomy, botany, etc. but neither the Ithaca chemistry and history surveys nor other studies discussed by Esposito (2013) reveal much evidence of emergent developments of this kind in practice in current disciplinary scholarship. In the case of blogging, as in the case of open publication, the Ithaca surveys reveal disciplinary differences. Blogging has emerged as a significant form for scholarly communication among some historians (Rutner and Schonfeld 2012, p. 33), but there is no mention of it all by the interviewees in the chemistry survey. The historians' interest in blogging is related to their view of their subject matter as having an intrinsic relevance and interest to a wider scientific and public community; however, they do not view it as a substitute for formal publication of their work, but '... as a supplement and enhancement to their scholarship' (p. 33).

Other studies which have looked at the use of social media by researchers have also found that traditional channels of scholarly communication continue to be more important in most disciplinary areas (see Esposito 2013 reviewing several studies from 2010) largely because of the importance that scholars place on the views of their peers, rather than a wider public audience. Whilst digital technologies may help researchers to improve the functional efficiency of their activities, a wider transformation to a culture of openness premised on digital networking is not yet in evidence (Esposito 2013). Digital openness in the wider non-scholarship domain is characterised by the collective production of encyclopaedic forms of

knowledge, and by the participation in social knowledge construction of individuals unbounded by affiliation or location. These are conditions which lead Garnett and Ecclesfield and other proponents of open scholarship to propose (and promote) a blurring of the distinction between ‘knowledge discovery’ and ‘knowledge transmission’ and a conflation of the roles of researcher and teacher (Garnett and Ecclesfield 2012, p. 13). This view signals a major tension with the practices and views of disciplinary scholars that have been discussed above.

### **The tensions in the triangle**

Each of the component relations of the triangle, between scholarship and digitality, scholarship and openness, digitality and openness, has its own coherence. But what makes the triangle appear impossible (see Figure 1), is the attempt to view the three dimensions simultaneously as defining a particular kind of practice which embeds the values of both disciplinary scholarship and open teaching/public engagement. The three-way relation introduces significant tensions, in particular, between the practices of academic scholars in digital contexts, and those being adopted by proponents of ‘digital openness.’

The use of digital tools by disciplinary scholars, whilst introducing speed, economy and convenience to some areas of practice, also adds further dimensions of complexity to their processes of knowledge construction, and the roles of their specialist communities. Epistemic complexity introduced through novel methods of digital processing of large datasets is evident in the Ithaca surveys and in other areas of humanities and social sciences research where a turn to a data-driven, inductive model of thinking has been mooted as new paradigm for disciplines that have traditionally been theory-driven (Savage, Ruppert, and Law 2010; Willifred and Henry 2012). Further, the increasing sophistication of computationally intensive research tools is leading to the greater involvement in scholarship communities of specialist information scientists and librarians (Waters 2012). As Borgman has noted, a principal concern of academic librarians and information professionals is the preservation of the ‘scholarly record’ (Borgman 2007, p. 97) – a role that is complicated by the affordances that digital media offer for replication, mutation and redistribution of texts and artefacts. The principles of provenance that traditionally underlie scholarly claims are thus in tension with practices of open participation in the construction of knowledge artefacts. The examples from the Ithaca surveys illustrate the way that scholarship in research is developing new processes and procedures involving wider interdisciplinary communities that include librarians, archivists, technicians and others who must themselves become specialists in the information requirements of the specific domains of enquiry. This effect of digitality in research scholarship supports the sharing of knowledge and understanding within scholarly communities, but it also makes the engagement of others outside these specialist communities less likely to occur without some effort on the part of the outsiders to acquire similar kinds of skill and domain understanding.

The value of open environments to scholars remains primarily in their communication with professional peers, in which both access to and participation in the negotiation of core concepts and methods in the domain of enquiry may be guaranteed, and through which professional reputations may be established. Engaging public or non-affiliated interests in this is only likely to further these

processes where scholars are able to present it to their disciplinary communities as worthy of recognition, as is the case for scholars who are taken up in broader public arenas as ‘public intellectuals’ (Kellner 1997). Where public engagement is directed towards the universal participation characteristic of much internet communication, however, scholars are more likely to experience it as a distraction from their ‘real’ work and even as detrimental to the necessary rigour of actual scholarship.

