3.

Digital scholarly editing and the crisis of knowledge technology

Helen Abbott, Michelle Doran, Jennifer Edmond, Rebecca Mitchell and Aengus Ward

Introduction

The history of digital humanities is one of convergence, with software, standards and theoretical frameworks originally developed for one purpose finding new utility when applied in another. This chapter will continue this tradition by drawing together some of the central values and tenets of digital scholarly editing with the emerging subfield of critical digital humanities (see Hall 2011; Liu 2012; Berry 2019). In doing so, it will propose a potential opportunity to reconceptualise the margins of scholarly editing, but also how it might provide distinctively new insights related to problems not just of digital source materials, but of contemporary digital society as a whole.

The conspiracy theory community Q-Anon has become known in part for their seemingly paradoxical catchphrase: 'Do the Research' (NYT, 27 January 2020). In this context, 'doing the research' seems to imply an epistemic process in which evidence perceived to be biased is mined for a subtext to corroborate the worldview already embraced by the 'researcher'. While those on the outside of this community might recognise in this approach a strong confirmation bias, the workings of an echo chamber or a lack of rigour in testing

the credibility of information sources, one can also see a failure in the overall system to inculcate critical reading and textual analysis skills in the 'researcher' in question. This is not entirely an educational gap, however, as the shifting of knowledge technologies, and in particular the manner in which sources convey their authority in the transition from the analogue to the digital age, is an incomplete process that has made the signals of trustworthiness and credibility easy to hack and manipulate.

In the digital age, we are suffering from a crisis of authority. Whom do we trust? How do we prove ourselves trustworthy? How do we as citizens guard against dis- and misinformation, and as scholars against the 'crisis of reproducibility'? (Baker 2016). Individuals, communities and indeed democracy are all being failed by the emerging twenty-first-century norms in which digital platforms act as our primary information intermediaries. The filtering of works and ideas through the consciousnesses of others, and the subsequent presentation of those ideas, has become a process of which we have grown deeply, and rightly, suspicious. The heuristics according to which we recognise authority and assign trust have been co-opted by any number of actors able to manipulate them and, by extension, us. Uncertainty and complexity seem to be out of fashion, and removing them has become a key success metric within both backend computational systems and user interface design. The rapid shifting of knowledge technologies, in particular as regards the manner in which sources convey their authority in the transition from their affordances as analogue to digital media (where unfiltered source availability is high and the visual languages of authority, from web design to 'deep fakes', are easily appropriated), is an ongoing transition that has muddied our ability to assess credibility. In addition, the provenance of an idea or the evidence that underlies it seems no longer valued, as we rely instead on the superficial input of our peers and the algorithms driving our feeds to convince us of the merit of a particular knowledge claim.

These are problems democratic societies are currently struggling with on a fundamental level. Unfortunately, too often the solutions

being proposed emerge from the same culture of software development that created the problems in the first place. There is one cohort of advanced researchers – namely scholarly editors, in particular digital scholarly editors – whose work has been built over decades if not centuries upon the management of these very tensions, and whose processes and perspectives have yet to be brought forward into the discussion. In this essay, we propose 'Radical Iterative Editing', a concept that leverages the inherent affordances of digital scholarly editing, and identifies possible applications of this methodology to inform/enhance DH understanding and applications, in particular as might be applied to that most opaque class of knowledge technologies we capture under the umbrella term of Artificial Intelligence (AI).

The chapter's interventions at the interface of the scholarly and the social, of digital scholarly editing and critical digital humanities will address in particular two key points: (a) how we can explore and expand the current norms within analogue, digital and indeed hybrid scholarly editing processes towards a model that emphasises the constructed and consensual nature of knowledge, embraces the uncertainty, complexity and contextual dependency of cultural materials and makes knowledge claims and decision-making processes transparent; and (b) how this model can be documented and expanded to become applicable in other kinds of human, machine and hybrid knowledge-making processes, in particular systems wielding algorithmic authority.

