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## CHAPTER 35

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# REAL TIME BIDDING SYSTEM

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In early 2017, Euro-American publics were suitably shocked to be told that they had unwittingly been subsidising those ‘sworn to destroy’ their way of life. ‘Some of the world’s biggest brands’ including, *inter alia*, car-makers such as Jaguar and Mercedes –Benz, supermarkets such as Waitrose, banks, charities and universities were apparently funding Islamic extremists, white supremacists, pornographers and child abusers ‘by advertising on their websites’ (Mostrous, 2017a:1; Bridge and Mostrous, 2017). As ‘sites/sights of organization’ (O’Doherty et al, 2013), the display of advertisements for luxury vacations framed by demands for jihad, or of appeals to charity set against a backdrop of calls to racial violence, appear surreal, almost Dada in their absurdity. An advert for an all-inclusive luxury resort may appear to be of little interest to followers of Al-Shabaab except as a possible target.

Foucault (1970: xv) has, among others, drawn attention to the methodological significance of seemingly bizarre moments and paradoxical juxtapositions as affording, perhaps peripheral, glimpses of the workings of much broader processes of social organization. What is being glimpsed in this instance, it is suggested, is the ‘parasitical’ (Serres, 2007) machineries and machinations of the contemporary ‘attention economy’. The workings of this economy, of which banner ads, pop-ups etc, are the most visible products, are perhaps best exemplified by devices such as Real-Time (or ‘programmatic’) Bidding (RTB). RTB (on which the blame for the above transgressions was eventually laid by the media – see Mostrous 2017a) enables advertisers in the form of automated agents, (bots) to select and target internet or social media users in ‘real time’ and through multiple third party websites. Such devices then, allow every online *viewing* of an advertisement (impression) to be evaluated in terms of its commercial potential, sold and bought, within milliseconds (e.g. Wang et al, 2017; Papadopoulos et al, 2017). Thus, as soon as a ‘surfer’ clicks on a site (e.g. a YouTube video) their ‘profile’ (IP address, geolocation, browsing history, search keywords, time of day, etc.) are passed on to an auction site (such as Google’s DoubleClick RTB Ad Exchange or Yahoo!’s Right Media). Immediately, an auction takes place whereby (automated) agents ‘bid’ to place their advert in front of that particular user. For example, an agent representing a resort chain will typically place a higher bid to advertise to a visitor with a particular profile who has been browsing

travel-related sites. A proportion of the successful bid will then be paid to the owner of the website where the ad was displayed. Based on users' browsing history, further suggestions of content (e.g. 'similar' YouTube clips) will be made. Increasingly complex machine learning algorithms seek to establish (or rather construct) the relations of 'relevance' that underpin such 'user recommendations' (e.g. Alaimo and Kallinikos, this volume): the longer visitors remain at the site the more adverts can be 'impressed' upon them. 'How often', wonders one commentator, 'have you sat down with a plan say, ...to buy one thing online, only to find yourself, hours later, wondering what happened?' (Wu, 2016: 344).

It is worth noting at this point, that industry 'blacklists' are supposed to function as guardians of the commercial logic (as well as the morals) of 'Real-Time Buying' by preventing the subsidising of offensive material. We are thus assured that 'armies' of Google and Facebook staff (e.g. BBC, 2017) 'combining human judgment with powerful machine learning' (Wojcicki, 2017) are constantly scanning media platforms to identify and remove unsavoury content<sup>i</sup>. Nonetheless, as media researchers have recently shown, it is still possible to use sites such as Facebook in order to pitch to audiences who identify with topics such as 'why Jews ruin the world' and 'how to burn Jews' (Angwin et al, 2017).

It is a commonplace to say we live in an 'information age' (Castells, 1996) characterised by an abundance, an 'overload' even, of readily and freely available information (e.g. Gantz et al, 2008). As information becomes abundant however, it is *attention* that comes to be seen as scarce - and thus the proper object of economic reasoning and calculation (Lanham, 2007; Davenport and Beck, 2001; Goldhaber, 1997). Nicholas Carr (2008; 2010) for instance, has made the case that the flood of information, and the omnipresence of information technologies, have brought in their wake a kind of attention deficit, a deterioration of the ability to focus on any particular task at hand. Compared to the days when *print* media were the main vehicles of information, contemporary expectations of quick and constant access have, he argues, eroded subjects' attention spans and left them unable to, for instance, read texts 'in depth' (Carr, 2008). According to those who claim to measure such things (e.g. the National Center for Biotechnology Information at the U.S. National Library of Medicine), the average attention span has now shrunk to 8 seconds, apparently one second shorter than that of a goldfish<sup>ii</sup>.

