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Disinformation and fake news as externalities of digital advertising: a close reading of sociotechnical imaginaries in programmatic advertising

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ABSTRACT

Disinformation researchers suggest that the digital advertising market has been used to divert brand budgets to monetise misinformation and fund fake news. Despite mounting evidence from journalists and whistleblowers, it remains unclear why advertisers and marketing academics overlook the harmful effects of online advertising. This study explores the techno-social imaginaries that frame harmful outcomes as externalities unrelated to the market. By analysing how marketing agencies describe programmatic advertising, three imaginaries emerge: (1) an ideological justification, (2) the disassociation of adverts from publishers, and (3) selecting marketers as the sole stakeholders. The sociotechnical imaginaries conceal likely outcomes, including ad fraud, the proliferation of AI-generated synthetic users (social bots), and the monetisation of incendiary content. The article urges digital marketers to establish oversight over advertising technology firms (AdTech).

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Programmatic advertising; digital marketing; sociotechnical imaginaries; market shaping; disinformation; fake news

Introduction

Disinformation researchers claim that digital advertising has become a vehicle for circulating and amplifying disinformation (Ahmad et al., 2024; Braun & Eklund, 2019; Guilbeault, 2018; Papadogiannakis et al., 2023) by diverting marketing budgets to fund incendiary influencers (Bahar & Hasan, 2024) and fake news outlets (Braun, 2023; Mills et al., 2019). According to industry reports (Skibinski, 2023), digital advertisers unknowingly contribute $2.6 billion annually to fake news publishers in the US. Moreover, state-sponsored operatives use digital advertising technologies (AdTech) without disclosing the source of their funds to camouflage their digital influence campaigns on social media (i.e. 'dark money' Nadler et al., 2018), to the point that they are often indistinguishable from legitimate advertisers (Ghosh & Scott, 2018).

Tech firms have policies to address disinformation on their platforms (Google, 2019; Meta-Facebook, 2021), like moderating content and demonetising channels. However, Roberts (2016, 2021) identified that commercial content moderation is plagued with conflicting interests when platforms have vested interests in making content go viral (Thach et al., 2022). Fogden (2022), a journalist, found that while Google claims to counter

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disinformation, its actions addressing the loopholes of its profitable advertising business appear reluctant and inadequate. One reason is that even when platforms demonetise troublesome publishers, they get to keep the ad revenue (Elliott, 2022).

When previous research claims that digital advertisers unwittingly fund fake news (Guilbeault, 2018; Herasimenka et al., 2023; Wood & Ravel, 2018), researchers point to structural problems of how the digital ad market is configured (Braun, 2023; Dholakia et al., 2023; Hughes & Waismel-Manor, 2021). However, this academic dialogue occurs primarily in non-marketing journals (Kapantai et al., 2021; McGuigan et al., 2023; Weikmann & Lecheler, 2022), with only a tiny fraction of disinformation research occurring in marketing journals (DiDomenico et al., 2021, 2022). Although exceptions exist (Dholakia et al., 2023; Mills et al., 2019), marketing academics and practitioners pay little attention to the relationship between disinformation and digital advertising, and when they do, they treat it as 'inefficiencies' (Gordon et al., 2021) for which neither advertisers nor platforms are responsible.

From a market studies perspective, while previous research has examined how practitioners shape markets by steering a particular vision of the future (Bajde et al., 2022; Beckert, 2021; Pollock & Williams, 2010), we know less about how representations stabilise markets by decoupling undesirable market outcomes and framing them as externalities unrelated to the focal market. For disinformation research, this divide reveals a gap in our understanding of the sociotechnical practices within 'ad markets' that catalyse the emergence of undesirable market outcomes while also distancing them from digital marketers. This opposition raises the following research question: *Why do digital marketers and advertisers continue to fund the spread of misinformation through their practices while appearing to disregard the undesirable outcomes that existing advertising market practices perform?* This paper argues that sociotechnical imaginaries can help uncover the representations that dislodge disinformation from digital advertising.