The humanities versus technosolutionism

Before we can explore how a re-evaluation of the humanistic process of scholarly editing can inform our understanding of the contemporary digital society, we must first more closely define the technocultural tensions we understand as urgently requiring this kind of disruptive consideration. Although Europe may be leading the world in the establishment of values-based frameworks for the regulation of culturally disruptive new technologies, this regulatory

approach is still strongly dependent on 'technosolutionist' (Mozorov 2013) conceptualisations of where harm is being done and how it can be ameliorated. Results are therefore fragmented and unsatisfactory (Mozorov 2021), largely due to how the measures proposed to address problems of opaque technology often intrinsically incorporate the values of the companies and disciplines that have created those black boxes in the first place.

Such perverse incentives are particularly hard to resist when dealing with AI, a metaphorical rather than functional or descriptive term that is widely used in policy and public discourse (meaning something akin to 'human like' (Krafft et al. 2020)), but which is nearly absent in technical discourse, where it is supplanted by more precise referents, such as machine learning, robotics or neural networks (see Toney 2021, for a contrasting list of key terminologies). These differences leave a wide gap in communications about advancing technologies, which hinders consensus about what would be socially and culturally optimal. As Sadowski and Bendor advocate, we must therefore urgently take steps to develop new, alternative sociotechnical imaginaries (2019) to keep the subtle, relational and culturally inscribed processes of identity formation from being hijacked, sold or subjected to manipulation in the service of or via advanced algorithms and data. In other words, we need an applied humanities approach to AI to render it truly humancentric, and to realise the goal formulated by Willard McCarty as '...meeting "artificial intelligence" straight on with a combination of technical knowledge, an historical imagination, keen critical discernment, anthropological scope and a thorough education in the arts and humanities'. (McCarty 2021).

As a mode of interacting with source texts, Radical Iterative Editing commences from the premise that the humanities, and in particular the digital humanities, can provide a unique source of insight relevant to these challenges, as well as the transdisciplinary communicative traditions to harness this insight for new audiences. To do so, it exploits the processes and values of scholarly editing, in particular as they have responded to the transition to digital scholarly editing,

as exemplary of the kinds of technical and social processes of building and sharing authority that we are so sorely lacking. It does this by expanding the current norms within analogue, digital and indeed hybrid scholarly editing processes towards a model that embraces the uncertainty, complexity and contextual dependency of cultural materials and makes knowledge claims and decision making and processes transparent. In this, it builds on the centuries of humanistic tradition to create a more widely actionable paradigm for the engagement of and with knowledge claims, and the sources that contain them.

From scholarly editing to Radical Iterative Editing

At its most basic level, scholarly editing mediates in subtle and time-honoured ways the authority of the creator of a work, the editor, and the reader of an artefact. As specialists in scholarly editing, we manage layers of information in a highly effective manner, and are able to create knowledge out of noisy, sometimes conflicting information. Critical to that task is the self-awareness of the editor. In parsing the potential of philology to address the pressing needs of 'human beings to read their pasts and, indeed, their presents and thus to preserve a measure of their humanity', Pollock (2009) noted that 'the philologist's meaning'– acknowledging that 'we cannot erase ourselves from the philological act' – cannot be divorced from 'textual meaning' and 'contextual meaning'. Yet conventional views of textual editing often traffic in the appeal of the 'definitive': establishing a version of a text that is so comprehensive, so authoritative, as to be regarded as final. In practice, the 'definitive' does not exist. New information might arise – the discovery of a previously unknown manuscript, for example – but even more significant are the cultural and contextual changes to the reading experience that demand revised contextualisation. Editors both borrow from and enhance the authority of a work by showing where ideas were derived from or when texts were stabilised, but they also must establish their own authority, being neither too transparent nor too forward, and ensuring their interventions are evident without becoming distracting.

