Open Publication, Digital Abundance, and Scarce Labour

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Abstract

This article examines the challenges of labour provision in the open-access online scholarly publishing environment. While the technological underpinnings of open access imply an abundance, it is also the case that the labour that remains necessary in the publishing processes is based on a set of economics that are scarce: the availability of human time, effort, and expertise. I here argue, with a demonstration of some of the labours of XML typesetting, that we are unlikely to realise the transformations of an abundant proliferation of scholarship without asubstantial change and re-distribution of labour functions to authors, which is unlikely to be socially accepted. The resultant outputs from this process would also, I argue, be less likely to be machine readable and semantically rich, thereby conflicting with other imagined digital possibilities.

Keywords: open access; digital technology; labour; cost

The Open-Access Movement

At the time I am writing, in 2017, a broad group of individuals have worked over approximately two decades to harness the power of the Internet and the World Wide Web to achieve the dissemination of research work with lowered price and permission barriers. Fuelled by a spectrum of motivations—from the pressure on library budgets to a desire for general publics to engage with academic research—this informal group, dubbed the 'open-access movement,' comprises a disaggregated set of individuals with few shared political assumptions or practical methods. Some, such as Stevan Harnad, believe that the deposit of authors' accepted manuscripts in openly accessible institutional repositories will eventually lead to the overthrow of the print subscription system.[1] Others, such as the founders of the Public Library of Science, have invested in a new economic model for open-access publication in which the publishers' costs are borne by authors, their institutions, or their funders. Consortial funding systems such as Knowledge Unlatched, arXiv, SCOAP3 (to an extent), and the Open Library of Humanities take the economics of a subscription environment and apply non-classical economic thought to allow for the open dissemination of research work.[2]

On the political front, the open-access movement has been accused of being an anti-corporate, almost communist, undertaking since many of its members criticize the high levels of profit earned by large scholarly publishers.[3] On the other hand, David Golumbia has branded open access as a neoliberal 'cyberlibertarian' enterprise that is, in his view, irreconcilable with Marxist accounts of labour.[4] As the former director of advocacy for the Public Library of Science, Cameron Neylon, put it: to work on open access is to be accused one day of being an anti-corporatist 'Marxist' and the next an 'uber-capitalist' neoliberal

betrayer.[5] In truth, neither of these extreme labels accurately characterizes a ‘movement’ that barely possesses a unified coherence and shows little homogeneity across its member base.

In this article I delve more deeply into the ways in which labour has been represented within the open-access movement and within a broader paradigm of digital ‘abundance thinking.’ I begin by defining open access and the histories of which I speak before moving on to consider how labour has been characterized in the literature on open access. I close with a case study of the ongoing labour processes involved in typesetting, even in the digital age.

For the purpose of definition, I understand open access to mean the digital availability of academic research work under these conditions:

- there is no direct cost to the reader to access the work beyond those intrinsic to using the Internet (and all the attendant costs thereon);
- the work is distributed under an open license that at least permits redistribution to any party but preferably also permits re-use and derivatives but always requires attribution (equivalent to a range spanning Creative Commons Attribution No-Derivatives to Creative Commons Attribution).

These definitional criteria are broader than those in the original BBB declarations[6] on open access and will be spurned by some open-access advocates.[7] However, a range of practices for the open accessibility of research work has arisen since the primal definitions, and many publishers are calling works *open access* even when they are more tightly licensed than the key statements of the movement would allow.

Whence Did Open Access Emerge?

To ask where open access came from, one must begin by considering why academics publish their research work. I would argue for there being two core motives: to be read and to

be assessed. In terms of the former, it is worth noting that, in the majority of cases, academics do not earn a living from the sale of their research work. Journal articles do not provide direct recompense for the labour of academics. The specialisation of research work often yields a small customer base for interested parties (since research work is niche), and publishers do not, therefore, return royalties on such items. Very few academics are successful enough in their monograph sales to live off this income. Instead, academia works as a system of patronage, one in which academics are paid a salary so that they can give away their work. Of course, much academic labour is precarious. Many of those publishing do not have secure jobs, tenure, or other ongoing sources of income. For the marginally or precariously positioned academic, in contrast to trade authors, a desire to be read may be paramount.

