Algorithmic culture

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Abstract

Over the last 30 years or so, human beings have been delegating the work of culture – the sorting, classifying and hierarchizing of people, places, objects and ideas – increasingly to computational processes. Such a shift significantly alters how the category culture has long been practiced, experienced and understood, giving rise to what, following Alexander Galloway, I am calling 'algorithmic culture'. The purpose of this essay is to trace some of the conceptual conditions out of which algorithmic culture has emerged and, in doing so, to offer a preliminary treatment on what it is. In the vein of Raymond Williams' Keywords, I single out three terms whose bearing on the meaning of the word culture seems to have been unusually strong during the period in question: information, crowd and 1 10 8 5a 10 2gthe imf thitmenng doinloads whoh

on Twitter's trending topics list, unseating the Prince of Peace along the way (James, 2009b). As the Beatles learned back in 1966, however, 'more popular than Jesus' (as John Lennon had claimed of the band) is not necessarily an enviable position in which to find oneself. The hashtag to which the Twitterati directed tens of thousands of messages – #AmazonFail – indicated that something had gone terribly wrong with company. Why, they wondered, had Amazon apparently begun excluding gay and lesbian–themed books from its sales rankings, searches and bestseller lists?

'it' is. The overarching impulse here is historico-definitional, though there are many ways to execute such a project. One could focus on the propagation of 'truthful' statements (i.e. discourses) pertaining to algorithmic culture (Foucault, 1972), or map the sociological circuitry through which the concept has made its way through the world (Mannheim, 1955). Or instead, one could take an etymological tack in attempting to trace the origins of particular words, or adopt a philological thrust in trying to apprehend definitive usages of words in history.

While this essay combines elements of these approaches, it is inspired primarily by Raymond Williams' (1983) work on keywords. This piece emphasizes moments of catachresis – instances of lexical 'misuse' that help concretize an alternative semantics for particular words and word clusters. These moments enable new or at least different ways of figuring reality through language, for example, in drawing what was long taken to be the conceptual sine qua non of qualitative human experience – culture – into the orbit of computational data processing (see, e.g. Kittler, 2006). It is a contention of this essay that the semantic dimensions of algorithmic culture (and also then of the related phenomena of big data, data mining and analytics, the themes of this special issue of European Journal of Cultural Studies) are at least as important as the technological ones, the latter, for perhaps obvious reasons, tending to command the spotlight. But as Williams (1983) noted, 'some important social and historical processes occur within language', giving rise to new existential territories that only later come to be populated by technical artifacts (p. 22; see also Striphas, 2014).

Moreover, a keywords approach is useful in apprehending latencies of sense and meaning that persist, insist and subsist in contemporary usage as 'traces without … an inventory' (Gramsci, 1971: 324; see also Seigworth, 2000: 237). Logging that inventory, as it were, allows one to not only situate algorithmic culture within a longer durée but also reflect on claims to objectivity and egalitarianism that are now made in its name. Beyond semantics, what is at stake in algorithmic culture is the gradual abandonment of culture's publicness and thus the emergence of a new breed of elite culture purporting to be its opposite.

Keywords today

Gary Hall (2002) opens the final section of Culture in Bits with the line, 'what if Richard Hoggart had had email?' (p. 126). This is tantamount to asking, 'what would the work of cultural studies' canonical figures look like were it composed today, a time of ubiquitous digital computational technologies?' Imagine, say, Raymond Williams (1958) were writing Culture and Society having to confront the #AmazonFail episode. How might he (p

They similarly imagined a world bombarding us with sensory input. This was a broken, not a direct line, however, resulting in an even more diffuse meaning for the word. If information were akin to a 'To Whom It May Concern Message', then it need not be directed to anyone in particular. More to the point, in Wiener's formulation, it need not be directed to anyone at all.

Apropos, the stars of Wiener's two major books on cybernetics and information are neither the brain nor the cognitive structures that purportedly allow people to make our way in the world. They are, instead, photoelectric cells and antiaircraft guns, and more utilitarian things like automatic door openers and thermostats (Wiener, 1954, 1961). In contrast to wind-up clocks and other simple mechanical devices, which function in a manner more or less unattuned to environmental conditions, these machines 'must be en rapport with the world by sense organs' and adjust their behavior according to the information they receive (Wiener, 1954: 33; see also pp. 21–22). In 1944, the physicist Erwin Schrödinger (1967 [1944]) argued that life 'feeds on negative entropy', meaning that life is nothing more and nothing less than a small pocket of order within a world abuzz with information (p. 70). Four years later, Wiener told a similar story but threw in a major plot twist. If machines possessed an appetite for information, then apparently information was not particular to human beings.

