

Abstract

This chapter examines material published in the field of the digital humanities (DH) in 2018, all of which explores the relationship between the digitalized present and its pre-digital past(s). In one publication, *Friending the Past: The Sense of History in the Digital Age*, Alan Liu notes: ‘The signal sense of history [...] is not just like a plot on a radar scope. It is like the unfolding epic plot of Tolstoy’s *War and Peace*’ (p. 157). As political scandals over the use of social media and the role of cyber-targeting to influence electoral outcomes continue to dominate the news, it is becoming increasingly evident that not only are social media ushering in an era in which we are alienated from our personal data, but that today’s digitalized world builds on and replicates pre-digital hegemonic structures. Books by Andrew Piper and Alan Liu discuss ways in which scholars can approach the complexities and challenges of literary tradition and historical transmutation through the application of computational methods and digital tools. Discussion then turns to the ways in which digital practices have converged with wider cultural and political developments since the second half of the twentieth century. Lee Humphreys examines this transformation through the traces that we leave as the record of our daily lives while on social media, while Felix Stalder considers how such practices have wider ramifications as symptoms of a ‘digital condition’, for good and ill. Exploring the pressure points of the digital condition more closely, Safiya Umoja Noble scrutinizes the ways in which algorithmic processes, notably those that drive Google’s search engine, are shaped by and sustain discriminatory regimes at the expense of vulnerable minorities. Finally, Roopika Risam’s critique interrogates the field of the digital humanities itself, which—notwithstanding good intentions—remains dominated by the Global North and is at risk of perpetuating the very power structures that it seeks to dismantle.

Since the publication of Franco Moretti's *Graphs, Maps, Trees: Abstract Models for a Literary Theory* (2005) and *Distant Reading* (2013), quantitative approaches to literary study have increasingly tacked into the academic mainstream. Appearing in the same year as *Distant Reading*, Matthew Jockers's *Macroanalysis: Digital Methods and Literary History* demonstrated how computational methods could be applied to large corpora of literary texts in order to unlock new insights about canon formation and literariness. Controversially, Jockers argued:

Science has welcomed big data and scaled its methods accordingly. With a huge amount of digital-textual data, we must do the same. Close reading is not only impractical as a means of evidence gathering in the digital library, but big data render it totally inappropriate as a method of studying literary history. (p. 7)

Whatever the merits (or otherwise) of such data-positivism, Moretti's and Jockers's interventions have been followed by a succession of literary studies that draw on algorithmic criticism, network analysis, and big-data models. Andrew Piper's *Enumerations: Data and Literary Study* continues this approach, building on his work directing TXTLAB at McGill University and the multi-institutional research project, *NovelTM: Text Mining the Novel. A Multi-Novel Digital Humanities Initiative* <<https://novel-tm.ca>>. For *Enumerations*, he analyses some 230,000 poems, 15,000 novels, and 12,000 works of non-fiction, which he suggests 'reveals the grooves and channels of cultural expression, the deep connections among words, ideas, and forms' (p. 3).

Despite working on such eye-watering (for the humanities) scales, Piper is at pains to avoid the binaristic fallout that followed Moretti's and Jockers's perorations, pitting 'objective' distant reading against 'subjective' close reading. In Piper's formulation, computational reading can instead be seen to complement and assist earlier hermeneutic traditions. Indeed, he contends, computational approaches extend the humanistic tradition because translation lies at their heart. Hence, 'the literate and the numerate are not agons engaged in a duel. They are two integral components of a more holistic understanding of human mentality' (p. 5). If literary criticism has traditionally tended towards the metonymic and the particular/local encounter, Piper proposes that through computing we can apply the same rigour but at a much larger scale. His foundational concept is that of *modelling*, which 're-aligns our focus around the ways in which knowledge is always mediated, the small details through which our insights about large texts are constructed' (p. 9). Focusing on models moves away from the binary logic of size (bigger is better) to one of representation, bringing categories like general/

particular, large/small, and distant/close together into play. Models also implicate—or, in Bruno Latour’s terminology, *entangle*—their users in them, pushing against notions of ‘universality’ and favouring instead the situatedness of the critical encounter with bodies of work. Piper applies a distributional framework method, which draws on linguistic approaches to generate spatial and multi-dimensional models. His use of distributional frameworks enables the context for analysis to be changed, meaning that context is never fixed but perspectival (pp. 17–18). In *Enumerations*, we no longer find the loaded language of objective computation versus subjective reading, but a pluralistic and emancipatory discourse.

Piper employs a number of case studies that draw on a massive corpus of texts and a range of DH methodologies. For instance, he examines ‘the way spacing and pacing make meaning on the page’ (p. 23), by plotting on a histogram the distribution of full stops expressed as a percentage of words across novels and poetry from 1790 to 1990. Piper observes that the use of stops increases as novels progress during this period, suggesting a trend towards narrative closure; meanwhile, in poetry a similar rise enacts a sense of displacement and paradox. Piper notes: ‘these results serve as an important means of establishing an interpretive framework, a medium that allows us to move between the extreme subjectivity of interpretation (*I see this*) and the accountability of our observations to something external to ourselves (this is what is *there*)’ (p. 34). Likewise, new ways of thinking about plot emerge through an analysis of 450 English, French, and German novels, spatially mapping word distributions across the entire corpus and the networks of characters in a number of selected novels. In these ways, ‘thinking schematically about narration and the ways in which computational models can be a useful tool for thinking spatially about narrative form—for seeing the form of narrative’ (p. 61).