Lukka and Vinnari (2014) offer a productive approach that distinguishes between *domain* and *method* theories. *Domain theories* refer to substantive subjects or topic areas in a field, like sustainability or tourism. In contrast, *method theories* are meta-level conceptual frameworks for studying substantive issues, like phenomenology or assemblage theory. The domain theory here is *disinformation research*, an emerging field focusing on media manipulation, conspiracy theories, and orchestrated deception (Bennett & Livingston, 2020). The method theory is *Constructivist Market Studies (CMS)*, a theoretical perspective examining how markets are continuously in the making (Karnøe et al., 2022; Kjellberg & Murto, 2021; Nøjgaard & Bajde, 2021), recursively performed through arrangements or assemblages of socio-material practices (Chataigner, 2023; Fligstein & Dauter, 2007; Mason et al., 2015). Within CMS, one stream studies the representational practices that shape interpretations of what a market is and how it works (Murto, 2021; Palo et al., 2020; Ryan et al., 2023). This method theory examines the process of disentangling markets from undesirable outcomes.

Conceptual framework

Domain theory: conceptualizing the production and circulation of disinformation in digital advertising

Disinformation is a polysemic term that broadly refers to an orchestrated campaign that spreads misleading and adversarial narratives for political, military, or commercial

purposes (Bennett & Livingston, 2020; Diaz Ruiz & Nilsson, 2023, p. 18). The academic literature on disinformation research claims that digital advertising funds disinformation and fake news (Braun et al., 2019; Giansiracusa, 2021; Mills et al., 2019; Rubin, 2022; Samuel et al., 2021), and NGOs and policy institutes back such claims (Ahmad et al., 2024; Decker, 2019; Lewis, 2018Nadler et al., 2018). Journalistic reports show that advertisers are unknowingly funding disinformation (Fogden, 2022; Hananoki & Kann, 2023; Silverman et al., 2022), and whistleblowers warn that platforms are aware of this (Haugen, 2023).

As the evidence accumulates, it appears online disinformation is highly profitable because it feeds on marketing budgets. However, it is unclear why advertisers take insufficient steps to prevent their budgets from funding fake news. Some attribute the phenomenon to the greed of advertisers (Giansiracusa, 2021; Samuel et al., 2021), how bad actors exploit vulnerabilities in the system (Gordon et al., 2021; Mills et al., 2019Nadler et al., 2018), or the infrastructure of the digital advertising market (Ghosh & Scott, 2018; Wood & Ravel, 2018).

Giansiracusa (2021, p. 151) declared that part of the reason for the growth of the fake news industry is the 'avarice of advertising' because platforms like Google Ads are aware that their algorithmic advertising systems divert ad revenue to fake news but choose inaction (Silverman et al., 2022). Therefore, commentators call advertisers to take responsibility, urging 'the advertising industry to make the sort of judgments – about truth and falsehood, acceptable and unacceptable speech – that have long been the domain of journalists' (Braun & Eklund, 2019, p. 19). The avarice argument states that advertisers are aware of the consequences of their actions but choose to ignore them.

A second explanation is the vulnerability of media business models. For Marwick and Lewis (2017), 'Media's dependence on social media, analytics and metrics, sensationalism, novelty over newsworthiness, and clickbait makes them vulnerable to media manipulation'. The overreliance on online traffic directed by platforms makes news organisations compete with fraudulent publishers for a share of advertising revenue (Braun & Eklund, 2019). Legal scholars have proposed frameworks to regulate digital advertising, at least for political advertising (Wood & Ravel, 2018).

A third stream focuses on the infrastructures that frame rational action within the ads market. For Ghosh and Scott (2018, p. 3), the toolbox for precision influence campaigns 'aligns the economic interests of platforms and advertisers' regardless of 'whether they are pushing retail products, news stories, political candidates, or disinformation'. These tools include behavioural data collection, programmatic digital auctions, predictive analytics, social media management software, and algorithmic distribution systems. The extensive use of predictive analytics and user surveillance on social media (Zuboff, 2023) aligns with the business models of digital platforms (Diaz Ruiz, 2023), incentivising their circulation.