From the Second World War on, then, machines begin being seen not merely as useful things but as custodians of orderliness. Critical to their work was information, which Gregory Bateson (2000 [1971]) defined as 'a difference which makes a difference' (p. 315). Bateson, like Wiener, identified as a cyberneticist, so in one sense it should not surprise to find him defining information in terms of bits, or simple yes–no decisions. But in another sense, his definition may surprise. Bateson was a trained anthropologist and spouse of Margaret Mead, to whom he was married for 14 years. They had one child together, Mary Catherine, who also became a noted anthropologist. In a family so thick with interest in people and culture, it is telling that Bateson never bothered with the question 'to whom?' when he called information 'a difference which makes a difference'. By the early 1970s, information was only residually the process by which people and things were endowed with substance, trait or character – in-formed, as it were. It had become, instead, a counter-anthropological leveler, smoothing over longstanding differences between humans and machines: Inform-uniform. James Gleick (2011) puts the matter succinctly: 'it's all one problem' (p. 280).

In 1966, Michel Foucault concluded The Order of Things (1971 [1970]) by claiming that 'man is an invention of recent date … [a]nd one perhaps nearing its end' (p. 387). Six years later, Gilles Deleuze and Félix Guattari (1983) opened Anti-Oedipus by proclaiming that 'everything is a machine' – plant life, animal life, mechanical devices, electronic goods, economic activities, celestial bodies and more (p. 2). Sandwiched between them was Bateson, the an-anthropic anthropologist for whom cultural life becomes one type of information processing task among many. One can also see emerging the sense of cultural objects, practices and preferences as comprising a corpus of data (from the Latin, 'something given'), albeit data that exceed the traditional view of the human sciences in the agnosticism toward the intended recipient. No longer would human beings hold exclusive rights as cultural producers, arbiters, curators or interpreters – a welcome development, perhaps, given the shame, disrespect and brutality elites

that from the moment when the moral forces on which a civilisation rested have lost their strength, its final dissolution is brought about by those unconscious and brutal crowds known, justifiably enough, as barbarians' (Le Bon, 2002 [1895]: xii–xiii; see also Arnold, 1993 [1869]).

Le Bon's book has been read, understandably, as an attack on crowds (see, for example, Milgram and Toch, 2010; Surowiecki, 2004). It is one, to be sure, and an elegy for the decline of privileged minority rule akin to Edmund Burke's (1999 [1790]) Reflections on the Revolution in France. Yet, there is a tone of resignation evident in Le Bon's prose, suggesting a kind of begrudging acceptance of the emerging political realities of the time: 'The age we are about to enter will in truth be the AGE OF CROWDS', he states (Le Bon, 2002 [1895]: x; emphasis in original). This may help to explain why The Crowd also contains a handful of passages in which Le Bon offers a more equivocal view, such as this one: 'What, for instance, can be more complicated, more logical, more marvelous than a language? Yet whence can this admirably organised production have arisen, except it be the outcome of the unconscious genius of crowds' (Le Bon, 2002 [1895]: v)?

Whether by default or by design, Le Bon was drawing on a subterranean line of thinking about crowds. This line developed in the overlap of Classical Liberalism and the Scottish Enlightenment and received its most enduring expression in the work of Adam Smith. It was Smith (1977 [1776]) who, in An Inquiry into the Causes of the Wealth of Nations, struggled to make sense of apparently spontaneous economic activities whose outcome was – in Le Bon's words – 'admirably organised production'. Yet, the figure of the crowd is noticeably absent from Smith. In fact, the word crowd appears only four times in his 375,000 word magnum opus, and only then in verb form. His figure is a different one, and of a different kind, although it performs rhetorical work comparable to Le Bon's 'genius' crowd. This is the famous 'invisible hand', which, in Smith's (1977 [1776]) view, aligns the interests of individual economic actors with the needs of a society as a whole (p. 477).