The study also considers how words cohere to produce a more general category, *topics*, which can be graphically rendered and analysed. ‘Reading topologically’ allows us to see how ideas, patterns, and habits emerge and fade away: ‘the ideas of topical space appear more as stages or screens upon which we see the dispersion and the fluidity of linguistic relations accumulate and stretch out according to quantitative performances’ (p. 70). Piper takes 14,888 passages from 150 German novels published between 1770 and 1930 and explores a single topic, before looking across multiple topics to identify the networks of relationships between them. As such,

[c]omputational topics reframe the post-structuralist project of intertextuality, not so much as the presence of one text in another, as

a form of citation, but in a sense of dedifferentiation, where the text contains a multiplicity within itself that can never be entirely accounted for. Quantification serves in this sense not as an entry into the empirical and the definitive, but the conjectural and the interpretive. (pp. 92–93)

Using computational approaches, Piper challenges the illocutionary/perlocutionary paradigm of philosophers of language such as John Searle and J. L. Austin, and their poststructuralist successors like Derrida, who argue against ‘literariness’ as an identifiable feature of discourse. Indeed, Piper proposes that, computationally, fiction is a highly legible linguistic category, which can be modelled with 95 per cent accuracy. Within this framework, quantitative analysis revises classic arguments about the novel being a genre about engaging with external realities: ‘Rather the novel can best be described through its investment in the negation of the certainty of its own worldliness. It is grounded in an appeal to an embodied encounter rather than reality itself’ (p. 100).

Analysing 650,000 characters in 7,500 novels from the last two centuries, Piper’s modelling reveals that, while characters occupy a distinctive semantic space within novels, ‘[f]ar from serving as a proxy for the individual or individuality, [...] the evidence suggests that the process of characterization is best described as one of stylistic constraint’ (p. 121). He uses this concept of constraint to interrogate the rise of interiority in the novel, especially among female characters, who tend to be more reflexive than their male counterparts. His analysis reveals that a key difference emerges in the case of female characters written by women novelists, who are more cogitative than male characters written by women and than both male and female characters written by men. Hence, Piper’s computational work suggests that a significant intervention was made by women writers at a specific point in the history of fiction (the early nineteenth century), confirming at a much larger scale what has been intuited by scholars based on local readings of a small corpus of novels. Using these and other case studies, Enumerations demonstrates that, while quantitative analysis cannot provide researchers with definitive answers about literature, it can assist or reframe close or historicist readings by mobilizing new ways of *thinking about* literature. ‘They help us situate our observations in a more contextually dependent way, away from our own biases and interests that we inevitably bring to the text, but that are never entirely left behind even in this numerically informed context’ (p. 137).

If Piper concludes that computational approaches reveal new ways of understanding literary history, Alan Liu’s *Friending the Past* asks whether the

concept of *history* itself can hold together in today's digital age. 'How can so much media, affecting the lives of so many people in such crucial ways, have so little apparent sense of history?' (p. 25). Occupying the heart of his project is an analysis of media communication and its construction of history as fundamentally *networked* phenomena. This concept applies to pre-digital, as well as digital, cultures: orality, with its 'store and forward' mode of transmission (p. 9); manuscript culture, through which writing formed 'a history machine whose highest level technical effect [...] was the manufacture of the sense of history' (p. 14); and print culture, which accelerated the speed and extent of networked communication, culminating in the stadial model of the Enlightenment and Rankean historicism (*Historismus*) during the nineteenth century (pp. 14–15). In the digital age, most especially via the social media world of Web 2.0, human experience has migrated to the immediacy of the network—as articulated in slogans such as 'collective intelligence', 'wisdom of the crowd', and 'hive mind': 'Clearly, Web 2.0 and its aftermath are all about the moment. *Now* is history as it really *is*, with no *was* in view more extensive than—on a typical Web 2.0 screen—just a handful of entries ordered by most-recent or "trending" at top' (p. 28).

New media are 'edgy', both demarcating a border between old and new and occupying a fraught, contested space. This edge is a thick zone rather than merely a dividing wall, and it is this nexus that forms the focus of Liu's analysis. Indeed, 'new' media stage exaggerated, messy encounters between old and new, revealing that media development is not deterministic but rather *contingent*, and, far from being post-historical, new media are intrinsically embedded in history. Liu contrasts the modes of *notation* (experiencing new media as script or code) and *presentation* (intuiting or immediately apprehending the script, whether or not it has been rendered). He compares code to alphabets or musical notation, both of which elicit a movement from the notational to the presentational. However, full literacy requires not just being able to render notation into presentation but also to reverse-engineer presentation back into notation. During the ages of writing and print, the 'literary' migrated from deploying and exploring nature (generating models of classical truth) to an increasingly complex, stylized technical form of truth, becoming 'a program of complexity to be "closely read" with technical rigor' (p. 57). In the digital age, media has displaced literature as the star; consequently, '[w]e need today a *poiesis* of digital literary studies able to imagine how old and new literary media together allow us to imagine' (p. 57).

The old structures—literature, religion, history—traced linear pathways of descent and ascent to form their canon, their dogma, and their narrative.

At a deeper level, linearity and historicity are co-constitutive: 'far from being a priori, linear logics are *part* of the history whose plot lines and timelines they structure' (p. 60). *Friending the Past* interrogates our powerful instinct for linearity in historical narratives about media and the civilizations they represent, asking whether we can escape perspectives constrained to particular lines of thought. One possible solution is to turn to an alternative tradition: that of *graphical knowledge*. A form of visual epistemology that represents lines of thought through diagrams, charts, and so forth, graphical knowledge has gained increasing cultural and critical prominence, encroaching ever closer on the privileged position occupied by textual narrative. Drawing on the work of scholars like Johanna Drucker (*Graphesis*) and Franco Moretti (*Graphs, Maps, Trees*), Liu proposes an approach to history grounded in the *hypergraphical*. Digitalization moves us further towards hypergraphical modalities, conforming to a multi-perspectival and multi-scalar episteme that is distributed in its foci and relations, and ultimately networked (p. 73). Yet a turn to hypergraphical perspectives signals something of a *return*, as upon closer examination linearity appears a recent phenomenon: oral culture was non-linear and literate culture used the codex in multi-dimensional ways, while the more we learn about print culture the more we realize that ubiquitous textuality ushered in distributed, accelerated reading practices (p. 85). Indeed, linearity itself can be seen as emerging out of graphical knowledge systems in order to focalize them, so that the present 'post-linear' condition can really be understood as a particular kind of multi- or hypergraphical linearity expressive of our sense of history in the age of the network.