However, it is clear that a desire to be read by the broadest audience is not the only driver of academic publication choices. For academics are hired, promoted, and generally assessed on the basis of their publications. In many ways, this works against the above narrative since it conditions academics to seek out highly selective audiences: their colleagues within their own fields who may hire or promote them. However, hiring panels in academia are extremely short of time. While it may be anecdotal, in my field we frequently have candidate pools for entry-level lecturer jobs that exceed 150 well-qualified people. Many of them have a book and several journal articles. The hiring panel, though, has just a few days to short-list candidates for interview. Put otherwise, the hiring panel has insufficient labour time to appraise every candidate's work as an independent object of study. In order to handle this, the panels use what Geoffrey Bilder has called ‘reading avoidance techniques.’[8]They may look at the names or Impact Factors of the journals and presses in which the work has appeared. They may use citation statistics. The thrust of this, though, is

that publication also acts as a symbolic economy wherein scarce markers of prestige (press and journal brand) serve as discriminators for appointments and promotions, which lead to real financial returns for academics.[9]

These functions of reading and assessing are not entirely distinct from one another. For journal and press brand also help with dissemination, at least to academics, thereby again helping with the targeted dissemination that academics desire within hiring systems. All academics are under time pressure and seek frames that can confer value as guides for where to bestow their scarce attention (labour). In this way, for those in the academy, brand and/or citation statistics may be a signal that encourages them to read a particular article or book.

Publisher and journal brand, though, when used in this way, cause a series of cascading problems for the academy. And to understand where open access came from is to identify these problems that open access is meant solve. The most acute of these, referred to as the 'serials crisis,' is the increase in necessary subscription expenditure by university libraries when serial subscriptions have reached a comparative point of 300 per cent *above inflation* since 1986.[10] There are several causes for this rise. The first is the mass expansion of higher education in the Global North since the early 1990s resulting in a larger academic staff base and, therefore, a hugely increased volume of research output and commensurately higher total publication costs.[11] The second is an increasingly monopolistic publication space, with a small number of publishers controlling a high proportion of total research output within some sub-disciplines, as evidenced by competition inquiries into groups such as RELX (Elsevier) that stretch back over a decade.[12] This rise in publication price, though, has led to an access gap at most institutions around the world. Coupled with the mass expansion of higher education, a growing desire to engage a broader set of general publics with research work and

the emergence of digital technologies for instant copying and replication led to the idea of open access.

Open access was born within scientific disciplines, although some humanists were present and involved during the initial signings of the BBB declarations (indeed, the Berlin declaration is specifically called the Berlin Declaration on Open Access to Knowledge in the Sciences and the Humanities). The first institutional sub-mandate for green open access (open access by deposit in an institutional repository) came from a computer science department. High-energy physics and mathematics have also been quick to adopt preprint servers, such as arXiv. Indeed, in disciplines where an accelerationist approach is valued as important, open access seems to have had more traction. That said, a simple correlation between ‘science’ as a homogeneous term and ‘open access’ is simplistic. In fact, Jingfeng Xia has presented a compelling initial challenge to the idea of disciplinary cultures exhibiting singular, unified stances on open access.[13]

The final piece of the puzzle that led to the development of open access comes from technology. For, although knowledge is a non-rivalrous form that can be transmitted from person to person without the original ‘copy’ being lost, when recorded it has always been inscribed within media that are rivalrous.[14] Digital texts, though, are usually considered to be non-rivalrous. The dissemination of a digital text involves the first copy being produced (note the terminology here: even the first version is referred to as a ‘copy’); it can then be replicated without the original copy being destroyed or lost by the original owner. However, even these digital texts rely on a specific type of rivalrous, owned technology that can shift its form of display depending on what is loaded into it. While the texts of which we speak are not rivalrous, they depend on rivalry in the computer display technology that can and does

shift its form frequently.

However, this n[15]

ear-instant and unlimited digital replication undermines the ‘artificial scarcities that [have] allow[ed] the economy to function’ in scholarly communications thus far.[16] This is the third and final context that I chart for the emergence of open access: technological possibility and its disunion from the scarcities of material economies. Indeed, the prestige economy of academic hiring and value frames and the financial economy of the library purchasing group are both, by the nature of their economic properties, scarce. Yet technologies of replication promise infinite dissemination.

From technological possibility, then, comes the unwinding of a set of suppositions held by the academy.For instance, external actors such as governments wish to ensure the accountability of academia in the face of the above pressures to reach only limited internal audiences within the academic hiring space; something that OA promises to undo. Yethow are hiring panels to maintain their value frames based on prestige scarcity (commensurate with their scarce labour time) when digital technologies allow for unlimited proliferation? On the other hand, does the freedom to read any work without paying actually save the libraryor university budget in an era of reconfigured publishing economics?For even though open work is disseminated freely and abundantly, it is underwritten by scarce labour that still requires remuneration.