This careful layering of evidence allows the reader to decide whether the editor is a trustworthy intermediary of information, based on the full range of signals, heuristics, contextual matter, technologies, paradata and so on that the editor harnesses in achieving the delicate balance between exposing and obscuring the object of their work. The digital space affords greater flexibility to attend to these ongoing changes, allowing editorial projects the means to be far more responsive, far more inclusive of variation, than the printed form. Arguing that in fact the digital space could transform how readers and editors interact within the very nature of an edition, Gabler (2010) emphasised the dynamism of digital affordances, describing the digital scholarly edition as a 'web of discourses' – including the source texts and editorial interventions and commentaries – that are 'interrelated and of equal standing': 'digital editions may be designed and made researchable as relational webs of discourse, energized through the dynamics of the digital medium into genuine knowledge sites'.

That the digital allows for a more flexible, interlinked and alterable platform for the dissemination of textual knowledge is well established, but those possibilities have re-opened fundamental questions at the heart of the practice of scholarly editing: What do we edit and why? Who has the authority to edit a text, and how and why do readers recognise and trust that authority? How can editorial interventions be made explicit so that a reader or user can make sense of them? Each of these questions speaks to the decisions and techniques of the editor, but also of a deeper covenant between editor and reader, a cooperative approach to uncertainties at the core of a knowledge creation pipeline. It is at this fundamental level that a radical iterative approach to editing can have its greatest impact. Radical Iterative Editing proposes a framework for negotiating trust and authority that exploits the affordances of scholarly editing by privileging the iterative rather than the definitive (McGann 1996; Schreibman 2013; Sahle 2016; Broyles 2020), the process rather than the product (Siemens et al. 2012; Pierazzo 2014; Sahle 2016; Doran 2021) and the active, even radical role, of the editor acting transparently as an active collaborator in the sensemaking

process, rather than an 'invisible hand' (Siemens et al. 2012). The resulting premises of an editing paradigm that privileges the radical and iterative demonstrate awareness that editing is never neutral. Instead, textual editors have for centuries (if not longer) used the technologies of their times, from concordances to footnotes to hyperlinks, to signal uncertainties, communicate complexities and deliver as complete a record as possible of the provenance behind an edited work.

Central to this methodology is making editorial practices radically visible, by, for example, documenting multiple iterations of any output and making metadata legible and assimilable by multiple publics (the scholarly community, readers, audiences and consumers of creative, journalistic and scientific artefacts and texts). In this, we can view scholarly editing as a process-based suite of knowledge technologies that are optimised around a set of specific 'primitives', including: filtering, presentation, building authority to engender trust, managing uncertainty and maintaining provenance. The interdependence between culture and knowledge technologies (aboriginal songlines and libraries also being knowledge technologies) underscores the importance of them for sensemaking, in both the Heideggerian sense of *Dasein* and also as seen from the perspective of the field of behavioural economics (Shiller 2019; Kahneman 2011). Knowledge technologies can, of course, also be instruments of power: the editor's position is inherently one of authority, and one need only consider the impact of the affordances of print on the power of the elites of the Catholic Church (McDaniel 2015) to see a harbinger of Facebook's interactions with regulators centuries later. It is indeed their role as knowledge technologies par excellence, with serious impacts on human competence and critical thinking (Mackenzie 2017) that makes algorithmic profiling and decision making so problematic, and associates the challenges they bring with potential new sources of inspiration with regard to how they might be managed better in the care and expertise of digital scholarly editors.

Radical Iterative Editing as a scholarly practice

Radical Iterative Editing differs from traditional scholarly editing in a number of ways. 'Radical' refers to the radical changes that the continuously developing affordances and constraints of digital environments and contexts bring to the scholarly editing process. These changes include: (1) a full recognition that editing is a subjective process; (2) a radical openness of the processes of knowledge creation, so that consumer and producer will be able to understand these processes and effects, creating a more informed, resilient information audience (this is where the digital environment and technologies may potentially have the greatest impact). 'Iterative' recognises that all artefacts and forms of knowledge are fluid, and thus we can never honestly speak of a 'definitive edition'. Editions are therefore part of a process potentially spanning centuries and millennia.