In order to dig deeper into these network processes, Liu extends the media-archaeological work of Lisa Gitelman, Friedrich Kittler, Matthew Kirschenbaum, and Jussi Parikka (among others) into the field of *network archaeology*: 'the network is simultaneously—or, more accurately by its own rhythms and structure—both rupture *and* continuity, both constantly refreshed data *and* a standing archive' (p. 102). While the materiality of books might fix them as objects, in contrast to the distributed and intangible nature of new media, Liu argues that books are as much networks as objects, and that digital media have a materiality of their own. Drawing on the formative work of Marshall McLuhan and Michel Foucault in this field, Liu proposes a series of tenets by which to approach network archaeology (pp. 120–44):

- (0) understand print, electronic, digital and other kinds of work inhere in a common, meaningful milieu of media—communication—information;

- (1) understand individual works of media to be proto- or micro-networks;
- (2) understand that micro-networked works are part of evolving, larger networks;
- (3) understand the past as a network;
- (4) understand past and present networks differently;
- (5) understand that different networks shape different senses of history;
- (6) understand that a properly evolved network archaeology would itself be a network concept.

For Liu, a network-archaeological approach clarifies that the digital age absolutely does have a sense of history in its own measure—‘where *measure* is not just big-data metrics (for instance, analyses of aggregated tweets about political events) but also something like poetic measure—a particular lilt and rhythm of experiencing life together in history’ (p. 152). The trick (in Moretti’s terms) is to ‘operationalize’ the sense of history by measuring, close-reading, and imagining it in today’s digital environment. In this formulation, three core paradigms of the sense of history emerge: the ontological, the epistemological, and the sociohistorical. The ontological paradigm emphasizes the ‘elsewhereness’ of history’s *here* and *now*, a form of alienated, absent sourcehood that itself evacuates notions of sourcehood and origination. Epistemologically, the sense of history hovers between knowledge and sensation, while, through what Liu terms ‘numbness’ or ‘anomie’, a veil falls upon events as we experience them, making history simultaneously immersive and removed. For instance, news on social media is both subjectively close (it appears on one’s intimate timeline) and objectively distant (it is algorithmically mediated by social media corporations and can be manipulated by bots, trolls, fakers, and so on). Sociohistorical extensions operate through the intersection of the social (*I-and-we*) sense of history and the temporal (*now-and-then*) sense. Beyond these three foundational paradigms, Liu details four ‘fine-tuning’ parameters, which can be applied to a greater or lesser extent: (1) our sense of history is both individual and collective, and is experienced in the possessive case; (2) our sense of history is both punctual and durational, resulting in discrete/continuous experiences of the sense of history, bound together by what Raymond Williams termed ‘flow’; (3) our sense of history is both static and dynamic in qualitative and quantitative terms—respectively, how it is narrated and visualized, and the degree of change experienced; (4) our sense of history is both infrastructural (material, spatial) and structural (a design, a pattern).

While network archaeology provides us with a useful heuristic through which to make sense of our sense of history, the challenge facing us is that we

are not yet able to gather together all the artefacts of history (especially audiovisual materials) in order to analyse them as a corpus. Neither do we have a means of technologically ‘wrangling’ that putative corpus nor of analysing it: Liu estimates that we are around fifteen years away from accomplishing this goal. At this time, digital tools would be able to operationalize the sense of history as experienced at different times in various contexts through discrete media. Distant-reading approaches would combine with those of close reading, providing a methodology homologous to our different senses of historical scale. As such, distant reading would attend to the our sense of history as absent, durational, and collective; close reading would engage with our sense of history as present, punctual, and individual. In concluding his rich and provocative account, Liu contends that ‘the characteristic sense of history of the digital age manifests in such swarm-timed phenomena as the “trending” of social media or of Google search terms when enough individual nodes of attention associate with each other in so-called “real time”’ (p. 214). In order to address this sensibility, *contingency* becomes ‘the improvisational program, the antimethodical method, for creating a sense of history that brings [those] autonomous nodes into rapidly coordinated yet just as quickly dissolved connection’. In this dynamic, contingency thus reorients older modes of historical understanding away from our sense of time *as* time (conceived as an axis) towards a sense of *timing* (conceived of as a network of independently activated yet interconnecting events).

If Liu invokes approaches to understanding history amidst the presentism of the digital age, Lee Humphreys’s *The Qualified Self: Social Media and the Accounting of Everyday Life* considers how we fabricate history when documenting our daily lives on digital platforms. Humphreys historicizes her analysis of twenty-first-century social media practices relative to those of previous centuries: ‘By comparing and contrasting media across longer historical epochs, we can begin to understand some of the critical tensions surrounding social media differently’ (p. 3). The affordances of technology have always shaped everyday practice: for example, the shrinking of the diary page invited writers to record their thoughts in specific ways, in much the same way as Twitter’s post limit of first 140, then 280, characters. Humphreys’s approach is organized around a theory of *media accounting*, which she defines ‘as the media practices that allow us to document our lives and the world around us, which can then be presented back to ourselves or others’ (p. 9). The usefulness of this paradigm emerges from the bifurcation of its terminology: one records an account but can also be expected to account for oneself. Media accounting involves the solitary or collaborative

creation, circulation, and consumption of *media traces*—that is, the marks or vestiges that indicate a former presence, existence, or action. An account is a collection of traces generated and curated through media and tied to identity, although the person doing the accounting does not necessarily need to be its focus (such as when parents document their children's lives or when concertgoers film a performance). As such, '[w]hile the practices of media accounting remain consistent, the modes through which we engage in these practices change over time' (p. 117).