New Practices and New Labours

The technological imagination knows few bounds, and the same is true in scholarly communications. Even *Star Trek* has a central library for the Federation, taking up a small planet and called Memory Alpha. In our more prosaic present, though, the possibilities of the

digital have frequently caught the imaginations of those conducting academic research beyond just open access to text.

The first area in which new possibilities have arisen is the potential to store and disseminate the underlying data from research papers. Although not valid across all disciplinary endeavors, much research generates quantitative or qualitative data. These data are important because, without them, it is difficult or impossible to verify the statistical accuracy of a paper's claims and replication/reproducibility studies also become much harder. Reproducibility refers to the idea that scientific experiments should be verifiable, so access to the underlying data would allow other researchers to check or disprove a paper's statistical methodologies and findings. On the other hand, replication refers to conditions under which scientists can repeat an experiment and to then check whether they produce the same data as the original work. Furthermore, although far more controversial, access may allow others to re-analyse the data set to create new findings. Not everyone agrees with such a practice, with some prominent figures labelling such scientists 'research parasites.'[17] Yet, it appears incontrovertible that, if new results were found, such work would advance the scientific record.

The other area implied by the deposition and reuse of data is the preservation and availability of software. It seems important, for instance, that if a piece of work rests on analysis of data facilitated by software, then somebody wishing to check this should have access not only to the software but also to its source code in order to verify operational correctness. Indeed, this actually also goes beyond the analysis of data. Ideas about the future of the digital book have speculated on interactive webpages in which users may zoom in on figures or bring in external contextual elements to supplement the reading experience.[18] No

doubt these seemingly wild fantasies will appear tame in the not-even-distant future. However, the point this raises is that these practices, whether analytical or presentational, require software stacks to be available and maintained.

The abundance thinking inspired by digital technology is clear here. Surely, in the digital age, such thinking runs, we could make all of this material available. The universal library that stores arbitrary objects of varying sizes—from a few lines in a spreadsheet up to terabytes of genomic data—seems within our grasp. What is perhaps less thought through is what types and forms of labour are required to support the indefinite storage and availability of such digital objects.

On the first of these matters—data—it is usually the case that the term *data* can be replaced, in any sentence, with the word *stuff* and convey much the same meaning. Indeed, the sheer variety of data formats and volumes makes it nonsensical to speak of data as a single category. Articles themselves are now, in fact, data; whether stored in Portable Document Format, HyperText Markup Language, or OpenOffice formats, the ‘plain text’ that we now take for granted actually requires sophisticated encoding and decoding routines to render it comprehensible. For, as Lisa Gitelman reminds us: there is no such thing as raw data.[19]

To make arbitrary large binary objects (i.e., data) available to be read and preserved in perpetuity requires a variety of labour functions, as evidenced by the massive infrastructures required to run services such as the ICPSR and UK Data Service architectures.[20] It requires software engineers to build and maintain dissemination platforms; it requires system administrators and server technicians to monitor the ongoing state of hardware and its potential degradation (which could lead to data corruption); it requires manufacturing plants

to continue to build magnetic and solid-state storage systems; it requires Internet service providers to provide connectivity; it requires an ongoing source of electricity from power plants; it requires metadata specialists to ensure ongoing human- and machine-readable information about the stored bytes; it requires data-format specialists to forward-migrate content to new formats when existing files are at risk of becoming unreadable; it requires a persistent identification system to locate digital objects; and it requires managerial oversight to coordinate the labour of all of these different specialisms. When the funding is withdrawn for entities – such as the Arts and Humanities Data Service in the UK in 2007 – organizations that seemed stable quickly collapse, serving as a warning of this underlying scarcity.