Inflected by the affordances of digital modes of being, and building on the tools methods of philology, Radical Iterative Editing therefore implies a process of constant renegotiation of meaning, one which may revolve around a (textual) artefact as its focal point, but which ceaselessly recognises the addition of new (forms of) knowledge and understanding. The addition of such knowledge and understanding is not a sedimentary process, which seeks to alter the artefact, but rather a dialectic one, which brings into play new perspectives. The resulting editions are not versions of a text, but rather hypotheses of a work, here understood as the (infinite) range of proximate and distant knowledge and understanding about a document, an idea, an artefact or any element of cultural heritage.

The value and effect of editing, therefore, lies more in the iterating, in the documentation of the intersection between times and consciousnesses, than in the result, which is necessarily provisional. And its authority derives from the open nature of its composition.

The kinds of scholarly projects that benefit from Radical Iterative Editing practices include those that challenge and contest 'standard'

modes of editing, across inputs, media or output formats. It is the experience of attempting to resolve these kinds of editorial conundrums that have inspired the concept of Radical Iterative Editing, including those that incorporate inclusive participatory practices (such as the need to address visual doodles on an author's manuscript) or seek to edit where there are gaps and silences (such as scores for musical performance with missing parts, or oral tales for which there are multiple 'authoritative' versions). Such projects challenge the current epistemic boundaries of digital scholarly editing, harnessing the shared question of how to 'edit the uneditable', by which we mean the intangible, tacit, embedded and embodied aspects of cultural production. An editor might have to choose between multiple printed versions of a text, for example, as the copy text for an edition, and account for the reasoning behind that choice. Documentation is thus central to the iterative process, giving rise to more transparent knowledge provenance, where editorial interventions can be trackable, associating (via metadata or within the edited object itself) the manipulation of the digital artefact with the human who made the intervention. The resulting edition would not stand as a fixed output, but rather as one manifestation of a transparent process, the result of which might be different had other choices been made. This means, as Andrews and van Zundert (2018) have argued, that the digital interface must be regarded not as a 'utilitarian means of representing [an] edition' but rather as 'a site of interaction between text and user' and, we would add, a site of interaction between work and editor.

Digital scholarly editors have long had a powerful tool in the Text Encoding Initiative (TEI) to represent the formal features of a text, its versions and its apparatus, as well as many of the editorial choices made in rendering it as an edition. Indeed, perhaps the greatest success of the TEI has been not the standard, but its status as a community, a place to negotiate questions of representation, of authority and of the place of a text in its context. However, TEI has limitations in areas for which it was never intended; it cannot, for example, harness the interoperability that later digital developments allow. The paradigm of Radical Iterative Editing is therefore in no

way a replacement for the TEI, but rather a new way of thinking about how we might use it, and how its use might continue to evolve along with the changing technological and social affordances and requirements of our time.

Radical Iterative Editing and the failure of knowledge technologies

Through the application of Radical Iterative Editing to AI, we can also explore the phenomena that amplify the credibility of some knowledge claims while also undermining our ability to interrogate them. Existing approaches to this issue appear in the popular media and policy literature under a variety of names: filter or epistemic bubbles (Pariser 200; Nguyen 2020), mis- or disinformation (as discussed in the EC's 2018 High Level Expert Group report and the UK DCMS committee's similar 2019 publication on the same issue) or algorithmic bias. This form of assumed authority leading to potentially misplaced trust is hard-coded into systems based on algorithmic filtering, choice architectures and personalisation, leading to an assumption of authority that is 'epistemic rather than the authority of force' (Alfano et al. 2018). Further, AI-based systems 'are notoriously opaque, offering few clues as to how they arrive at their conclusions. But if consumers are to, say, entrust their safety to AI-driven vehicles or their health to AI-assisted medical care, they will want to know how these systems make critical decisions' (Bleicher 2017). To address this, the idea has been proposed of an 'ethical black box' to continuously record sensor and relevant internal status data (Winfield 2017) and the fast-growing field of XAI (or Explainable AI, see Doran et al. 2017; Holzinger 2018) seeks to address the threats inherent in this black box, but with only limited breakthrough success so far, leading one researcher in the field to refer to XAI as 'the new 42' (that is, the answer to life, the universe and everything, Goebel et al. 2018).