Humphreys suggests that 'the sense of self that emerges from media accounting can be understood as the qualified self' (p. 17). An assemblage of our media traces, the qualified self is situated and performative, its worth often comporting with notions of symbolic or social capital, typically measured by the time and care taken in collecting and arranging the media traces. Historical examples include the commonplace books of the eighteenth century and the scrapbooks of the nineteenth. Humphreys compares the qualified self to recent formulations of the 'quantified self', through which users track their biological data in order to stimulate self-improvement. There are similarities between the qualified and the quantified selves, as media accounting 'is fundamentally a self-tracking process. To track means to trace the course of movement of something over time' (p. 21). Today's media accounting practices participate in longer traditions of, for instance, diaristic record-keeping. Both follow a registered approach to recording information and, until the twentieth century, like social media posts, personal diaries would have been written with the expectation of being read by others. Moreover, they also display a presentism that supplies a degree of veraciousness or authenticity, while routine and ritual are important in both practices. The process of documentation can ascribe symbolic status to events, while media can transform the private into the public and the public into the performative, thus maintaining and reaffirming social codes. Through these and other processes of documentation, our subjectivities become increasingly mediated as ritualistic practices that reify social structures. A case in point is the 'vlogging' (video blogging) culture of YouTube, which connects vloggers' personal lives with their audiences, through the ritualized practice of recording typically quotidian behaviours, building both intimacy and celebrity, allowing the private and the public spaces to bleed into each other. Thus, '[t]he quotidian becomes an aesthetic, a value, a practice that is a primary characteristic of media accounting' (p. 43).

One of the longest-standing critiques of blogger (and 'selfie') culture is that it can display pathologically narcissistic attributes, where the

performative supersedes the authentic in pursuit of an ever-growing trove of likes and followers. While Humphreys acknowledges such performative qualities, she sees them less as evidence of self-admiration than of self-scrutiny. Certainly, when bloggers share their personal thoughts online such labour can have a therapeutic effect, drawing attention to its communal function. Media accounting should thus be understood as a phatic communication, privileging the ritualized *act* of documenting and sharing over its *content*. Moreover, media accounting performs important identity work through its use of representation: 'Representation differs from performance and presentation because it involves the production of a textual object, such as a Facebook post. [...] When people perform their identities through media accounting, they create representations' (p. 52). Such representations are never just about the self (even the infamous 'selfie'), but are situated as both object (the selfie, the post) and practice (taking the photo, writing about oneself), coding them as social rather individual. Humphreys invokes a number of twentieth-century examples of pre-digital media that she suggests are analogous to the selfie: the snapshot photographs of the family holiday; scrapbooking, which she compares to the visual social media platform Pinterest; and baby books, which document and infant's early milestones in life. As such, '[m]edia accounting for the self or family could be identified as domestic material labor in that people are often producing representations on behalf of themselves and the family' (p. 68).

As well as being performative, media accounting is an act of *remembrance*, which Humphreys defines as 'the creation or use of media traces as part of our memory work regarding ourselves, the people in our lives, and the world around us' (p. 73). Remembrancing can be a personal process, but it is often a social one, as evidenced in our use of media to capture, revisit, and share memories with others. Media accounting also entails *reckoning*, enabling us to see ourselves and others through self-surveillance: 'Through reckoning, media accounting becomes, what Foucault would call, technologies of the self. They enable self-disciplining, whereby we use media to better know ourselves so as to "improve" ourselves toward more normative expectations or ideals' (p. 92). Drawing on the evidentiary and accumulative nature of media accounting, reckoning allows us to *reconcile* the gaps between how we see ourselves and how we are externally perceived. Social media is often treated as indexical (that is, providing evidence of actual events, activities, behaviours, or experiences): as such, we attach notions of truth or accuracy to social media artefacts. At times, this process requires us to interpret or make sense of what happens between posts, or, in Derrida's terms, pay heed to the absent trace or the 'non-trace'. As Humphreys notes:

'Reconciliation accepts the evidentiary nature of media traces but acknowledges their incompleteness. Reconciliation is fundamentally about the absent traces' (p. 105).

The Qualified Self suggests that changes in media accounting—that is, from written to print, and print to digital—can be understood through shifts in *mediatization*. Here, Humphreys applies the work of Nick Couldry and Andreas Hepp, who define mediatization as the metaprocesses of social change through which increasingly mediated communication forms a trans-cultural and dialectical process of transformation at every level of interaction across society. Humphreys draws attention to three overlapping waves of mediatization: (1) mechanization, involving the production of the printed book from the fifteenth century onwards; (2) electrification, which saw the emergence of photography as a new way of media accounting and overshadowed continuing mechanization; and (3) digitalization, which has changed the visibility and circulation patterns of media accounting. In the third stage, 'people collectively become aware of engaging in media accounting because they increasingly received and engaged with others' qualified selves', while also benefiting from the digital gains of rapid searchability and replicability (p. 119). At the same time, however, media accounting faces significant but often under-scrutinized constraints, as today's social media environments can only be modified within the parameters allowed by the companies that own them. Platforms like Facebook, Twitter, Instagram, and YouTube have greater access to and control of our media traces and networks than we do: 'They aggregate all of this data and come to understand their users and the system more broadly. Fundamentally, this extensive access transforms ways of knowing, what is known, and what is knowable' (p. 123). In their daily practices of media accounting, then, users become the product, fulfilling a fourth wave of Couldry and Hepp's model of mediatization: datafication, which transforms us into a media trace that will be accounted for—albeit not at our own hands.