The preservation and accessibility of software poses even more serious challenges. At various levels of compilation and abstraction, software is dependent on specific hardware chipsets, firmware platforms, operating systems, and run-time environments. To actively maintain or emulate all of these layers almost calls for a degree of labour that is, in some ways at least, disproportionate to the benefits and/or economic costs. As C. Titus Brown has put it, ‘on a decadal time scale, we cannot rely on software to run repeatably.’ Brown also notes that preserving all software is impossible ‘because of the reliance on software/firmware/hardware interactions’ and that virtual machines do not solve the problem since their ability to run must be likewise preserved.[21]

One potential solution that Brown proposes, following Beaulieu-Jones and Greene, is a continuous integration-esque model in which software is run consistently in perpetuity so that immediate failures are obvious and can be regularly corrected.[22] The level of expertise and degree of labour that would be required by research labs, publishers, and libraries to support such functionality, though, would be enormous. Indeed, such a degree of labour

would be disproportionate to the need to preserve precise software set-ups indefinitely for the replication and dissemination of knowledge. There is, as Brown puts it, a ‘half life of utility.’[23]

The technological imagination that envisages such bright futures for scholarly communications is often not so good at recognising the labour that would sit behind such possibilities, and similar accusations have been levelled at the open-access movement. That said, it is not true that ‘[o]ne searches [open access] literature in vain for discussions of the labor issues.’[24] Indeed, Paul Boshears, who edits an open-access journal, has already noted that ‘Open Access publishing isn't a disruptive technology, it is a labour relation’ in which the important point of focus is how current open access provisions may simply re-enforce the enclaves and enclosed spaces of the academy against a growing community of interested para-academics.[25]Likewise, in the library space, there have been contributions to the labour debate from Emily Drabinski and Korey Jackson, who have organized sessions at (un)conference events that ask tough questions: ‘What is the distance between rhetoric around open access and the work required to do it? How are labor questions in open access dealt with? How can we separate [open access] from the notion of “free,” which it isn't?’[26] Chris Kelty has also pointed to the many issues of precarious labour, both in the academy and with respect to open-access publishing and accreditation processes.[27] I myself have noted that even just the technological side of publishing operations is a labour-intensive spacein whichthe labour in producing digital artefacts inheres in the cost to produce the first copy. However, I have also noted thatbecause this labour is often buried by the low dissemination costit is sometimes ignored or denied and there is a potentially dangerous political risk that the monetarily free nature of open access might hide this economic presence and thereby

sustain the illusion that research work is a liberated, esoteric activity.[28]

This last aspect is among the core challenges of the dissemination of research material for free on the World Wide Web. The fact that, for the reader, there is no price does not mean that for a publisher there is no cost. Indeed, the zero price point (free) occupies a special place in economic thought. Products that are priced at ‘free’ are found to be in exponentially more demand and have a disproportionately damaging effect on competitors' efforts.[29] Yet, a certain strand of technological thinking displaces, or replaces, a set of these labour functions and then imagines them away. The classic instance of this would be the argument that we no longer need typesetters since we can just create our own PDFs from manuscripts and put them online. This mirrors Clay Shirky's assertion that, in the era of the Internet, ‘publishing is a button.’[30]

Yet, what is actually happening here is a trend that has been ongoing ever since word-processing software came to the fore: a re-situation of labour. Indeed, as Matthew Kirschembaum points out, the labour of typesetting does not *disappear* but is integrated more into the process of composition.[31] That is, authors are taking on the labour of typesetting, to some extent. However, even this is not entirely fair. For in the digital age, the process of typesetting consists of multiple steps and output objects that are more semantically rich and diverse than the ‘throw up a PDF’ approach might suggest. In order to demonstrate this, I turn in the penultimate section to a case study of typesetting in the digital age.

Typesetting and Its Labours: A Case Study

Sticking to journal publishing for reasons of exegetic simplicity, and assuming that authors submit in Microsoft Word format, the process of ‘typesetting’ looks a little like this.[32] First, the document is tagged using a program such as eXtyles, which allows the typesetter to

append additional semantic information to the document. For, while Microsoft Word documents are, in essence, based on an open XML standard within a zip container—Office Open XML (OOXML)—the semantic fields available are insufficient for full tagging of scholarly documents. For instance, correctly identifying authors in the bibliographic list, in order that citation matching and accurate statistical bibliometric analyses can be conducted, is not a feature built into OOXML.