Making AI able to promote and protect human development is not a goal that can be approached as a 'technical fix', however: it requires

instead the kind of 'cultural fix' (Layne 2000) that the humanities can provide, particularly the digital humanities, which can interrogate both the socio-cultural and technological drivers at play. In spite of this, debates concerning AI frequently disregard or minimise the potential contribution of the humanities. In line with the acceleration of developments within AI and machine learning, it is essential that human-centred, qualitative examinations that consider the social, political, cultural, educational and environmental impacts of these advances form a central part of future planning (see Couldry and Powell 2014; Woolley 2019). As McLuhan stated, 'an artist picks up the message of cultural and technological challenge decades before its transforming impact occurs … the artist is indispensable in the shaping and analysis and understanding of the life of forms, and structures, created by electric technology' (McLuhan 1964, p. 13). We would claim the same for scholarly editors, who must assemble, corroborate, filter, annotate, organise and present the words and work of others in a way that is completely antithetical to the current trends driving the circulation of misinformation.

Code already incorporates some similar mechanisms to the creation of editions (van Zundert 2018). Annotation, for example, can be seen as a common language shared by the coder and the editor, enabling in each case the addition of contextual information without disturbing the running of the source code or reading of a source text. Where there are distinct differences, however, are in the contract between the coder and the editor. The mediating layer in which code is compiled before it is passed to a user creates an impenetrable boundary between the decisions of the code creator and the code user. This hides the kinds of editorial decisions, uncertainties, provenance of data or code snippets and indeed those very annotations from the intended end user of the software product. Scholarly editing in a radical, iterative context cannot create the same kind of hierarchy between editor and reader, as the very basis for the editor's authority lies in the transparency of the decisions, from selection to annotation to presentation, that the editor makes.

How might our most advanced knowledge technologies look different if software developers acted more like editors? Certainly, the agility of software development could be maintained, as the modern scholarly edition demonstrates that care and precision in the editing process need not (only) be authoritative and slow. The principle of explainability would have to be embraced as a value that united software users and creators, however, rather than an emergent interlanguage functioning between, rather than beyond, system developers. More than anything else, however, gaining the informed trust of the user would need to be paramount, a consideration that would challenge many of the norms of the software industry today, from the rapid, top-down culture of updates and changes that disturb the heuristics of authority and make it impossible for even informed users to maintain awareness of how their tools operate; the disenfranchisement of users through aaS models; the narrowly defined notions of platform success (processing speed, 'stickiness'); the opacity of platforms, data sources, models, processing and results; and the incentives to meddle in social processes without due oversight. Of course, this would also undermine a company's ability to protect the code underlying a platform as their intellectual property. These goals may not be achievable in the short term, but ultimately, the deployment of AI for social good will not occur unless the good will of regulators can be enhanced with appropriate imaginaries regarding the kinds of systems we would like to see. The tenets of Radical Iterative Editing provide an excellent example of one such possible imaginary.

Conclusion

The problems described above, all framed by the adoption of contemporary knowledge technologies, are fundamentally challenging democratic societies, which rely on open discourse, civic participation and shared culture to thrive. Unfortunately, too often the solutions being proposed emerge from the same culture of software development that created the problems in the first place: as Pasquale describes it, '... authority is increasingly expressed algorith-

mically... Silicon Valley and Wall Street tend to treat recommendations as purely technical problems. The values and prerogatives that the encoded rules enact are hidden within black boxes' (Pasquale 2015).

Hiding the 'encoded rules' informing knowledge creation within 'black boxes' is precisely the kind of process the work of scholarly editors, in particular digital scholarly editors, has evolved over decades to avoid. Instead, this is an expertise that documents the complexities resulting from the work of filtering accounts, establishing authority, managing uncertainty and documenting provenance. The clear link between the problems of information overload and technological overreach and the affordances of digital scholarly editorial expertise to 'situate knowledges' (Haraway 1988) is yet to be systematically explored, however.