Originally published in German in 2016, Felix Stalder's *The Digital Condition* adds to the work in 'critical digital humanities' by scholars such as David Berry, Kathleen Fitzpatrick, and James Smithies. This scholarship explores more directly how digitalization affects us in ontological and epistemological ways, drawing on earlier aspects of critical theory. Stalder observes that '[t]he rise and spread of the digital condition is the result of a wide-ranging and irreversible cultural transformation, the beginnings of which can be traced back to the nineteenth century' (p. 4). Divided into three chapters—'Evolution', 'Forms', 'Politics'—Stalder's book applies a poststructuralist definition of the term 'condition', which will be used 'to

designate a cultural condition whereby the processes of social meaning—that is, the normative dimension of existence—are explicitly or implicitly negotiated and realized by means of singular and collective activity’ (p. 7). Resisting technodeterminist narratives of the digital as unilaterally transitive, Stalder argues that pre-digital cultural practices and social institutions were already eroding well before the digital became mainstream. From the 1960s onwards, technology offered a solution to various sociocultural crises, which were themselves amplified by wider tectonic disruptions. The emergence of the knowledge economy out of nineteenth-century capitalist configurations of consumption and the ‘scientification of industrial production’ (p. 15) became so embedded that even traditional labour processes like manufacturing became knowledge-intensive. The shift towards a ‘cybernetic’ economy driven by information networks coincided with the coterminous expansion of neoliberal ideology that espoused the freedom of the market, and of liberal social movements agitating for personal freedom and self-development. A second shift was the erosion of heteronormativity, promoting the right of self-determination to citizens (especially minorities) of an increasingly ‘free’ society. This kind of splintering, Stalder argues, is itself emblematic of the digital condition. Finally, the emergence of postcolonial critique from the 1970s deconstructed the centre/margin dichotomy of West and East, such that ‘[i]nstead of one binding and unnegotiable frame of reference for everyone, which hierarchizes individual positions and makes them appear unified, a new order without such limitations need[ed] to be established’ (p. 33).

Alongside this enlargement of participants in culture, the definition of culture itself expanded during the second half of the twentieth century. ‘The term “culturalization of the economy” refers to the central position of knowledge-based, meaning-based, and affect-oriented processes in the creation of value’ (p. 35). At the centre of this process was design, which from the late 1960s was led by designers such as Enzo Mari and Victor Papanek to reject earlier mid-century imperatives of utility and optimization. Instead, the focus shifted from the individual object to its social and material environment: ‘Potentially all aspects of life could therefore fall under the purview of design’ (p. 37). Since then, the emergence of digitalization and networking has provided opportunities for the public to participate directly in design. The collateral evolution of the knowledge economy, neoliberal ideology, and a technologized society accelerated the formation of cybernetic communities: ‘humanity was expected to be reconfigured as a community in cooperation with and inseparable from [the] machine’ (p. 51). As the Global North moved further towards a digitalized society, older vertical

hierarchies have been displaced by ever-scaleable horizontal networks grounded in consensuality and collectivism: ‘a space has been opened up for endless negotiations, a space in which—at least in principle—everything can be called into question. [...] the digital condition has become quotidian and dominant’ (p. 57).

Stalder defines three forms arising in the digital condition: *referentiality*, *communality*, and *algorithmicity*. Referentiality entails ‘the use of materials that are already equipped with meaning—as opposed to so-called raw material—to create new meanings’ (p. 59). The paradigmatic example is the remix, which samples existing material and combines it to form a new work of media. The ‘information overload’ caused by digitalization and ever-expanding referentiality operates both quantitatively (there are exponentially more artefacts available to us) and qualitatively (the platforms and media that house these artefacts have proliferated). Yet the excess and disorder of the digital also organize the material world, logistically and operationally, so that ‘people are also confronted with constantly changing material things about whose origins they have little idea’ (p. 71). Amidst such complexity it is difficult to orient oneself as an individual, especially in the continued neo-liberal dismantling of public institutions. One response to these circumstances has been the emergence of new types of community, ‘formed in a field of practice, characterized by informal yet structured exchange, focused on the generation of new ways of knowing and acting, and maintained through the reflexive interpretation of their own activity’ (p. 84). A significant example of this is, of course, social media, where *attention* forms the principal currency, measured by likes, retweets, comments, followers, and so forth. While access to massive amounts of data has increased our faith in the utility of information, digital information is mediated: ‘Beneath or ahead of the social mechanisms of decentralized and networked cultural production, there are algorithmic processes that pre-sort the immeasurably large volumes of data and convert them into a format that can be apprehended by individuals, evaluated by communities, and invested with meaning’ (p. 103).

Hence, algorithmicity precedes referentiality and communality, forming the foundations of our digitalized *habitus*. The boundaries between algorithmic and mental processes have blurred, so that ‘the borders between the creative and mechanical have shifted’ (p. 109): algorithms are being used to compose real-time sports writing, to evaluate scripts submitted to Hollywood, and to generate headlines for journalistic copy. To cope with the emergence of big data, it has become necessary to create dynamic algorithms, which test, correct, and iterate themselves exponentially. Each iteration further separates the algorithm from its human originators, rendering

it increasingly *unknowable*. Yet '[o]rders generated by algorithms are a constitutive element of the digital condition', which consequently abstracts users from their environment. While dynamic sorting based on quantifiable outcomes suggests a kind of neutrality, commercial determinants and replications of human biases can end up skewing principles of objectivity. The application of 'data behaviourism'—the explanation, prediction, and control of people's behaviour by their outwardly observable actions—to human beings risks a mechanistic appropriation of subjectivity as an inevitable symptom of the digital condition.