Once this document is marked up using this proprietary software, the typesetter can produce a PDF for author proofing using Adobe InDesign, a LaTeX layout engine, or an XML-first workflow. The last of these, which is rarer to find, consists of creating a JATS (Journal Article Tag Suite) XML document from the input Word file. This JATS document contains all the common metadata and structural elements found in scholarly articles. The purpose of this file, when produced first, is to create an abstract, semantically structured representation of the article that can be transformed into PDF and (X)HTML using either XSL-FO (although Extensible Stylesheet Language–Formatting Objects is now in decline) or Cascading Style Sheets (CSS) Regions–like technologies (itself an experimental standard that is not widely implemented). However, even when the JATS document is produced *last* in the process (a more common approach), its purpose is both to allow machine readability of articles—which will become increasingly important in coming years as text- and data-mining approaches take hold to assist researchers in dealing with ever-growing quantities of academic material—and to allow for forward-migrating the content at a future date for preservation purposes.In my experience, this process can take anywhere between 30 minutes and a couple of hours per article, depending on the complexity and the length of the reference list. Considering that PLOS ONE publishes approximately 85 papers per day this translates to

up to 170 hours of full-time work, or 4.25 weeks' worth of work for a single person, every day.

Unfortunately, although there have been attempts to produce tools that can automatically parse arbitrary Word input documents and output semantically rich XML documents, such as my own meTypeset,such software is unlikely to produce entirely accurate output in the near future.[33] Indeed, at present these tools depend highly on the quality of the input document, where ‘quality’ means standardised structuration and user-behavioural patterns (that is, not creating tables with the line-drawing tools of Word, for example). Even the creation of such software, though, requires ongoing labour that should be remunerated. It is very difficult, as an active academic, to produce and maintain this type of para-service/publishing software amid competing demands for research, teaching, and service.

It is easy to believe, in a realm of the free availability of these formats, that they are utterly trivial to produce. This is, as I hope the above case study has demonstrated, far from true. Specialised labour practices that require remuneration underlie even something so seemingly obsolete as typesetting within scholarly communications. Wishing this away or subsuming it under the realm of volunteerism does not bode well for the long-term availability and archiving of scholarship, even if it is tempting for our imaginations when fed by technological-abundance thinking. There are also many other labour forms that could be taken as case studies for future work, such as development editing within many humanities fields; an area that is rapidly disappearing at present,

Technological Problems Are Usually Social Problems

The old adage goes that we should wish our problems were technological, rather than social, since the former are easier to fix. However, when we see technological possibility and social

possibility as distinct from one another, we miss the point. Most technological problems are social problems and almost as hard to fix. Imagining that vast amounts of labour can be willed away by the introduction of new technologies, in scholarly communications as I have demonstrated here or in other areas, is unrealistic; it is a huge social problem that will likely meet with resistance since what is really at stake is a challenging redistribution of labour. In the example of typesetting to which I have here turned, for example, it is often suggested that authors learn LaTeX or produce their own formatted outputs in order to eradicate the labour of publishing. However, this does not eradicate such labour. It *redistributes* it to academic authors, whose time is already extremely limited. On the other hand, it is true that digital technologies provide us with some kinds of abundance. Specifically, we can *copy* material indefinitely. Yet our economic systems are predicated on a set of artificial scarcities that are necessary components of their very functionality. For instance, in the situation to which I alluded above, we have evaluative situations on academic hiring panels where there is insufficient labour to truly assess work. In these instances, evaluation is delegated to the "frame" of journal or press brand, assuming that it will be commensurately difficult to get work into these venues. That is, these venues possess a scarcity. Removing scarcity from our systems of publication – which act as proxies of scarcity for hiring panels – poses grave threats to this system. It may be that we *need* this collapse to happen to realise how poor our academic systems of evaluation actually are. What is clear, though, is that we have digital abundance but scarce labour (or at least: scarce remuneration for labour while expecting ever more work to be taken on without commensurate pay).

The cost-free dissemination of digital objects lends the appearance of a freedom to produce such objects. This is a form of commodity fetishism, though; we imagine that our

relationship is with the objects produced rather than an interrelation of ourselves with respect to other labourers. For while free has the connotation of monetary pricing, it also has the meaning of liberty, as Richard Stallman has pointed out.[34] This is not to say that open access does not remain a laudable goal worth pursuing. Rather it is to say that such efforts may require as much, if not more, cost and investment than the current traditional publishing system. Indeed, when we reject or neglect the idea that there is valuable labour behind the publication of research work, we come to a situation that might best be framed through a tongue-in-cheek reference to Rousseau. Scholarship is now born free but is everywhere in chains.