Mysterious, ghostlike, the 'invisible hand' is essentially a deus ex machina of economic activity, and in this regard it is not too far removed from the spiritual sense of information mentioned earlier. In the 20th century, Friedrich A Hayek would make the link more explicit, helping to bolster the more affirmative view of crowds nascent in both Smith and Le Bon. The key work here is Hayek's (2007 [1944]) Road to Serfdom, published in 1944, arguably the strong state's high-water mark in both Europe and the United States. Hayek believed there ought to be some force to which was assigned the task of holding the state in check; for him, that force was the economic sphere. Hence, his desire to strip the state of the responsibility of economic planning and to leave the task of coordinating economic activities up to individual actors dispersed far and wide (Hayek, 2007 [1944]: 232). Instead of positing that coordination resulted from the arcane workings of an invisible hand, Hayek stressed the crucial role that information – his word – played in choreographing this intricate group dance, particularly through the price system (Hayek, 2007 [1944]: 95).

Like Smith, Hayek had little to say about crowds per se. His understanding of the individual, however, harkened back to the earliest English-language sense of crowd as the exertion of force on others. And with this, he helped to usher the idea of the intelligent, constructive crowd more fully into view. He was not alone in this endeavor. In 1965, the

economist Mancur Olson (1971), a friend of Hayek, refuted the claim that groups were intrinsically stupid and irrational by describing the hidden 'logic' underlying collective action.[8] So, too, with sociologist Stanley Milgram, whose early work on obedience to authority was given subtlety and dimension in his later work on crowds, where he dismantled the view that crowds caused otherwise mindful people to become deluded (Milgram, 2010; Milgram and Toch, 2010). Finally, inasmuch as he was Hayek's ideological opposite, we must nonetheless reckon with the contributions Raymond Williams made to the redemption of crowds. The conclusion to

('Algorithm', n., n.d.). Algorithm is recorded in English for the first time at the beginning of the 13th century CE as augrim, in Chaucer's Canterbury Tales, whereupon it undergoes a long series of orthographic transformations before settling into what, from the early 18th century until the early 20th century, becomes its conventional spelling, algorism (Karpinski, 1914: 708). The present-day rendering of the word, algorithm, likewise appears around the start of the 18th century, but it does not become the standard orthography until almost 1940.

The confusion stems mainly from two key mathematics texts attributed to al-Khwārizmī from which his name, and eventually two different though related senses of the word algorithm wind their way into English. The first manuscript, Al-Kitāb al-Mukhtaṣar fī Ḥisāb al-jabr wa-al-Muqābala (The Compendious Book of Calculation by Restoration and Balancing), introduced many of the fundamental methods and operations of algebra. It is the primary work through which the word algebra itself, adapted from the Arabic al-jabr, diffused through Moorish Spain into the languages of Western Europe (Crossley and Henry, 1990: 106; Smith and Karpinski, 1911: 4–5; see also Karpinski, 1915). Incidentally, the word appearing just before al-jabr in the Arabic version of the title, Ḥisāb, though translated as calculation, also denotes arithmetic. Algorithm, arithmetic: conceptually, they have been a stone's throw away from one another since the 9th century. Consequently, it is hardly the case that one corrupted the other. It is more accurate to say that, until the second quarter of the 20th century, the arithmetic sense of the word algorithm was not dominant or preferred.

The other key work is al-Khwārizmī's untitled text on Hindu- or Indo-Arabic numbers, or what today many Westerners simply refer to as 'Arabic' numerals. It is widely believed that this untitled manuscript of al-Khwārizmī's played a major part in introducing Europeans to Arabic numerals in the middle ages (Crossley and Henry, 1990: 104). Just as Al-Khwārizmī's name became synonymous with arithmetic through the algebra book, so too did it become synonymous with the Arabic system of numeration itself. The form of the word algorithm that has today fallen out of favor, algorism, is a legacy of this association. Until the early 20th century, Arabic numerals were commonly referred to as 'the numbers of algorism' ('Algorism', n., n.d.)