The erosion of public institutions and their replacement by corporate interests in the digitalized knowledge economy have created technocratic state apparatuses focused on efficiency. The outcome is what Jacques Rancière adumbrated in the pre-digital period as 'post-democracy': 'The government practice and conceptual legitimization of a democracy *after* the demos, a democracy that has eliminated the appearance, miscount and dispute of the people' (quoted in Stalder, p. 127). Notwithstanding the continuing mythemic invocations of 'democracy' in the Global North today, politics and government are slipping back into the hands of the elites in a manner reminiscent of pre-democratic times. Correspondent with this superstructural shift is the transformation of the digital environment ushered in by Web 2.0, from the eclectic openness of the Internet of the 1990s to post-democratic forms overseen by algorithmic processes and social media platforms. Stalder observes how users have willingly ceded control of their digital identities and media traces to corporate entities. Nowhere is this more evident than in social media, where our personally manufactured content is platform-dependent (our Facebook, Twitter, and Instagram posts interweave content and form, and cannot be extracted and read elsewhere). Moreover, not only are our digital identities black-boxed away from us, they are subject to processes of flattening, tracking, and surveilling by corporate groups. There has been a consequent shift, then, from the liberal impulses that characterized the origins of Internet culture towards a 'cybernetic hypothesis', which conceives of humans as 'analogous to animals, plants, and machines. Like the latter, people are organisms that react to stimuli from their environment' (p. 141). The electoral scandals of recent years in the US, UK, and elsewhere have implicated social media in the leveraging of users' data as an instrument to secure post-democratic outcomes through targeted political advertising and propagation of 'fake news'. In this fervid context, it is unsurprising that a large number of publications in the field of the DH over the past year have focused on Web 2.0 and the imbrications between corporate interests, political manipulation, and

populist ideology. The tilt of such titles is unmistakable: *Anti-Social Media: How Facebook Disconnects Us and Undermines Democracy* (Vaidhyanathan); *Ctrl Alt Delete: How Politics and the Media Crashed Our Democracy* (Baldwin); *Democracy Hacked: Political Turmoil and Information Warfare in the Digital Age* (Moore); *Digital Dominance: The Power of Google, Amazon, Facebook, and Apple* (Moore and Tambini); *Network Propaganda: Manipulation, Disinformation, and Radicalization in American Politics* (Benkler, Faris, and Roberts).

That said, the future of the digital condition is not entirely grim. Stalder points to digital whistleblowing (such as WikiLeaks) and ‘hacktivism’ as obvious examples of how technology can be harnessed to mitigate anti- or post-democratic practices. Moreover, he points to a ‘commons’ model of the Internet, grounded in principles of reciprocity and defined by a rich ecology based on three principles:

The first of these involves ‘common pool resources’; that is, *goods* that can be used communally. The second dimension is that these goods are administered by the ‘commoners’; that is, by members of *communities* who produce, use, and cultivate the resources. Third, this activity gives rise to forms of ‘commoning’; that is, to *practices*, *norms*, and *institutions* that are developed by the communities themselves. (p. 152)

Guided by consensual and collaborative principles, participation and decision-making are directly and explicitly connected through diverse social relations, mutual trust, and a common culture. Examples of commons-type practices today include Wikipedia, the Internet Archive, the Debian Project, the Open Access/Data movements, and Creative Commons licensing. As Stalder notes, ‘[t]he commons model [...] allows various groups equal and unobstructed access to this potential resource of power’ (p. 167). Despite this promise, public institutions have been slow in taking up the prospect offered by commons values. More worryingly, the discourse of ‘sharing’ predicated on a commons philosophy has been appropriated by commercial interests to replicate hypercapitalist practices, with companies like Airbnb and Uber using their digital platforms to centrally coordinate massive numbers of workers who experience increasingly precarious labour conditions. Ultimately, the digital present glimpses two potential futures: a post-democratic world, which replicates old hegemonies or creates new ones, and a world of commons, grounded in the emancipatory and revitalizing possibilities of the digital condition.

Stalder establishes what is at stake in the digital condition, especially the risks to democratic and emancipatory practices that result from the

black-boxing by government and corporate agencies of the algorithmic processes that increasingly shape our lives. Developing this kind of critique, Safiya Umoja Noble's *Algorithms of Oppression: How Search Engines Reinforce Racism* exposes how datafication replicates discriminatory practices in foundational ways. She begins by highlighting the common misperception that big data and algorithms are benign, neutral, or objective entities, and focuses instead on what she terms 'algorithmic oppression': that is, the ways in which platforms like Google represent and constrain minorities such as people of colour and women. It is not simply that the Internet is populated with racist content: it is governed by a racist modality. Noble's principal point is that 'there is a missing social and human context in some types of algorithmically driven decision making, and this matters for everyone engaging with these types of technology in everyday life' (p. 10). As noted above, the increasing neoliberalization and privatization of the Internet by corporate interests has coincided with massive disinvestment in public services, leaving online information production in the hands of private enterprise, a process which is subsequently misread as public service. Responding to the erosion of the democratic potential of the Internet, Noble's work combines academic study with social manifesto, 'the goal of which is to eliminate social injustice and change the ways in which people are oppressed with the aid of allegedly neutral technologies' (p. 13). She starts from her own personal experiences of searching for 'black girls' and the pornographic results that Google returned, in contrast to the more normative results generated for 'white girls'—suggesting that Google's dominant narratives reflect historical and ongoing forms of oppression faced by marginalized social groups.