Notes

[1]Stevan Harnad, ‘Overture: A Subversive Proposal,’ in *Scholarly Journals at the Crossroads: A Subversive Proposal for Electronic Publishing*, ed. Shumelda Okerson and James J. O’Donnell (Washington, D.C.: Association of Research Libraries, 1994), 11–12, http://hdl.handle.net/2027/mdp.39015034923758; Stevan Harnad, ‘Pre Green-OA Fool’s Gold vs. Post Green-OA Fair Gold’, *Open Access Archivangelism*, May 26, 2013, http://openaccess.eprints.org/index.php?/archives/1007-Pre-Green-OA-Fools-Gold-vs.-Post-Green-OA-Fair-Gold.html.

[2]See Martin Paul Eve, *Open Access and the Humanities: Contexts, Controversies and the Future* (Cambridge: Cambridge University Press, 2014), chap. 2, http://dx.doi.org/10.1017/CBO9781316161012.Non-classical economic thought refers to those modes in which there are actors who gain access to the good without payment; so-called “free riders”. Classical economic systems assume that these free riders will deter legitimate payers. Library consortium models for open access assume the opposite (a non-classical economic model): that libraries are already paying but that libraries also want open access and so they will continue to pay.

[3]Jeffrey Beall, ‘The Open-Access Movement Is Not Really about Open Access,’ *tripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society* 11, no. 2 (2013): 589–97.

[4]David Golumbia, ‘Marxism and Open Access in the Humanities: Turning Academic Labor against Itself,’ *Workplace: A Journal for Academic Labor* no. 28 (2016), http://ices.library.ubc.ca/index.php/workplace/article/view/186213.

[5]Cameron Neylon, ‘@d_mainwaring ....I’ve Also Been Described as “Neo Liberal” (alongside Uber Capitalist) and “Marxist” in the Past Year Which Is Fun...’, *@CameronNeylon*, Twitter, December 9, 2013, https://twitter.com/CameronNeylon/status/410035300388597760.

[6]So called for the cities that lent their names to three foundational documents of the open access movement: Budapest in 2002 and Berlin and Bethesda in 2003.

[7]For more on this history, see Peter Suber, *Open Access*, Essential Knowledge series (Cambridge, MA: MIT Press, 2012), 7, http://bit.ly/oa-book.

[8]Personal correspondence.

[9]For more on this, see Eve, *Open Access and the Humanities*, chap. 2.

[10]University of Illinois Library at Urbana-Champaign, ‘The Cost of Journals,’ *University of Illinois Library at Urbana-Champaign*, last modified October 8, 2015, http://www.library.illinois.edu/scholcomm/journalcosts.html; Martin Paul Eve, ‘Tear It Down, Build It Up: The Research Output Team, or the Library-as-Publisher,’ *Insights: The UKSG Journal* 25, no. 2 (2012): 158–62, https://doi.org/10.1629/2048-7754.25.2.158; Association of Research Libraries, “Graph 4. Expenditure Trends in ARL Libraries, 1986–2015,’ *ARL Statistics 2014–15*, http://www.arl.org/storage/documents/expenditure-trends.pdf.

[11]For more on the expansion of higher education, see Thomas Docherty, *For the University: Democracy and the Future of the Institution* (London: Bloomsbury Academic, 2011), 136.

[12]Martin Paul Eve, Stuart Lawson, and Jon Tennant, ‘Referring Elsevier/RELX to the Competition and Markets Authority,’ December 7, 2016, http://eprints.bbk.ac.uk/17569/; Vincent Larivière, Stefanie Haustein, and Philippe Mongeon, ‘The Oligopoly of Academic Publishers in the Digital

Era,' *PLOS ONE* 10, no. 6 (2015): e0127502, https://doi.org/10.1371/journal.pone.0127502; Office of Fair Trading, 'The Market for Scientific, Technical and Medical Journals: A Statement by the Office of Fair Trading (OFT 396),' *Interlending & Document Supply* 31, no. 1 (2003): 61–64, https://doi.org/10.1108/02641610310460745.

13Jingfeng Xia, 'Assessment of Self-Archiving in Institutional Repositories: Across Disciplines,' *Journal of Academic Librarianship* 33, no. 6 (2007): 647–54.

14Thomas Jefferson, *The Writings of Thomas Jefferson*, vol. 7, ed. H. A. Washington (Washington, D.C.: United States Congress, 1853), 180; Aaron Swartz, 'Jefferson: Nature Wants Information to Be Free,' in *The Boy Who Could Change the World.* (London: Verso, 2015), 23–25, 24; Suber, *Open Access*, 46–47.

15Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction,' in *Illuminations* (London: Pimlico, 1999), 211–44, 212.