Some commentators argue that at the core of advertising's disinformation problem is 'programmatic advertising', a complex system of real-time bidding that pits advertisers in a bidding competition for ad space allocation (MacKenzie et al., 2023; McGuigan, 2023). For instance, Braun (2023, p. 261) argues that, far from being unexpected, disinformation is a predictable consequence, an 'expected feature', or a 'normal accident' of programmatic advertising, describing the problem as follows: 'Rather than a single, highly visible, catastrophic event, they are millions of tiny, fleeting, sometimes comical occurrences that

get ignored or laughed off but collectively finance tens of millions of dollars in disinformation and conspirational bile, while bleeding billions of dollars away from reputable publishers and legitimate sources of news, destroying our privacy in the process' (Braun, 2023, p. 267). Some commentators characterise the role of programmatic advertising in funding fake news as a 'Pandora's box' (Fogden, 2022), a metaphor for a cursed box that brings about harmful consequences once opened.

The difference between these interpretations matters. While Braun's (2023) notion of 'normal accidents' evokes an unintended error or bug that is part of the market system, Giansiracusa's (2021) 'avarice of advertising' argument frames the phenomenon as intentional. Moreover, Marwick and Lewis (2017) argue that broadcast media, social media, and advertising have co-dependent business models that feed upon each other. And, finally, Fogden's (2022) 'Pandora's box' argument imagines disinformation as a harmful consequence of a poorly designed market system. All these interpretations portray undesirable outcomes differently, and thus it is essential to have a method theory that examines how these representations shape markets.

Method theory: representational practices and sociotechnical imaginaries

The method theory stems from a constructivist perspective on markets (Callon, 1998b; Kjellberg & Murto, 2021). This substantial and diverse body of knowledge examines how the practices of market actors like buyers and sellers, as well as activists, academics, and governments, continuously construct markets, shaping them. By attending to the performative effect of economic representations (Gond et al., 2016; Mackenzie et al., 2007; Mason et al., 2015; Palo et al., 2020), this research stream emphasises their generative capacity to direct attention, construct meaning, and establish boundaries (Beckert, 2021; Mützel, 2021).

Representation means portraying or depicting objects, people, and events through devices and mental constructs (Diaz Ruiz & Holmlund, 2017, p. 66). In CMS, market representations are 'coherent yet incomplete views of what a market is and how it works, either at present or in an alternative future' (Diaz Ruiz & Kowalkowski, 2014, p. 1027). Representations can be studied as practices by focusing on how routinised sayings and doings reify images of markets and how they work (Kjellberg & Helgesson, 2006, p. 846, 2007, p. 143). One type of representational practice is *sociotechnical imaginaries*, 'collectively imagined forms of social life and social order reflected in the design and fulfilment of nation-specific scientific and/or technological projects' (Jasanoff & Kim, 2009, p. 120), although these same authors later clarify that they 'can be articulated and propagated by other organized groups, such as corporations, social movements, and professional societies' (Jasanoff & Kim, 2015, p. 4).

Rankings (Pollock & D'Adderio, 2012), financial charts (Preda, 2006), and even pieces of financial mathematics (MacKenzie, 2006) embed sociotechnical imaginaries that shape markets by steering how various market actors (newcomers, regulators, and other market participants) interpret what types of exchanges are feasible in a particular market (Beckert, 2021) and set boundaries with other markets (Chimenti, 2020; Kjellberg & Olson, 2017), framing the actions managers consider valuable and worth pursuing (Nilsson, 2021).

Previous empirical research demonstrates that representational work can be *performative* when it shapes the ideas it ostensibly refers to (Diaz Ruiz, 2022; du Gay, 2010; Gond

et al., 2016; Mason et al., 2015). For example, Palo et al. (2020) examined how the myth of Santa Claus organises the construction of a tourism destination in Finland, performing the market by providing multiple opportunities to enter a magical world reified across real-world locations. Their study shows how multiple speech acts coordinate market action by stepping through the boundaries of imaginary-real distinctions. Another example is using quotas to frame how much fish can be harvested and sold (Holm & Nielsen, 2007). The selection of consumer segments is a representational practice that shapes markets by using certain consumer groups to justify managerial action (Diaz Ruiz & Kjellberg, 2020; Murto, 2021; Nilsson, 2020; Stigzelius, 2018). Finally, trends and forecasts can be used to organise emerging markets by framing the viability of products in the future (Sadowski & Bendor, 2019).