Still, this is not the only or most interesting sense of the term. Algorism's semantic context includes a range of secondary meanings that are key to making sense of algorithmic culture. Among the most important is its close association with zero (Smith and Karpinski, 1911: 58). The word zero comes from śūnya, Sanskrit for 'void', which migrates into Arabic as ṣifr, meaning 'empty', the root from which the modern English language form cypher derives (Smith and Karpinski, 1911: 56–57). Thus, it is no coincidence that the phrase 'cypher in algorism' was long used interchangeably with the word zero; sometimes cypher would be used to designate any of the Arabic numerals, making it synonymous with algorism ('Algorism', n., n.d., 'Cipher, Cypher', n., n.d.). Moreover, until the middle of the 19th century, cypher, like zero, could refer to a placeholder – often in a derogatory sense, indicating a 'worthless' person ('Cipher, Cypher', n., n.d.). This was alongside what has emerged today as cypher's more commonplace definition, namely, a secret code or the key by means of which to crack it.

So, on the one hand, we have algorithms – a set of mathematical procedures whose purpose is to expose some truth or tendency about the world. On the other hand, we have

Conclusion

I have tried my best to connect as many of the dots between the words information, crowd and algorithm as possible. I realize, of course, that there are a great many dots left

point is that Twitter and its kin bandy about in what one might call the algorithmic real, where placeholders for trending topics and the like are presented as if they were faithful renderings of reality. But the issue is even more complex than this. Gillespie (2011) adds that '[w]e don't have a sufficient vocabulary for assessing the algorithmic intervention in a tool like Trends', an observation that underscores just how deeply entangled are questions of language, technology, big data, analytics and political economy. This is all the more reason to broach the issue of the privatization of cultural decision-making only after having explored the semantic context, or keywords, that frame the issue in the first place.

In brief, consider the product recommendations one sees on Amazon. These, says the retailer, are the result of one's browsing and purchasing histories, which are correlated with those of Amazon's millions of other customers – a crowd – to determine whose buying patterns are similar to one's own. You, too, might like what this select group has bought, and vice-versa – a process Amazon calls, 'collaborative filtering'. Google reportedly works in a similar way. Although the company has moved far beyond its original 'PageRank' algorithm, which measured the number of links incoming to a website to determine its relative importance, it still leverages crowd wisdom to determine what is significant on the web. As Wired magazine explained in 2010,

> PageRank has been celebrated as instituting a measure of populism into search engines: the

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Notes

1. This is not to suggest algorithmic culture is somehow strictly computational and therefore exclusive of human beings. As Tarleton Gillespie (2014) has noted, and as the preceding example suggests, algorithms are best conceived as 'socio-technical assemblages' joining together the human and the nonhuman, the cultural and the computational. Having said that, a key stake in algorithmic culture is the automation of cultural decision-making processes, taking the latter significantly out of people's hands (Flusser, 2011: 117).
2. Galloway does not offer a specific definition of 'algorithmic culture', nor does he provide any type of genealogy for the term. His having largely taken this suggestive idea for granted is a primary motivation for this essay.
3. Outside the United States, the book is simply titled, Culture.
4. Several of these terms appear in Fuller (2008), although the project does not adhere closely to a Williamsonian keywords approach. The Williams-inspired New Keywords (Bennett et al., 2005) contains only a handful of them. Ben Peters' (ed.) forthcoming Digital Keywords project is the most compelling project to have developed in this vein to date (Welcome, n.d.; see also Striphas, 2014).
5. Beyond Williams' passing interest in information, I can offer no strong empirical basis for the selection of these terms beyond my own intuition, or a desire to engage in a thought experiment that would attempt to see what new understandings of culture might emerge from having placed the word alongside information, crowd and algorithm. That said, one should not dismiss 'intuitive' methods as lacking in scholarly rigor. Henri Bergson (1992), for one, pioneered the project of recovering intuition from the Kantian doctrine of the faculties, seeing it as a way of relating to the world that was less categorical and therefore better attuned to duration (pp. 126–129). More recently, Lauren Berlant (2011) has made a strong case for the relationship of intuition, the somatic and the affective (pp. 52–53). Gregory J Seigworth (2006) also gets at the point in arguing for the relationship between intuition and what Williams has called the 'pre-emergent', which is to say a category of experience exceeding the realm of the visible and the articulable. It is also not a coincidence that Seigworth draws attention to the etymological links between the words experience, experiment and empiricism (Seigworth, 2006: 107–126; Williams, 1977: 132).

131 see also Striphas, 2014).

5.

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