Appropriation:

Towards a Sociotechnical History of Authorship

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Abstract: The evolution of our literate culture across the millennia has been marked by clearly identified and well-documented milestones in the history of reading and writing technologies. Changes in literacy, understood as the sum of reading and writing practices, have always followed such milestones at some remove. Not only are they much more diffuse in character and much harder to identify and describe, but they stand in a tenuous cause-and-effect relationship to the technologies in question. This article makes a plea for a stronger awareness of the effects of technology on our literate culture. Reading has always received a fair amount of attention (with the history of reading being a prominent subdiscipline of the field of book studies), but it should be recognized that its corollary, authorship, is a central, and, as digital technology is becoming ubiquitous—at least in the Western world—, increasingly important part of our literate culture, too. With Web 2.0 technology enabling more people than ever in history to write for public or at least semi-public consumption, the concept, definition and status of authorship is in need of radical revision.

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In 2006 Kevin Kelly's essay 'Scan this book' published in the *New York Times*[1] drew a scathing reply from one of America's most famous contemporary authors, the late John Updike.[2] At stake was the issue of authorial intellectual property and its appropriation by others, now made so easy by means of digital copying and pasting. The exchange brought together two aspects of our cultural history that are often studied in isolation, but ought by rights to be studied in close connection. These are the (social) history of literate mentality, and the (technological) history of the material means of text dissemination. Studying the intimate relationship between the technological development of the dominant means for the dissemination of text and the social development of literate mentality together rather than in isolation will mutually inform our understanding of both.[3] Though for reasons I will examine below the subject

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[1] *New York Times,* 14 May 2006, http://www.nytimes.com/2006/05/14/magazine/14publishing.html.

[2] 'The end of authorship', *New York Times,* 25 June 2006, http://www.nytimes.com/2006/06/25/books/review/25updike.html. Updike died in 2009.

[3] Although wording it less forcefully than I do, Jens Brockmeier and David Olson similarly suggest such a close relationship when they write about twentieth and twenty-first-century developments that 'the rise of the literacy episteme is not simply the result of accumulative scholarship, scientific discovery or century-long debates on the very nature of language. Rather, it is the result, if not the side effect, of more profound sociocultural changes in the twentieth century, among which the revolutions in modes of communication—perhaps most significantly the digital revolution—have played a crucial role.' ('The

remains intractable, there is already much attention for the passive half of literacy—as the number of histories of reading testify. This is very different in the case of authorship, The sociotechnical environment in which authors work strongly affects the nature and social position of their authorship. Phrased differently, the social position of authorship is always founded in a particular sociotechnical constellation of a particular literate mentality and a particular dominant technology for the dissemination of texts.

The particular sociotechnical constellation that developed over the last few decades is one in which the long-established print paradigm of text dissemination clashes with the ascendancy of a digital paradigm. By way of an example of how this affects the status and nature of authorship I would like to take a brief look at how digital text technology has shaped current thinking about appropriation. In doing so, I hope to suggest that a sociotechnical approach will offer a fertile perspective on the history of authorship more generally—and on the history of our literate culture at large.

Back then to Kelly vs Updike. The vision Kevin Kelly describes in his article is of a digital library to dwarf all pre-Google visions of universal libraries, from the scrolls of the famed Library of Alexandria to the microfilms of Paul Otlet's Mundaneum, to Michael Hart's Project Gutenberg. This all-encompassing library, as Kelly argues, is 'truly democratic, offering every book to every person'. John Updike's reaction to Kelly's fantasy a few weeks later makes painfully clear how one man's vision of heaven is another man's vision of hell. It is worth quoting at length:

> The anarchic nature of [Kelly's] true democracy emerges bit by bit. 'Once digitized, books can be unraveled into single pages or be reduced further, into snippets of a page,' Kelly writes. 'These snippets will be remixed into reordered books and virtual bookshelves. Just as the music audience now juggles and reorders songs into new albums (or "playlists", as they are called in iTunes), the universal library will encourage the creation of virtual "bookshelves" — a collection of texts, some as short as a paragraph, others as long as entire books, that form a library shelf's worth of specialized information. And as with music playlists, once created, these "bookshelves" will be published and swapped in the public commons. Indeed, some authors will begin to write books to be read as snippets or to be remixed as pages.' The economic repercussions of this paradise of freely flowing snippets are touched on with a beguiling offhandedness, as a matter of course, a matter of an inexorable Marxist unfolding. As the current economic model disappears, Kelly writes, the 'basis of wealth' shifts to 'relationships, links, connection and sharing'. Instead of selling copies of their work, writers and artists can make a living selling 'performances, access to the creator, personalization, add-on information, the scarcity of attention (via ads), sponsorship, periodic subscriptions — in short, all the many values that cannot be copied. The

*A*uthorship

cheap copy becomes the "discovery tool" that markets these other intangible valuables.'