Radical Iterative Editing is therefore not just a model that can be narrowly applied to explore the boundaries of our conception of digital scholarly editing, but also as a paradigm for the kinds of critical thinking and knowledge creation under uncertainty that the digital society urgently requires. In this, the conceptual framework can have wide applicability. We can use the tenets of both the history and the future of editing to inform our interactions and outputs, highlighting the processual, the failures that lead us to invent a new approach, the hybridity of our processes (for the digital humanities are never fully digital so long as a human researcher undertakes the study), documenting closely the inputs we filter, the uncertainties we manage, the forms of 'performance' we harness to present to our findings, and the contexts we harness to build our conclusions.

References

Alfano, M., Carter, J. A. and Cheong, M. 2018. 'Technological seduction and self-radicalization.' *Journal of the American Philosophical Association*, 4(3): 298–322.

Andrews, T. and van Zundert, J. 2018. 'What are you Trying to Say? The

Interface as an Integral Element of Argument.' In *Digital Scholarly Editions as Interfaces*, edited by Bleier, R., Bürgermeister, M., Klug, H. W., Neuber, F. and Schneider, G. BoD. https://kups.ub.uni-koeln.de/9106/1/02_andrews_zundert.pdf.

Baker, M. 2016. '1,500 Scientists Lift the Lid on Reproducibility'. *Nature News* 533 (7604): 452. https://doi.org/10.1038/533452a.

Berry, D. 2019. 'Critical Digital Humanities.' *Conditio Humana – Technology, AI and Ethics* (blog), 29 January. https://conditiohumana.io/critical-digital-humanities/.

Broyles, P.A. 2020. 'Digital Editions and Version Numbering.' *DHQ* 14 (2).

Bleicher, A. 2017. 'Demystifying the Black Box That Is AI.' *Scientific American*, 9 August. https://www.scientificamerican.com/article/demystifying-the-black-box-that-is-ai/.

Broyles, P. A. 2020. 'Digital Editions and Version Numbering.' *DHQ* 14 (2).
Couldry, N. and Powell, A. 2014. 'Big Data from the Bottom Up.' *Big Data & Society* 1 (2). https://doi.org/10.1177/2053951714539277.

Doran, D., Schulz, S. and Besold, T. R. 2017. 'What Does Explainable AI Really Mean? A New Conceptualization of Perspectives.' ArXiv Preprint. http://arxiv.org/abs/1710.00794.

Doran, M. 2021. 'Reflections on Digital Editions: From Humanities Computing to Digital Humanities, the Influence of Web 2.0 and the Impact of the Editorial Process.' *Variants* 15-16: 213-30.

Gabler, H. W. 2010. 'Theorizing the Digital Scholarly Edition.' *Literature Compass* 7: 43–56.

Goebel, R., Chander, A., Holzinger, K., Lecue, F., Akata, Z., Stumpf, S. 2018. 'Explainable AI: The New 42?' In *Machine Learning and Knowledge Extraction: CD-MAKE 2018. Lecture Notes in Computer Science*, edited by Holzinger, A., Kieseberg, P., Tjoa, A.M. and Weippl, E. Springer. https://doi.org/10.1007/978-3-319-99740-7_21

Hall, G. 2011. 'The Digital Humanities Beyond Computing: A Postscript.' *Culture Machine* 12.

Haraway, D. 1988. 'Situated Knowledges, The Science Question in Feminism and the Privilege of Partial Perspective.' *Feminist Studies* 14 (3): 589–99.

High Level Expert Group on Artificial Intelligence. 2019. *Ethics Guidelines for Trustworthy AI*. European Commission.

Holzinger, A. 2018. 'From Machine Learning to Explainable AI.' In *2018 World Symposium on Digital Intelligence for Systems and Machines (DISA)*. IEEE. https://doi.org/10.1109/DISA.2018.8490530.

Kahneman, D. 2011. *Thinking Fast and Slow*. Farrar, Strauss and Giroux.