Noble posits that 'search results play a powerful role in providing fact and authority to those who see them, and as such, they must be examined carefully' (pp. 36–37). Users of Google typically operate at a locus of disjunction, reframing complex questions in the form of simple queries, suggesting that results are expressions of power and social relations. However, as a platform Google does not serve *informational* directives but its own *commercial* interests to generate profit and dominate the market, thus reinforcing dominant social biases, with marginalized communities experiencing increasing harm. Emerging digital technologies such as machine learning use algorithms to replicate human thinking, and by extension hegemonic practices and perspectives. Drawing on the critical work of commentators such as bell hooks, Noble adopts a black feminist approach, which argues that gender and race are constructs mutually constituted through historical, social, political, and economic processes. Shaped by financial interests rather than the public good, search-engine results should be read as 'deeply contextual and

easily manipulated, rather than objective, consistent, and transparent' (p. 45). Indeed, mounting evidence establishes that automated decision-making systems are disproportionately harmful to the most vulnerable and least powerful members of society.

The ongoing shift towards personalization and tracking suggests ways in which search results can be optimized for users' benefit, but these systems are subject to commercial imperatives: 'Egregious and racist content, content that is highly profitable, proliferates because many tech platforms are interested in attracting the interests and attention of the majority in the United States, not of racialized minorities' (p. 58). As such, the virtual utopia of cyberspace has been coopted by its enmeshment in the physical world of servers, service providers, telecoms companies, and political-economic agendas. For Noble, information is a form of representation rather than, as we might assume, benign or neutral data:

Understanding technological racialization as a particular form of algorithmic oppression allows us to use it as a framework in which to critique the discourse of the Internet as a democratic landscape and to deploy alternate thinking about the practices instantiated within commercial web search. [...] Rather than offer relief, the rise of the Internet has brought with it ever more commodified, fragmented, and easily accessed pornographic depictions that are racialized. In short, biased traditional media processes are being replicated, if not more aggressively, around problematic representations in search engines. (pp. 84, 100)

Noble's study of Google's search algorithms ranges from the ways in which they surface pornographic representations of black women to their role in promoting misinformation (most notoriously through 'fake news' sites), which has in turn stimulated right-wing terrorism. Conversely, legitimate journalists find themselves under pressure to shape their content to feed the algorithms that generate user traffic, given the commercial imperatives that drive search platforms (pp. 153–54). Noble notes that '[a]lgorithms that rank and prioritize for profits compromise our ability to engage with complicated ideas. There is no counterposition, nor is there a disclaimer or framework for contextualizing what we get' (p. 118). The penetration of search engines extends beyond the political into the personal: as records of human activity, search results are 'a battleground over identity, control, and boundaries of legitimate knowledge' (pp. 122–23). If we compare the limited lifespan of paper records to the potentially infinitely extensible digital record, the power that adheres to Google's algorithms in shaping our lives

becomes troublingly apparent. The European Union has sought to curb some of these impositions on our digital histories by Article 17 of its General Data Protection Regulation (GDPR) legislation of 2018, commonly known as the 'right to erasure ("right to be forgotten")', which enables private individuals to have negative information about them removed or delisted from websites. However, such legislation is by no means global, and does not apply for example in the US, thus limiting the ways in which we can be liberated from the tyranny of the digital cultural record.

In Noble's view, the classificatory and hierarchical systems of digital information retrieval are undergirded by historical structures, and those who have the power to create and configure these systems are able to privilege certain kinds of information (and therefore users) at the expense of others. Search platforms structure knowledge and the ranking protocols reflect sociocultural values, often replicating the discourses found in old media: 'Technologies and their design do not dictate racial ideologies; rather, they reflect the current climate. As users engage with technologies such as search engines, they dynamically co-construct content and the technology itself' (p. 151). Operating under the neoliberal focus on individual agency under the free market, users of Google have been encouraged to accept a private corporation as 'the only legitimate source of social change' (p. 166). Responding to this phenomenon, *Algorithms of Oppression* shines a light not only on the way that new technologies both reaffirm hegemonies of the past and impose constraints on our futures, but also on how we ourselves are interpellated daily and voluntarily into these algorithmic processes.

Acknowledging the constraints that digital processes are enforcing upon us is perhaps only the starting point, and greater self-scrutiny is in fact required by digital humanists themselves. Increasingly, scholarship is turning its gaze upon ways in which the DH has skewed towards pre-digital hegemonies of race and gender. For example, *Bodies of Information: Intersectional Feminism and Digital Humanities*, edited by Elizabeth Losh and Jacqueline Wernimont, 'emerges in an era when the tasks of intersectional feminisms, of coalition building, and of communal care and repair are recognized as increasingly important areas in digital humanities' (p. ix). Part of the 'Debates in the Digital Humanities' series overseen by Matthew K. Gold and Lauren F. Klein, the collection comprises twenty-five essays gathered under six headings: 'Materiality', 'Values', 'Embodiment', 'Affect', 'Labor' and 'Situatedness'. Likewise, Patricia Ticineto Clough's *The User Unconscious: On Affect, Media, and Measure*, collects essays, reflections, and creative pieces originally published by the author between 2007 and 2016. The material spans the affective to the datalogical in order to propose that what marks out

twenty-first-century critical theory, philosophy, and media studies is their ‘recognition of an originary technicity in ongoing processes of denaturalization and their insistence on the indeterminacy immanent to human and other-than-human agencies’ (p. ix). The book builds on the author’s previous work on ‘population racism’: in the context of war and terrorism, population racism operates at the global scale, and has done since colonialism and slavery, but the relationship between ‘technicality and measure at the heart of biopolitical intent [is] becoming more central to governance and economy’ (p. xi).