Updike's outrage at the presumption that it is okay for others to take what is rightly his and reuse 'cheap copies' of his work at will is almost tangible: 'Books traditionally have edges: some are rough-cut, some are smooth-cut, and a few, at least at my extravagant publishing house, are even top-stained. In the electronic anthill, where are the edges? The book revolution, which, from the Renaissance on, taught men and women to cherish and cultivate their individuality, threatens to end in a sparkling cloud of snippets.' It seems perfectly understandable that Updike resents to see his oeuvre, thus shredded to freely flowing snippets, vanish, like so many drops of water, in the anonymous sea of text on the Internet. It is not difficult to imagine how much Kelly's 'true democracy' must have resembled anarchy to Updike as a writer formed by several centuries of print history.

Little could Updike have guessed in 2006 what was yet to come. In 2006 the Web 2.0, or the participatory Web, had only just begun to emerge. Web 2.0 vastly extended the opportunities for all users to contribute to the Web as a platform for information exchange. Ranging from intensive scholarly collaboration through discussion and commenting to flaming and spamming, user participation has resulted in ever greater dynamism of 'content': a kaleidoscopic mix of text, pictures, sound and movies. As an environment that makes no distinction in principle between a writer and a reader, between a producer and a user, Web 2.0 gave us the concepts of the 'produser' or 'wreader', and 'user-generated content'. It has stimulated 'social' reading and writing in all forms and flavours, like participatory writing, collective writing, 'beta publishing', and crowd funding of writing and publishing projects. By bringing together in dialogue individuals who would otherwise never have met, the Web engenders an extraordinary variety of niche writings, constituting what we may call a 'long tail' of authorship.[4] What Updike, mercifully, never came to witness in full was the extent to which the Web 2.0 architecture facilitated not just contributions from all and sundry, but the friction-free 'sharing' of others' work, not just that of the newly enfranchised public at large but including that of professional authors.

Properly regarded, the ease of copy-paste appropriation of remixed snippets is thus merely a manifestation of a much larger 'democratising' tendency engendered by the digital textual medium: the rapprochement between writer and reader, between author and consumer. As we saw in the case of the Kelly-Updike controversy, this 'democratisation' has invoked extreme reactions: hailed by some, it is derided by others. The way today's readers are enabled by digital technology to become publicly visible as writers[5] is being routinely framed in one of two ways. One camp regards it as a misguided free-for-all and a source of slush, lamenting the lack of online gate-keeping

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[4] This is the corollary of Chris Anderson's long tail of book *consumption* (see Chris Anderson, 'The long tail', *Wired* 12:10 (October 2004), http://www.wired.com/wired/archive/12.10/tail.html).

[5] To call their writings 'published' begs the question of what constitutes publication. A definition of publishing is outside the scope of this article.

Authorship

and quality control. Diametrically opposed is the frame of Web 2.0 technologies as a means to raise everyone to the status of authorship regardless of prejudice, power or wealth. Replacing the disenfranchised, passive consumer of yore, the newly emancipated participatory producer, the 'prosumer', spells the glorious end of capitalist ownership of the means of production and dissemination.

The chasm betrays two sharply contrasting world views. The gap appears to be between those who happily embrace the new digital order of things and those on whom the legacy of print retains a stronger hold, and who are more sceptical. If the Kevin Kelly of 'Scan this book' is a digital evangelist, Andrew Keen[6] is one of the sceptics. He has been among the more vociferous critics of the Web 2.0 free-for-all:

> The cult of the amateur has made it increasingly difficult to determine the difference between reader and writer, between artist and spin doctor, between art and advertisement, between amateur and expert. The result? The decline of the quality and reliability of the information we receive, thereby distorting, if not outrightly corrupting, our national civic conversation. (p. 27)