16Jaron Lanier, *You Are Not a Gadget: A Manifesto* (London: Penguin Books, 2011), 102.

17Dan L. Longo and Jeffrey M. Drazen, 'Data Sharing,' *New England Journal of Medicine*, 374, no. 3 (2016): 276–77, https://doi.org/10.1056/NEJMe1516564.

18For just one example, see John Willinsky, *The Access Principle: The Case for Open Access to Research and Scholarship*, Digital Libraries and Electronic Publishing (Cambridge, MA: MIT Press, 2006), 155–71.

19Lisa Gitelman, ed., *'Raw Data' Is an Oxymoron*, Infrastructures series (Cambridge, MA: MIT Press, 2013).

20See http://icpsr.umich.edu and https://www.ukdataservice.ac.uk.

21C. Titus Brown, 'How I Learned to Stop Worrying and Love the Coming Archivability Crisis in Scientific Software,' *Living in an Ivory Basement: Stochastic Thoughts on Science, Testing, and Programming* (blog), January 11, 2017, http://ivory.idyll.org/blog/2017-pof-software-archivability.html.

22Brett K. Beaulieu-Jones and Casey S. Greene, 'Reproducible Computational Workflows with Continuous Analysis,' *bioRxiv* Preprint Server for Biology, August 11, 2016, https://doi.org/10.1101/056473.

23Brown, 'How I Learned to Stop Worrying.'

24Golumbia, 'Marxism and Open Access in the Humanities,' 87.

25Paul F. Boshears, 'Open Access Publishing as a Para-Academic Proposition: OA as Labour Relation,' *tripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society* 11, no. 2 (2013); 614–19, 614.

26Emily Drabinski and Korey Jackson, 'Session: Open Access, Labor, and Knowledge Production' (session notes, *Critlib Unconference*, Portland, OR, March 2015), http://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1014&context=critlib.

27Christopher Kelty, 'Beyond Copyright and Technology: What Open Access Can Tell Us about

Precarity, Authority, Innovation, and Automation in the University Today,' *Cultural Anthropology* 29, no. 2 (2014): 203–15, https://doi.org/10.14506/ca29.2.02.

[28]Martin Paul Eve, 'All That Glisters: Investigating Collective Funding Mechanisms for Gold Open Access in Humanities Disciplines,' *Journal of Librarianship and Scholarly Communication* 2, no. 3 (2014), 4, https://doi.org/http://dx.doi.org/10.7710/2162-3309.1131; Martin Paul Eve, 'An Old Tradition and a New Technology: Notes on Why Open Access Remains Hard,' *Martin Paul Eve*, posted February 9, 2016, http://eprints.bbk.ac.uk/17024/; Eve, *Open Access and the Humanities*, 65.Note that some of these works are directly self-cited here without quotation marks for reasons of readability.

[29]For more, see Kristina Shampanier, Nina Mazar, and Dan Ariely, 'Zero as a Special Price: The True Value of Free Products,' *Marketing Science* 26, no. 6 (2007): 742–57, https://doi.org/10.1287/mksc.1060.0254; Mauricio M. Palmeira and Joydeep Srivastava, 'Free Offer ≠ Cheap Product: A Selective Accessibility Account on the Valuation of Free Offers,' *Journal of Consumer Research* 40, no. 4 (2013): 644–56, https://doi.org/10.1086/671565.This is to say that even very inexpensive products are found to be far less appealing than those that are free in the majority of market studies.

[30]Clay Shirky, 'How We Will Read,' *Findings*, April 5, 2012, archived at http://blog.findings.com/post/20527246081/how-we-will-read-clay-shirky.

[31]Matthew G. Kirschenbaum, *Track Changes: A Literary History of Word Processing* (Cambridge, MA: Belknap Press of Harvard University Press, 2016), chap. 3.

[32]There are suggestions that academics could write their work in online collaborative environments or in LaTeX. However, such suggestions grossly neglect the social barriers to changing the way in which people write. Humanists, for instance, are unlikely to want to use TeX formats for the most part. Also, every additional format that is produced requires new labour forms for its preservation and availability.

[33]Martin Paul Eve, 'meTypeset', https://github.com/MartinPaulEve/meTypeset/.

[34]Richard Stallman, 'Misinterpreting Copyright: A Series of Errors,' in *Free Software, Free Society: Selected Essays of Richard Stallman* (Boston, MA: Free Software Foundation, 2010), 111–20.