The increasing in-ability to pay attention, means that attention has to be increasingly paid for. The by now long established practices of advertising (e.g. see McFall, 2004) appear, in retrospect, to have pre-figured the nostrums of this new 'attention economy' (Davenport and Beck, 2001). This is hardly surprising. Unlike other forms of 'information', advertisements never had a *prima facie* legitimate claim to the subject's attention and as a result, one way or another, had to pay their way. Thus, in the days when the 'information marketplace' had been dominated by a limited number of media channels –such as newspapers, radio and television – 'publishers' would attempt to sell the attention of audiences with particular characteristics ('demographics') to advertisers. News, knowledge and entertainment were the 'bait' that had been laid out for these audiences, in the spaces between advertisements. This, long-established model, was in turn challenged by the rise of the internet and of 'user generated' content. The press, we are told, has suddenly become 'free' in the sense that anyone can (in principle) have her/his own (Rosen, 2011): 'Everyone is a media outlet' (Shirky, 2009: 55). The new environment, argues Webster (2008:23) 'can be thought of as a virtual marketplace in which the purveyors of content compete with one another for the attention of the public'. In the new era of '*platform* capitalism', (e.g. Langley and Leyshon, 2016; Srnicek, 2016; see also Ridgway this volume), increasingly monopolistic 'platforms', such as Google or Facebook, have set themselves up as *the* virtual marketplaces where attention is to be traded. The inauguration of the major ad exchanges from 2007 onwards, notes Google (2011:3-5) 'brought more liquidity to the marketplace for online inventory',

which enabled advertisers, businesses and individual users ‘to transact in online display.... Now with large pools of liquidity ... and a robust ecosystem of buyers capable of accessing it, the market was ripe for innovation. RTB was the missing piece’.

Cometh the hour, cometh the artefact. RTB is thus called upon to complete the advertising *system* and to real-ize the market for attention. The new economic sociology (Callon and Muniesa, 2005; Callon et al, 2007; MacKenzie, 2008) has highlighted the role of such ‘market devices’ in summoning markets into being (McFall, 2009). RTB, as we have seen, enacts the commercial reallocation of attention as an auction. As Google’s (2011) white paper notes, it constitutes a crucial node in the system of attention capture and resale, where the devices of ‘behavioural’ forms of digital advertising endeavour to harness the agency of the ‘user’ in the organization of the targeting process. These devices range from ‘permanent’ cookies (which are not deleted when the browser is closed), to ‘flash cookies’ (which cannot be deleted by browsers), to ‘deep packet inspection’ (DPI) tools (which collect data at ISP level) (OFT, 2010). Even when search histories are being deleted the users’ ‘clickstreams’ can still be retained. Actions such as closing an advert, or selecting a menu option such as ‘This advert isn’t relevant’, are routinely harnessed as the (negative) feedback necessary to further train the targeting algorithm. The subject is meant to be nudged, so to speak, little by little, along consumption pathways predicted by the algorithm. In a series of patent applications for instance, Facebook has sought to develop devices for analysing data derived from its users’ text communications and status updates which would enable it to infer those users’ ‘personality characteristics’ thus increasing the precision of its targeting processes (e.g. Nowak, and Eccles, 2016). The digital technologies which now mediate social life, argues Lash (2007: 60) increasingly seek to organize ‘from the inside: there is self-organization ... now the brain ... is immanent in the system itself’.

The histories and functions of contemporary media technologies, their voracious appetite for personal data, and their complex roles as both products and producers of the ‘organized worlds’ that they set in motion, are analysed in a number of contributions to this volume (see Alaimo and Kallinikos; Ridgway; Shah; Przegalinska; Thylstrup; see also Beer, 2013). Devices such as RTB can therefore be seen as the other side of this particular equation (Ridgway, *ibid*; Kaplan, 2014;). By allowing measurable monetary value to be ascribed to the outputs of such technologies, RTB helps the advertising *system* cohere. What remains to be explored then, is the specific role of this system in organizing and disorganizing the ever-expanding ‘attention economy’. Its influence is of course most evident in the transformation of the internet *away* from the participative gift economy, subversive of commercial interests, not so long ago celebrated by the libertarian ‘digerati’ (e.g. Barlow, 1996; Rheingold, 2000; Benkler, 2006; Jenkins et al, 2006). Now, wonders former Facebook data team leader Jeff Hammerbacher, ‘[t]he best minds of my generation are thinking about how to make people click ads’ (Vance, 2011). An infrequently asked question therefore is what accounts for the advertising system’s conquest of the Web? Put another way how did advertising come to appear as *the* most obvious way to extract monetary value out of data?