At first sight it looks as if these sharply opposing views betray a generation gap, young people tending more naturally to embrace digital opportunities. However, the conflict works in more subtle ways than we might think. Rather, the two views represent primarily two social ideologies. For the culture of full participation is just as much celebrated by members of a generation old enough to have witnessed—if not actually brought about—the birth of the digital revolution. Kevin Kelly, born in 1952, is a case in point. Indeed, one sometimes gets the distinct impression that in their eagerness to embrace the new technologies some of the participants in the debate are purposefully aiming to show themselves young at heart. Vice versa, despite her youth, documentary maker turned Web critic Astra Taylor (1979) has become one of the most insightful and severe critics of the ideology of 'democratic creation' and sharing in her recent book *The people's platform: Taking back power and culture in the digital age*.[7]

Observing facts rather than being caught in an ideological debate, Taylor is one of a new wave of critical authors, cutting through the extreme polarisation. More perceptive as to the crucial role of technology, they have begun to develop a more nuanced point of view. An especially interesting early contribution to this more critical stance in the debate is that of Jaron Lanier. Like Taylor, Lanier is no technophobe. In fact, Lanier is a well-respected computer technology visionary, with a research track record in virtual reality and Web technologies. Despite his background as a digital technologist Lanier comes to essentially the same scathing verdict as Keen: that the

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[6] Andrew Keen, *The cult of the amateur: How today's Internet is killing our culture* (London and Boston, 2007).

[7] Astra Taylor, *The people's platform: Taking back power and culture in the digital age* (London: Fourth Estate, 2014).

digital world stimulates (and favours) what he calls second-order expression.[8] He has coined the term 'Digital Maoism' for open source and open content forms of knowledge production, decrying the practice of collaborative wiki writing as 'mob rule'. For Lanier a major cause for concern in this second-order expression is the loss of individual authorship:

> The digital flattening of expression into a global mush is not presently enforced from the top down, as it is in the case of a North Korean printing press. Instead, the design of software builds the ideology into those actions that are the easiest to perform on the software designs that are becoming ubiquitous. It is true that by using these tools, individuals can author books or blogs or whatever, but people are encouraged by the economics of free content, crowd dynamics, and lord aggregators to serve up fragments instead of considered whole expressions or arguments. (p. 47)

Both Taylor and Lanier conclude that, sadly and not a little ironically, two-way Web architecture has not actually delivered its chief promise of improved participation in the opportunities for real dialogue, and democratisation in the political sense. Despite the show of frenetic online participatory behaviour, in reality it has been confined chiefly to liking, retweeting and other forms of passive participation. The intention of Web 2.0 architecture, promising a fully democratic platform for participation can be said to have failed. What happened instead was an unintended example of the so-called 'Matthew effect'.

However disappointing the actual level of online participation and democratisation may be, this disappointment should not distract us from the fact that the two-way architecture of Web 2.0 remains.[9] Regardless of the nature and efficacy of actual participation, this still represents a fundamental change in access, causing a major shift in thinking about authorship and intellectual property rights, things that are obviously tremendously important to us.

As I suggested, I believe that this shift results from a particular sociotechnical constellation of a literate mentality and an increasingly dominant technology for the dissemination of texts. In fact, I would go one step further, and suggest that the technological force in this constellation may well be greater than the social force. We may think of it what we will, but once a technology has attracted a sufficiently large user base, it starts leading a life of its own that is hard to control.[10]

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[8] Jaron Lanier, *You are not a gadget: A manifesto* (New York: Knopf, 2010), 121-22. A good example of second-order expression is that of the hugely popular site Reddit.

[9] David Weinberger makes the same point rather wistfully in 'The Internet that was (and still could be)', *The Atlantic*, 22 June 2015, http://www.theatlantic.com/technology/archive/2015/06/medium-is-the-message-paradise-paved-internet-architecture/396227/.

[10] See Jennifer A. Chandler, '"Obligatory technologies": Explaining why people feel compelled to use certain technologies', *Bulletin of science, technology & society* 32:4, pp. 255-64.