In a similar vein to these interventions, Roopika Risam’s *New Digital Worlds: Postcolonial Digital Humanities in Theory, Practice, and Pedagogy* addresses ‘the disruptions within the digital cultural record produced by colonialism and neocolonialism’ (p. 3). The DH inadvertently risks repeating at an epistemic level the violence of the colonial era, to the detriment of the Global South. Risam notes that ‘because the digital cultural record exists in a media environment that is caught in a battle between corporate interests, academia and the cultural heritage sector, racial and cultural politics, and consumer power, that record itself has become a spoil of war’ (p. 10). Rooted in a broader history of exchange between postcolonial theory and science and technology studies, the postcolonial DH foregrounds the inter-operations of culture and power with design. Its imperative falls on localized design, moving away from the current ‘universalist’ positivism of mainstream DH grounded in the Global North. By contrast, ‘decolonial computing’ departs from the Anglo-American centre and works from the peripheries, emphasizing embodiment and situated knowledge within the Global South and through South-to-South connections. Alongside this ‘additive’ approach, the postcolonial DH can intervene on behalf of the Global South as part of the wider field of the critical DH (mentioned earlier in this chapter): ‘The reification of canons in digital form is not only a function of *what* is there—what gets digitalized and thus represented in the digital cultural record—but also *how* it is there—how those who have created their projects are presenting their projects’ (p. 17).

While DH practitioners risk rehearsing the colonial dynamics of the past, they are nonetheless well placed to challenge such legacies. Indeed, Risam observes the parallel trajectories of postcolonial studies and the DH within the academy, with both disrupting the orthodoxies of humanistic epistemology (postcolonialism from the 1970s and the DH since the 2000s). Shaped by the interventions of scholars such as Said, Spivak, Bhabha, Césaire, and Fanon, postcolonial studies has interrogated how Eurocentric models of history and subjectivity have been privileged at the expense of the Global

South. The postcolonial DH bridges ‘colonial pasts and imperial presents by examining the role of the digital in mediating between them and developing practices to ensure that these voices become part of the digital cultural record’ (p. 29). In this context, ‘the digital’ is neither neutral nor universal, encoding the same epistemic structures of colonialism that shaped not only modernity but our *understanding* of it. Decolonizing the DH challenges the replication of colonial violence and the power dynamics of neocolonialism.

The postcolonial DH can also debunk the myth of the Internet as fundamentally democratic and egalitarian—indeed, Risam observes how emergent modern technologies (slave ships, guns, the law) were often complicit with imperial and colonial projects of oppression. ‘The charge of the postcolonial digital humanities is in its insistence that digital humanities scholarship must attend to how discursive practices replicate themselves, legitimating the claim to power of the Global North in the digital cultural record’ (p. 37). Where subaltern voices exist, the postcolonial DH can address archival imbalances, as well as scrutinizing the ways in which archives bear the traces of colonial violence, not just in their content but in their construction. Likewise, by shifting focus from the global to the local, from the universal to the indigenous, the postcolonial DH can effect new approaches to code, design, and tools, avoiding the uncritical replication of epistemological and ontological formations based in the Global North. Interventions can manifest themselves in a range of ways: by developing archives grounded in indigenous values, such as the Australian Mukurtu platform <<https://mukurtu.org>>; by championing minimal computing to overcome issues of access and uneven development in the Global South; and by interrogating the exploitation of the Global South labour market, for example in Amazon’s Mechanical Turk crowdsourcing platform or the machine learning systems developed by CrowdFlower (now Figure Eight).

New Digital Worlds engagingly probes these dynamics by examining a range of interrelated issues. For instance, Risam considers how archives can operate as sites of colonial violence, shaping our understanding of history through colonizers’ eyes. The British Colonial Archive, for example, tells its story as much through what is excluded as through what is there (p. 49). By contrast, the Early Caribbean Digital Archive and the Bichitra Online Tagore Variorum demonstrate ‘that building in digital humanities is not a luxury for a privileged few but an ethical imperative for postcolonial studies’ (p. 56). Carefully deployed, such projects can repatriate cultural labour, restoring agency that has been denied to the Global South by material archives. Discussion turns from the outputs to the organizational structures of the DH, observing the field’s domination by the Global North, primarily

through the supernumerary Alliance of Digital Humanities Organizations (ADHO). According to Risam, the risks of exclusion for the Global South manifest in several ways: in how such organizational structures direct the focus of DH activity internationally; through the linguistic and cultural differences that undermine a truly global DH community; and in the presumed universalism of the Global North's model of the DH. To mitigate such centripetal, homogenizing impulses, we are offered the productive notion of DH 'accents': 'Like accents of a language, accents of digital humanities share common features, but they may be articulated in different ways based on local influence' (p. 80).

With this decolonizing movement in view, Risam turns to digital pedagogy and the ways in which the postcolonial DH can help students recognize the legacy politics underpinning knowledge production in the twenty-first century (p. 88). She proposes that postcolonial DH pedagogy can foreground plurality and due consideration of local politics, histories, and aesthetics: 'engaging with digital humanities offers students a new way of thinking through the core concepts that undergird modernity and alternative perspectives on community formation by considering their instantiations in the digital cultural record' (p. 96). Risam's final staging point is her exploration of concepts of the 'human' in the DH, which proposes that current 'technology-versus-humanity' debates stifle more crucial questions, such as 'Who are the presumed subjects of digital humanities scholarship? And how is digital humanities participating in re-instantiating a normative human subject in the digital cultural record?' (p. 116). Risam argues for embedding the longer traditions of humanistic critique in digital practice, enabling the DH to articulate 'a complex relationship between experiment and interpretation, leading us to a greater understanding of the stakes involved in the digital cultural record' (p. 120). However, she cautions against simply taking for granted notions of the 'human' in that process, as they can all too easily privilege the Eurocentric subjectivities of the Enlightenment and its successors, thereby excluding citizens of the Global South as equal participants in shaping the digital cultural record.

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