‘If we were sensibly materialist’, argued Raymond Williams (1980) in his discussion of the ‘magic system’ of advertising, ‘we should find most advertising to be of an insane irrelevance’. For nearly a century, social science and public discourse alike ‘have been preoccupied with proving whether or not advertising does influence an otherwise autonomous subject’ (Slater, 1989: 118). For (neoclassical) economics on the one hand, the prevalence of advertising hints of the possibility of irrational forces at work in the operations of a rational economy. In order then to safeguard the autonomy of the ‘rational choices’ that ground it, economics had to ascribe to advertising the strictly ‘supplementary’ (in the Derridean [1976] sense of the term) role of ‘conveying information’ (regarding the availability, prices and characteristics

of goods and services) to otherwise autonomous utility-maximizing consumers (e.g. Marshall, 1919; Nelson, 1974; Stigler, 1961). For Marxist-influenced social science on the other hand, advertising, with its claimed ability to illicitly substitute ‘sign value’ for ‘use value’, provides the hidden persuader, the generator of false needs required in order to smooth out capitalism’s endemic crises of overproduction (e.g. Adorno and Horkheimer, 1944; Marcuse, 1964; Packard, 1977). In what Lash (2007) calls our ‘post-hegemonic age’, where the routines of everyday life are increasingly organized and colonized ‘from within’ (ibid: 59) by the powers of the algorithm, Williams’s (1980) question of how the advertising system’s magic actually works, appears to have a clear and unambiguous answer.

Much has accordingly been made (by critical management studies among others) of the growing sophistication of digital advertising, and of its claimed power to stoke and re-shape the consuming desires of the subject (e.g. Arvidsson, 2005). The much-vaunted ability of the current generation of tracking and targeting algorithms to match advertisers with *individual* internet users is typically contrasted (by advocates and critics alike) with the ‘wastefulness’ of the traditional (mass) advertising on billboards, newspapers and television. The increasing deployment of algorithmic personalisation technologies, notes Eli Pariser (2011), facilitates the emergence of ‘filter bubbles’, intellectual environments which select and deflect information sources, giving their inhabitants a distorted picture of both the online and the offline worlds. Within such filter bubbles, technological lore has it, precisely targeted adverts will be both relevant and timely and no longer experienced as unwelcome diversions. As Cathy O’Neil (2016:69) (critically) sums up this line of argument, until now ‘most people objected to advertisements because they were irrelevant to them. In the future they ...[will no longer] be’. In line with this kind of narrative, Cambridge Analytica, a (now defunct) British data mining and analytics *cum* political consulting firm, has been credited (if that is the right word) with using Facebook data to surreptitiously influence voters in a number of elections across the world including the 2016 US Presidential election and the UK 2016 EU referendum (e.g. BBC, 2018a).

It is evident that whatever we might call the ‘digital advertising system’ at the very least *aspires* to the invidious post-hegemonic powers described by Lash (2007: 59) and others. Wendy Chun (2006: 9) has cautioned however against the tendency to, as she put it, accept ‘propaganda as technological reality, and [to routinely conflate] possibility with probability’. Indeed, there is, so far, little evidence that user tracking and targeting has increased effectiveness (e.g. Hoffman, 2017; Blake et al, 2015)) and, on the whole, users’ experience of digital adverts remains akin to that of an infestation (Serres, 2010): Pop ups and banner ads obscure a site’s content; interstitials appear to delay the loading of webpages. Ads open behind the main window or masquerade as search results or as content native to the site (‘advertorials’). ‘Videos [have] a way of popping up and starting to play unbidden; ... the stop button ... [is] the tiniest of all, and often oddly located. And something of a ruse as well; if you missed hitting it directly, yet another website will open with yet more ads’ (Wu, 2016: 324). In addition, it is becoming clear that the layers of complexity which behavioural advertising is introducing to the code of any website is increasing loading times –on average by ‘five seconds or more’ in 2015– and often causing the system ‘to slow or freeze... sometimes preventing the page from loading altogether’ (ibid). It is therefore hardly surprising that digital advertising has long been shadowed by practices and technologies of ad blocking. As far back as the 1990s, users of Prodigy (an early online service provider) would often paste a strip of paper at the bottom 1/5<sup>th</sup> of their screen, the space where adverts appeared at the time (see Introna, 2014). More recently the ever-expanding usage of ad blockers - which prevent ads from loading and also block tracking information - is said to threaten the ‘free’ nature of the Web itself prompting moral denunciations (‘using an ad blocker is stealing’)<sup>iii</sup>, accusations of blackmail (payments to get on ad blocker ‘whitelists’) and

technological countermeasures. Furthermore, because of various ‘viewability’ problems (such as the ad not loading on time) and, more importantly, the burgeoning business of ad fraud (in which adverts are ‘shown’ to bots) only a relatively small percentage of targeted ads may be actually shown to humans (e.g. Hoffman, 2017). But of course, there are signs that digital ad platforms like Google are increasingly using advertising precisely for, what we might call, its nuisance value rather than in the hope of enticing consumers to the product being promoted. As Lyor Cohen, Youtube’s current (2018) Global Head of Music, set out the company’s ‘frustrate and seduce’ strategy, Youtube intends to ‘frustrate music listeners by playing more adverts’ in order to ‘seduce’ them into paying for its new subscription service (e.g. BBC, 2018b)<sup>iv</sup>. Which gives a rather different inflection to the notion of ‘targeted advertising’ and appears to also ‘frustrate’ the market logic of RTB.