Authorship

What is definitely different, and what the various Web 2.0 phenomena mentioned so far have in common, is the loss of 'edges'. Updike's concern was with the edges between one person's writing and another's, but Web 2.0 allowed such fuzziness to spread much more widely, affecting the boundary between an author cast in the position of someone who has something to say and a reader who is interested in listening to what that author has to say. That we can even make such an observation reveals the extent to which the notion of appropriation in the context of authorship was until recently 'defined' by print and the Order of the Book. By the time the Order of the Book can be said to have become firmly established,[11] so had the concept of authorship based on essentially one-way traffic. The print paradigm was characterised by a rigid distinction between textual production by known individuals and its consumption by an anonymous public. The common reader had no other means of entering into dialogue with the author than to scribble in the margins of his book: 'even the most extensive and aggressive handwritten comments wind themselves around the monumental printed text like ivy growing up a pillar'.[12] Few had recourse to print, and the recognition of authorship befell only a tiny minority of people—even of people who wrote. Mutuality only obtained potentially between peers; they could enter the dialogue by writing and publishing a reaction (as in the case of scholarship).

Incidentally, it is sometimes suggested that in the digital world we return to the manuscript paradigm. It is true that there are quite a number of similarities. For one obvious example, fluidity characterises both. For another, there also appears superficially to be a parallel in greater fundamental equality between author and reader.[13] There are, however, also important differences between the manuscript tradition and Web 2.0. In the manuscript world, where few could read and write, the very fact of their literacy united author and reader more than the varying forms of their participation in the textual discourse divided them. In today's Web world, readers and writers are no longer part of such an elite. Instead there is, for the first time, mass participation in—public—textual *production* after a four-hundred year period in which expanding literacy virtually exclusively affected textual *consumption*.

In a matter of a few years aspects of authorship that centuries of print had apparently made relatively stable have become unstable. After oral and manuscript traditions of textual dissemination had largely given way to print, authorship could become easily identified with appearing in print. Being published equalled having one's name associated with the circulation of a print product through the infrastructure of the Order of the Book: bookshops, libraries, reviews, and so on. As such, authorship could be said to be defined by default. Now that Web 2.0 makes available the status of being

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[11] In my book *Changing our textual minds: Towards a digital order of knowledge* (Manchester: Manchester UP, 2011) I have suggested that this occurs in the late nineteenth century (pp. 90-103).

[12] Anthony Grafton, *Worlds made by words: Scholarship and community in the modern West* (Cambridge, Mass and London: Harvard UP, 2009), p. 317.

[13] This similarity between the pre- and post-print periods has led some commentators to call the intervening period the 'Gutenberg parenthesis'. See, for example, Tom Pettitt, 'Containment and articulation: Media, cultural production, and the perception of the material world', http://web.mit.edu/comm-forum/mit6/papers/Pettitt.pdf.

*A*uthorship

'published' to all and sundry, authorship—and the symbolic capital it brings—is no longer so self-evident; there is a new need for definition. This leads to the larger question of the nature of authorship, and in particular to the question about the intrinsic relevance of attributing text to individual known authors, and its connection with the concept of intellectual property rights.

The suggested link between appropriation and the sociotechnical constellation defining the nature of authorship should by now be clear. On the Internet, Web 2.0 textual (and non-textual) discourse is characterised by the two-way peer-to-peer traffic that also characterises the Internet's infrastructure as a whole. This results in a flat, horizontal, non-hierarchical relationship between author and reader, with a lack of clear boundaries—Updike's 'edges'. This more equal relationship has inevitably led to a loss of inhibition on the part of readers in using or appropriating authors' work. This is a marked departure from the way centuries of print technology had previously shaped authorship. Through its commodification of text (and the ideas it conveyed), and the development over time of copyright into an intellectual property right, print had set into motion a process of institutionalisation and professionalisation of authorship over time. By the nineteenth century it was enabling authors to make money from the economics of the book trade rather than those of patronage. This gave rise to the one-way, hierarchical relationship with the reader that writers like Updike implicitly regard as their birthright.

As far as technological developments are concerned, the major historical milestones in the field of textual dissemination are familiar. As the pen (stylus, chisel, brush, etc.) gave way to the printing press as the dominant technology for textual dissemination, and the press in turn to the screen of the networked computer, changes took place in production and distribution methods, for example from single to multiple copies; from slow to fast; from few texts to many. That there is a connection between these technological milestones and various social and cultural developments usually associated with them in terms of causality and the provision of necessary and/or sufficient conditions is beyond dispute, but there has been much speculation about the precise nature of the relationship. Elizabeth Eisenstein has, for example, linked printing technology to the Reformation and the Scientific Revolution. I have suggested elsewhere that nineteenth-century sensation literature, detectives, ladies' novels, cowboy stories, adventure novels, etcetera would not have been feasible without the sociotechnical conditions that prevailed in most of Europe in the second half of the nineteenth century.[14] In that sociotechnical constellation cheap papermaking and fast printing (rotary press)—causing an affordable and plentiful supply of printed texts—went hand in hand with a large reading audience creating a wide demand for cheap popular reading matter in the market.