The openness that is most closely associated with digital participatory cultures is an invitation to remake texts and interactions. This contradicts a basic assumption of the openness associated with scholarly digital communication, which is the assumption that participants have a common commitment to the stability of what is understood. Because of the contingent nature of much open online discourse, where the motivation for participation is often largely rhetorical, communications may add little to public understanding, still less to the scholarly record. This was demonstrated during the ‘climategate’ controversy that arose over the publishing of private communications between climate science researchers in 2009–10 (see Holliman 2011 for an account from a sociological perspective).

At the root of these tensions, there may be a fundamental disconnect between the ‘object world’ of practical scholarship and the more generally discursive world of online sociality. Scholars are engaged not only in the exchange of information, understanding and opinion, but also in interactions focused on objects such as physical equipment, locations, people, situated practices and other stuff of a physical and social nature. We can see what this might mean in examples such as the role that travelling to physical archives plays in historians’ practices of data interpretation, as described by Rutner and Schonfeld (2012), p. 12), and the effect on this of the introduction of digital cameras. The creation of knowledge and understanding in scholarship contexts results from more than open access to artefacts or the opinion of experts, such as might be better afforded to a larger number of people in an online only context. It is also the product of the negotiation that arises between the human scholars, their professional support communities, their tools and environments, their other institutional roles and the complexity due to the embeddedness of many of these actors in the material world.

### **Conclusion – a critical perspective**

Any assumption that as academic scholarship becomes more digital it should naturally become more open ignores tensions that reside not only within the scholarly community in its response to digitality, but also between the ideals of academic scholarship and the idealisation of a democratising and inherently educational open internet. I have argued here that these tensions make for an ‘impossible triangle’ of scholarship, digitality and openness. However, this does not mean that there is no way for these three principles to be used in conjunction by educationalists. Moreover, it may be that it is older and more established scholars who experience these tensions more profoundly as contradictions, whereas doctoral students and other newer scholars might find some compatibility between the principles of scholarship and those of digital openness, and find ways to relate them in their teaching. These newer and younger scholars have yet to build their reputations within their fields, and thus have less to lose in experimenting with media and audiences for their work. Whether newer kinds of computed ‘reputation-and-authority metrics’

such as those proposed by Jensen (hits, valued links, taggings, percentages of text quoted etc., Jensen 2007, p. 40) will become the basis on which they choose to build their scholarly reputations remains to be seen, but rather than wait for time to smooth the tensions away it would make more sense to explore them further, in a principled way – to make them the subject of scholarship in fact – in an effort to understand better the conditions in which they arise. Research in this area always runs the risk of collapsing into reflexivity, as digital scholars turn the lens of enquiry onto themselves, but grounded and critical research into situated practice in areas of research, teaching and public engagement where both scholarship in all its forms and digitality in all its manifestations are prominent is possible and should be pursued.

An area in which research of this kind is going on is in studies of literacy and knowledge practice in the ‘digital university’ (see Goodfellow & Lea 2013). This area of study turns an analytical spotlight onto the texts and situated knowledge practices of groups of people involved in different ways with digital technologies in contexts of institutional scholarship: researchers, teachers, learners, information specialists and other practitioners. These studies expose the material, rhetorical and political factors that shape higher education practice in conditions of digitality, and challenge us to recognise the value systems underlying our attempts to realise the triangle of scholarship, technology and openness. McKenna and Hughes (2013) for example, point to contradictions arising in institutions’ increasing use of open educational resources for teaching and their simultaneous attempt to discourage student plagiarism through the use of detection software. Fransman (2013) shows how different methods of researching social networking in a university scholarly community ‘enact the digital’ in different ways, including and excluding different groups of participants and non-participants from consideration. Goodfellow (2013) explores the form and rhetoric of different accounts of ‘digital scholarship’ in print and digital publication, demonstrating that there is a stability to the structure of some scholarly texts which digital open access can paradoxically render less open to the lay reader. Concerned scholars need this kind of situated critical perspective in the face of promises (or threats) to transform academic practice through an intensification of digital openness aimed at dissolving the boundaries between communities that nurture scholarship and those that are bent on engagement. There is an inherent tension between practices that aim to open up the social construction of knowledge to universal participation, and those which aim to deepen the understanding of specialist communities and establish a stable and enduring record. Nevertheless, it is the role of many scholars to be involved in both. To bring scholarship, teaching and public engagement closer together must surely be the aim, but first we need to understand the ways in which practice makes them different.

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