## DISCUSSION

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The picture of the ‘marketplace of attention’ (Webster, 2008) that emerges from even such a cursory sketch, is less that of an ‘algorithmic configuration that organizes the encounter of calculative agencies’ (Callon and Muniesa, 2005: 1242) and more akin to that of an ecosystem in the process of transition (cf Parikka, 2010). As already mentioned or alluded to, Serres (2007) concept of the ‘parasite’ - from the Greek *para* (παρά), ‘beside’+ *sitos* (σίτος) ‘wheat’ and *sitéúō* (σιτεύω) feed/fatten (Chambers, 2003) - can provide us with a suitable point of entry. As is well known (e.g. Brown, 2002; 2004; Brown and Stenner, 2009; Pasquinelli, 2008) Serres invokes three different, but in practice closely interrelated uses of the term: the biological parasite, as an organism that lives off another organism; the social parasite, as a free loader or uninvited guest; and the communicative parasite, as the static noise that interferes with and distorts communication. The ‘logic’ of parasitism is that of taking without giving: in Serres’s (2007: 80) paraphrasing of Marx, it is that of ‘abuse value’ (see also Brown, 2002). For Serres, parasitism is a typical, if typically unacknowledged, feature of all forms of social, economic and technological mediation. By means of their on-going interferences and interceptions, parasites introduce complexity into the systems that they have come to inhabit: ‘The bit of noise, the small random element, transforms one system or one order into another’ (Serres, 2007: 21).

Viewed in this light, RTB and the machinations of digital advertising can be seen as ideal typical manifestations of parasites jockeying for position. Adverts appear uninvited in online communications, searches and social interactions in order to siphon away and divert attention. They come in-between and frustrate the desire for speed, immediacy and direct access. The ostensibly ‘minimal actions’, ‘noise’, and ‘small fluctuations’, that they introduce, have set in train systemic changes in their hosts. Were we to follow Serres in his predilection for metaphors and examples that dis-respect long-established science-fable distinctions, then one way to describe the apparent direction of the changes catalysed by the advertising parasite, would be as akin to the actions of *Cymothoa exigua*. *Cymothoa exigua*, better known as the ‘tongue-eating louse’ parasitizes on fish, typically entering through the gills and attaching itself to the tongue (e.g. Brusca and Gilligan, 1983). Once in position, the parasite drains the tongue of blood causing it to atrophy. The parasite’s body remains attached to the muscles of the tongue-stub and begins to function as a substitute tongue. The fish now depends for its survival on the parasite as much as the parasite depends on the fish. Perhaps, we could see in *Cymothoa exigua* a parable of the on-going commercial appropriation of the ‘voices’ of the internet by commercial interests (Post Brothers and Fitzpatrick, 2011). This appropriation, in turn, creates various forms of mutual parasitism: since advertising parasitizes on ‘free’ content and ‘free’

content parasitizes on advertising neither is said to be able to survive without the other.

Parasitical inhabitations, Serres (2007) notes, commonly take the form of chains where what is a parasite in one relationship frequently re-appears a host in another. As we have seen, in digital advertising, as in elsewhere, entities are always in transition from host to parasite and vice-versa. We might even speak of a constant struggle among parasites and would-be parasites (platforms, devices, fraudsters, bots, extremists, advertisers, etc) for the best positions from which to intercept and divert the greatest number of circuits: money, attention, etc. (Roque, 2010: 35). In this environment the various techno-logical fixes deployed, rather than re-storing identity and means-end rationality, further add to the complexity and the proliferation of 'host-parasite' and 'parasite-host' transformations.

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<sup>i</sup> Recent targets of this zeal have included Facebook images of the neolithic Willendorf Venus (as 'pornography' e.g. Chigne, 2018) and of the US Declaration of Independence (as 'hate speech', e.g. BBC, 2018)

<sup>ii</sup> E.g. <https://www.statisticbrain.com/attention-span-statistics/>

<sup>iii</sup> E.g. Ad blockers 'are no different from a lock-picking kit for burglars or a lead-lined bag for shoplifters...Every time you block an ad, what you're really blocking is food from entering a child's mouth' (Piltch, 2015).

<sup>iv</sup> 'You're not going to be happy after you are jamming Stairway To Heaven and you get an ad' (Lyor Cohen quoted by the BBC, 2018b).