The social development of a literate mentality as the necessary complement to the technological trajectory of the history of textual transmission is a rather more elusive subject. Nevertheless I suggest that a similar timeline could be drawn. It seems obvious

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[14] In *Changing our textual minds*, pp. 90-103.

*A*uthorship

that the composite of skills that is regarded as crucial for literacy today would have been differently composed at an earlier stage of history. Notably the role of writing would never have been as important as it has become today. Nor would it have been just a matter of simple accretion of ever more sophisticated new skills. It will probably be necessary to talk of multiple and overlapping literacies, diachronically, but also synchronically. Retracing the historical trajectory of a literate mentality will be hampered by the scarcity of clearly discernible landmarks and milestones, and the nonexistence of border markers along the way. The creation of the literate mind began with the first tentative ways of dealing with words as visible signs instead of as sound, and culminated in the (virtually) universal literacy we have today and which, beyond the time in our early childhood when we spend years painfully acquiring it, we barely regard. Observed from our contemporary literate vantage point, it was a slow process. Or to be more precise, it began as a slow process: it has certainly gathered speed.

In mapping the social development of a literate mentality would it be possible to pinpoint when we first started learning to place trust in written forms of language (and later of print), and when the process can be called complete? Will it prove possible to say when and how books morphed from objects venerated for bearing texts that needed to be known, savoured and contemplated in full, to tools in which and with which to locate and retrieve passages, facts, opinions? Will it be possible to say when the monologue of the lapidary text became a dialogue between an individual author who was aware of his or her readers and the need for meaning and nuance to be negotiated? Of course it is a major complication that these phenomena proceeded at differential speeds depending on, say, geographic location and socioeconomic status. Perhaps initially it will do to begin to formulate the questions.

But the landscape we will be traversing is of course not altogether unfamiliar, even if the descriptions are sometimes vague and inconclusive, and at other times appear contradictory. Among the landmarks and milestones will be early intellectual developments like alphabetisation and the alphabetical index; silent reading; the studying form of reading associated with Hugh of St. Victor. In the early modern period the rise and fall of the Republic of Letters will loom large. In that Republic a defining moment no doubt was that of the application of the concept of reading to 'the book of nature'. As Thomas Browne famously phrased it in his *Religio medici*, 'The finger of God hath left an inscription upon all his workes, not graphicall, or composed of Letters, but of their severall formes, constitutions, parts and operations, which aptly joyned together, make one word that doth express their natures.'[15] This not only meant the application of a metaphor derived from human *culture* to nature (spelling a metaphorical subjugation of nature), but also the acceleration of the human pursuit to control nature, starting with the scientific revolution. With our current understanding, we regard the world as a mental construction, and thus man-made anyway. Thus the book shaped our understanding of reality in no small measure. The rise of Protestantism was facilitated by the emergence of a more studying and contemplative

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[15] Browne, Thomas: *Religio Medici*. London: Printed for Andrew Crooke, 1642, p. 116.

Authorship

method of reading (which we may call, with Foucault, a 'pratique de soi') furthered by the printing press, which brought the text within the reach of many. The end of the nineteenth century saw the culmination of the Order of the Book with the democratisation of general reading on a grand scale leading to virtually complete literacy in the West around the turn of the twentieth century.

The chief challenge, it seems to me, is to link this historical timeline of our textual culture and literate mentality more intimately to the unequivocal history of textual technologies than has been done so far. While it is obvious that they are connected, it is not always clear exactly how, beyond the generic fact that both point at a historical increase of general literacy. Numerous important books have already made significant contributions to this challenging enterprise, but I would like to single out one. David Olson's book *The world on paper* is probably one of the best studies about the history of literate mentality.[16] Olson describes the historical process of how authors began to be conscious of the requirements of textuality, developing conventions which were clearly aimed at readers rather than listeners. He devotes much attention to the need to find alternative means of expression to what linguists call the illocutionary aspect of speech. His conclusion is that our writing systems have a far greater power than we surmise. They 'not only preserve information, but also provide models which allow us to see our language, our world and our minds in a new way' (258). Where language is concerned, script is no record of spoken language, but rather we approach spoken language in a literate society like ours from a literate perspective: we can only see spoken language through the spectacles of our literacy. The inescapable conclusion must be that the textual technologies of writing and printing define us as individuals and as a society much more than we—as self-proclaimed masters of cultural creation—like to think.