Hagberg and Kjellberg (2015) investigated how product bundles can obscure the price of individual items. They examined how authorities compare the prices of a typical shopper's basket across food retailers, finding that the comparison requires multiple translations to assemble individual product prices into a 'typical' basket. From a theoretical perspective, Hagberg and Kjellberg (2015) show that price representations reveal as much as they hide, bringing certain market practices to the fore while obscuring or hiding others. Doganova and Karnøe (2015) made a similar point when they examined the controversies and environmental concerns of the markets for clean technologies, suggesting that representations can hide or obscure controversies.

Representing undesirable market outcomes as externalities or overflows

Markets are often named by categories or labels describing a type of product one pays for (Durand & Khaire, 2017) or its key benefits (Mützel, 2021). For example, the 'advertising' market represents the exchange of adverts between publishers and advertisers. It is tempting to think that the only thing exchanged in these markets are adverts, but market categories do not always include everything because hidden costs or byproducts exist. For example, mink fur was a glamorous luxury category until it became associated with animal cruelty (Olson & Goodnight, 1994). Advertisers often decouple product categories from undesired consequences, like disassociating tobacco from cancer (Apollonio & Bero, 2007) or fossil fuels from climate change (Ferns et al., 2022).

In economic theory, markets are assumed to disclose and list all the costs and outcomes associated with exchanges, and all the involved parties must agree on their costs and benefits (Laffont, 1989). The ensuing valuation determines whether participants exchange products and services at a given price. However, prices rarely capture all the costs of an exchange, and neither do all the outcomes. As Lusch (2017, p. 322) wrote, 'The price paid in a market exchange is only a relatively small part of what one pays and what other actors in the system pay'. Laczniak (2017) refers to this obfuscation process as 'the hidden costs of hidden costs', which means that market participants are often unaware of the costs imposed upon third parties, society, and the environment. This problem is especially salient for digital platforms where it is not self-evident what participants exchange (Jacobides et al., 2024). For example, users sign up to social media seemingly for free but also give away their user data.

The costs that market exchanges impinge upon others are called *negative externalities* (Varadarajan, 2020), of which environmental pollution is a classic example (Shive et al.,

2020). As Hardin (1968) argued in 'The Tragedy of The Commons', private self-interest and social benefit do not always align. For Hardin, shared resources will inevitably be overused due to individual rational self-interest, imposing undue societal costs. However, adverse effects can sometimes be disentangled, for instance, there is an active effort to hide harmful effects, as the tobacco industry did for decades (Apollonio & Bero, 2007; Smith et al., 2011).

Whereas research in CMS contends that markets should be studied along with their societal effects (Swedberg, 1991), one limitation is that externalities frame negative effects as unrelated outcomes. In 'An Essay on Framing and Overflowing: Economic Externalities Revisited by Sociology', Callon (1998a) proposes notions of 'framings and overflows' to correct the conceptual limitations of externalities. *Framings* establish boundaries of what an exchange entails, and *overflows* are the unavoidable shortcomings of framing efforts, which are fragile and prone to failure. 'The frame establishes a boundary within which interactions – the significance and content of which are self-evident to the protagonists – take place more or less independently of their surrounding context' (Callon, 1998a, p. 249), partly because connections with its surroundings require 'translations' that often result in 'leaks', and thus, 'overflows are the norm and framing is expensive and always imperfect' (Callon, 1998a, p. 252).

Whereas externalities are outside the scope of economic analysis, overflows are an integral part of markets (Christensen & Skærbæk, 2007; Kastberg, 2014). The difference matters because while externalities can only be mitigated, overflows can be redirected (Christensen & Skærbæk, 2007).

Research context and method

This investigation examines the framing of programmatic advertising and conceptualises why digital marketers can disassociate themselves from spending advertising budgets on fake news. Building upon representational practices in CMS, the study reports a close reading of market devices in programmatic advertising prone to overflows.