Krafft P. M., Young, M., Katell, M., Huang, K. and Bugingo, G. 2020. 'Defining AI in policy versus practice.' In *Proceedings of the AAAI/ACM Conference on AI, Ethics and Society*. Association for Computing Machinery.

Layne, L. 2000. 'The Cultural Fix: An Anthropological Contribution to Science and Technology Studies.' *Science, Technology & Human Values* 25 (3): 352–79 https://doi.org/10.1177/016224390002500305.

Liu, A. 2012. 'Where Is Cultural Criticism in the Digital Humanities?' In *Debates in the Digital Humanities*, edited by Gold, M.K. University of Minnesota Press.

Mackenzie, A. 2017. *Machine Learners: Archaeology of a Data Practice*. MIT Press.

McCarty, W. 2021. 'Being 'critical' about AI.' *Humanist* 35 (432). https://www.dhhumanist.org/volume/35/432/.

McDaniel, R. 2015. 'The Spread of Knowledge via Print.' In *Disrupting Society from Tablet to Tablet*. https://core.ac.uk/download/228820268.pdf

McGann, J. 1996. 'Radiant Textuality.' *Victorian Studies* 39 (3): 379–90.

McLuhan, M. 1964. *Understanding Media: The Extensions of Man*. McGraw Hill.

Mozorov, E. 2021. 'Privacy activists are winning fights with tech giants. Why does victory feel hollow?' *The Guardian*, May 15. https://www.theguardian.com/commentisfree/2021/may/15/privacy-activists-fight-big-tech.

Mozorov, E. 2013. *To Save Everything, Click Here: The Folly of Technological Solutionism*. Public Affairs.

Nguyen, C. T. 2020. 'Echo Chambers and Epistemic Bubbles.' *Episteme* 17 (2): 141–61. https://doi.org/10.1017/epi.2018.32.

Pariser, E. 2011. *The Filter Bubble: What the Internet Is Hiding From You.* Penguin.

Pasquale, F. 2015. *The Black Box Society*. Harvard University Press.

Pierazzo, E. 2014. 'Digital Documentary Editions and the Others.' *Scholarly Editing* 35.

Pollock, S. 2009. 'Future Philology? The Fate of Soft Science in a Hard World.' *Critical Inquiry* 35: 931–61.

Sadowski, J. and Bendor, R. 2018. 'Selling Smartness: Corporate Narratives and the Smart City as a Sociotechnical Imaginary.' *Science, Technology and Human Values* 44 (3): 540–63. https://doi.org/10.1177/0162243918806061.

Sahle, P. 2016. 'What is a Scholarly Digital Edition?' In *Digital Scholarly Editing Theories and Practices*, edited by Driscoll, M. J. and Pierazzo, E. Open Book Publishers.

Schreibman, S. 2013. 'Digital Scholarly Editing'. In *Literary Studies in the Digital Age: An Evolving Anthology* , edited by Price, K.M. and Siemens, R. MLA. https://doi.org/10.1632/lsda.2013.4.

Shiller, R. 2019. *Narrative Economics: How Stories Go Viral and Drive Major Economic Events*. Princeton University Press.

Siemens, R. et al. 2012. 'Towards Modeling the Social Edition.' *Literary and Linguistic Computing* 27 (4): 445–61.

Toney, A. 2021. 'A Large-Scale, Automated Study of Language Surrounding Artificial Intelligence.' Arxiv Preprint. https://doi.org/10.48550/arXiv.2102.12516.

Van Zundert, J. 2018. 'On Not Writing a Review about Mirador: Mirador, IIIF, and the Epistemological Gains of Distributed Digital Scholarly Resources.' *Digital Medievalist* 11 (1): 5. http://doi.org/10.16995/dm.78.

Winfield, A.F.T. and Jirotka, M. 2017. *The Case for an Ethical Black Box*. Springer.

Woolley, J. P. 2019. 'Trust and Justice in Big Data Analytics: Bringing the Philosophical Literature on Trust to Bear on the Ethics of Consent.' *Philosophy & Technology* 1 (32): 111–34.