Olson's investigation stops in the paper world, but we obviously need to continue our explorations to include the transition from paper to digital. Or maybe to avoid the teleological trap of having historical events prepare for an inexorable present it would be better to start this inquiry in the digital present, and to go backwards in time. At any rate, though digital text is clearly still a form of script, wholesale adoption of digital technology comes with enormous social changes. Attended by such phenomena as the convergence of modalities (still and moving images and sound as well as text), the vast increase of output, the endless copying, the levelling of authors and readers, the breakdown of the barriers between public and private, the digital revolution in textual transmission represents a paradigm shift if ever there was one: far greater than that between manuscript and print.

What do we need to know in order to be able to write a history of our textual culture and the literate mentality that accompanied it? Many of the questions have been asked before: how are texts used to transmit culture and knowledge? How does a particular text technology, such as the printed book, affect the way authors deal with content, and how does it affect dissemination? What types of texts (and knowledge)

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[16] David Olson, *The world on paper: The conceptual and cognitive implications of writing and reading* (Cambridge: Cambridge UP, 1994).

Authorship

does it stimulate authors to write? How does it even stimulate authorship in the first place? These are all important questions that book history has been at pains to answer. Much more challenging is the question how text technologies might affect the way we think: our very mentality. Would it be possible to establish a causal link between the technological properties of a given dominant medium or substrate and such far-reaching social effects? We can attempt to answer this question from historical evidence, but we can also make use of the unique opportunity that we are ourselves witnessing the birth of the new digital text technology. Apart from promising a fascinating insight into the mechanism of medial change in general, it would benefit us enormously to understand how the digital paradigm is likely to affect our thinking.

Works Cited

Anderson, Chris, 'The long tail', Wired 12:10 (October 2004), http://www.wired.com/wired/archive/12.10/tail.html).

Brockmeier, Jens and David Olson, 'The literacy episteme: From Innis to Derrida', in *The Cambridge handbook of literacy*, eds. David R. Olson and Nancy Torrance (Cambridge UP, 2009), pp. 3-21.

Browne, Thomas: *Religio Medici*. London: Printed for Andrew Crooke, 1642.

Chandler, Jennifer A., '"Obligatory technologies": Explaining why people feel compelled to use certain technologies', *Bulletin of science, technology & society* 32:4, pp. 255-64.

Grafton, Anthony, *Worlds made by words: Scholarship and community in the modern West* (Cambridge, Mass and London: Harvard UP, 2009).

Keen, Andrew, *The cult of the amateur: How today's Internet is killing our culture*, (London and Boston, 2007).

Kelly, Kevin, 'Scan this book.' *New York Times*, 14 May 2006, http://www.nytimes.com/2006/05/14/magazine/14publishing.html.

Lanier, Jaron, *You are not a gadget: A manifesto* (New York: Knopf, 2010).

Olson, David, *The world on paper: The conceptual and cognitive implications of writing and reading* (Cambridge: Cambridge UP, 1994).

Pettitt, Tom, 'Containment and articulation: Media, cultural production, and the perception of the material world', http://web.mit.edu/comm-forum/mit6/papers/Pettitt.pdf.

Taylor, Astra, *The people's platform: Taking back power and culture in the digital age* (London: Fourth Estate, 2014).

Updike, John, 'The end of authorship', *New York Times*, 25 June 2006, http://www.nytimes.com/2006/06/25/books/review/25updike.html.

Van der Weel, Adriaan, *Changing our textual minds: Towards a digital order of knowledge* (Manchester: Manchester UP, 2011).

Weinberger, David, 'The Internet that was (and still could be)', *The Atlantic*, 22 June 2015, http://www.theatlantic.com/technology/archive/2015/06/medium-is-the-message-paradise-paved-internet-architecture/396227/.