An overview of programmatic advertising

The Internet has become predominantly an advertising business (McGuigan, 2019, 2023). The digital advertising market sells, allocates, and delivers billions of adverts targeting individual users, worth USD 740 billion worldwide (Statista, 2024). It includes multiple marketing techniques, like the optimisation of search engine results (search advertising), sponsored content on social media platforms (social media advertising), banners and displays on third-party websites (banner advertising), targeted videos (video advertising), and paid digital classifieds (classifieds). As users visit websites, the accompanying banners are the outcome of a complex digital system that runs in the background (MacKenzie et al., 2023). At its core is an automated market called 'programmatic advertising', which performs real-time bidding for ad space allocation (Lee & Cho, 2020; McGuigan, 2019, 2023).

Figure 1 illustrates the process of programmatic advertising. 'Publishers' are the outlets and content creators that capture an audience's attention. They offer their 'inventory', the online space that displays ads to the 'advertisers' willing to pay money to push their

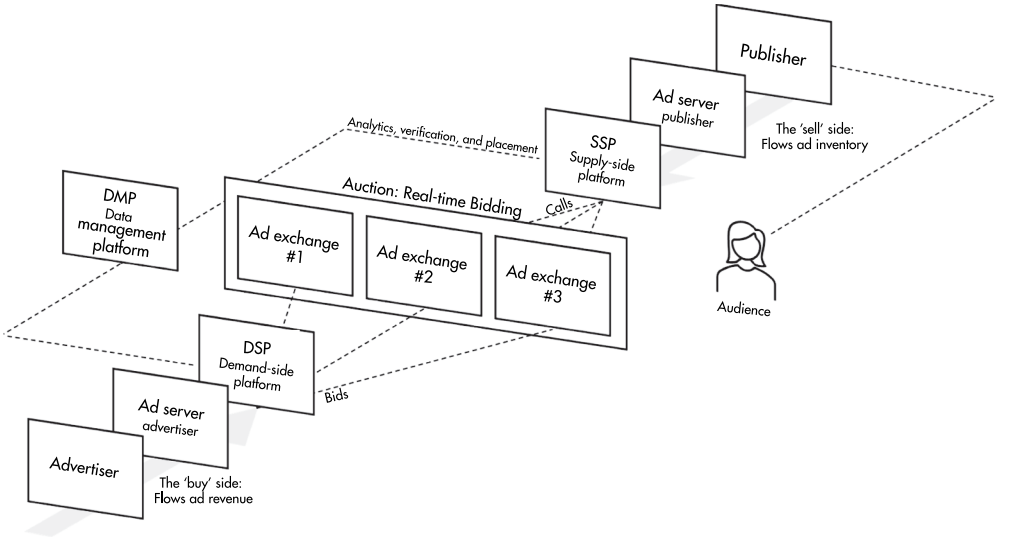

Figure 1. An overview of programmatic advertising.

message. Exchanges occur in real-time bidding (RTB), an automated auction in real time that announces an opportunity for advertisers to bid on inventory (MacKenzie et al., 2023). Requesting bids, pricing, and delivering ads occurs rapidly by the time a website loads up, and the highest bidder wins the right to serve the ad to a user. Demand-side platforms (DSPs) are tools that automate the purchasing parameters of the advertising process, and supply-side platforms (SSPs) enable publishers to set auction rules and pricing parameters for their inventory. Rapid bidding on this scale is only possible because the process is fully automated.

A close reading of sociotechnical imaginaries

Examining representational practices through market devices is a well-established research approach in CMS. Preda (2007) studied financial charts, one of the most popular investment tools in financial markets, to understand how devices represent trends and detect investment opportunities by visualising them through lines, figures, and numbers that make commodities transferable between contexts and places. Diaz Ruiz and Holmlund (2017) studied how market research reports are designed to guide managers when market researchers are absent, making them akin to maps that integrate landmarks with guiding. Pollock and Williams (2010) used industry analyses to understand 'promissory work', a sociotechnical imaginary that sets market boundaries by framing the expectations that guide business.

Building upon Pollock and Williams (2010, 2016), this study closely reads how devices represent an industry. The study focuses on 'how-to' guides in which aspiring marketers learn to operate in the digital advertising market. This approach was inspired by how MacDonald (2023) used instructive videos in which YouTube influencers explain to newcomers how social media algorithms work. MacDonald called the instructional materials 'lore videos' that set the narrative for how a platform algorithm works. 'Lore', from folk*lore*,

means traditional beliefs passed down through stories, shaping the cultural understanding of a community. The guides are *imaginaries* because they are narratives that set boundaries within a community of digital marketers.

The fieldwork consists of a curated selection of how-to guides published by marketing agencies. It involves in-depth readings of the most likely articles that prospective digital marketers might be served by identifying Google´s top results for a search query on 'how digital/programmatic advertising works'. Most articles are written by marketing agencies and published in a blog format. In addition to content produced by marketing agencies, the fieldwork includes guides published by Google and Amazon.

In every case, marketing agencies and official guides have the same basic information, but marketing agencies unpack the advice by making it easier to read, providing examples, and adding tips. Furthermore, the guides promise newcomers that they will learn how to operate in this market by explaining 'hacks' and 'tips' to optimise advertising. The articles were written in a friendly tone, divided into short paragraphs, and included multiple diagrams and visualisations. Their narrative presents digital advertising as a profitable market that is easy to start with but difficult to master. Table 1 shows the websites used for fieldwork.

Analysis

The analysis focused on the sociotechnical imaginaries that set the boundaries of programmatic advertising – framing what is included in a market exchange and what is excluded. The analysis was inspired by how Mützel (2021) examined industry reports to identify how consultants build imaginaries of the digital payment industry. The difference here is that the analysis compares the reports against claims raised by media scholars and journalists arguing that digital advertisers fund fake news. Consequently, the analysis addresses the following question: how do the how-to guides manage to ignore the most pressing pitfalls and risks of programmatic advertising?

One answer is that the how-to guides use promissory work to compare today's selective problems against tomorrow's imaginary solutions (Pollock & Williams, 2016, 2010). The analysis builds upon Sadowski and Bendor's (2019) study of the corporate narratives surrounding smart city technologies, showing that the imaginaries are simultaneously reactionary and visionary: they are reactionary by selectively emphasising some problems with current cities and visionary because they promise that technology will solve those specific problems. 'Selecting what to present and what to hide' is a core representational practice (Diaz Ruiz & Holmlund, 2017, p. 177); hence, determining which problems to highlight also conceals other problems. Silences emerge when reports ignore issues and fail to address the limitations the imaginary would bring to those existing problems if implemented.

From the domain theory – disinformation research – we know that researchers argue that advertisers are responsible for funding fake news websites. Therefore, the analysis focused on how digital advertisers can distance themselves from this accusation by identifying what problems the guides chose to emphasise. Building upon Sadowski and Bendor (2019), the guides create 'silences' that avoid sensitive topics and focus primarily on marketers' metrics (optimise traffic, reduce costs, and increase conversion rates). The analysis reveals three distinct imaginaries: (1) an ideological justification of why digital

Table 1. 'How-to' guides of digital and programmatic advertising.

Title	URL	Date	Type
Programmatic advertising explained: Types, best practices, trends	impressiondigital.com	28 February 2023	Digital marketing agency
What is Programmatic Advertising? The 2024 Guide	match2one.com	3 December 2023	Digital marketing agency
What is programmatic media buying?	adjust.com	8 January 2024 (accessed)	Marketing automation software
Programmatic Advertising 101: How It Works	seerinteractive.com	31 March 2021	Digital marketing agency
The Beginner's Guide to Programmatic Advertising	digitalmarketinginstitute.com	12 October 2021	Digital marketing education
Introduction to Programmatic Advertising	outbrain.com	1 October 2023	AdTech
What is Digital Advertising and How Does it Work?	smamarketing.net	28 April 2022	Digital marketing agency
What is digital advertising? A beginner's guide	advertising.amazon.com	8 January 2024 (accessed)	AdTech
How Digital Advertising Works	legal.yahoo.com	8 January 2024 (accessed)	AdTech
The Who, What, Why, & How of Digital Marketing	blog.hubspot.com	30 November 2022	Digital marketing education
The Ultimate Guide to Google Ads [Examples]	blog.hubspot.com	95.11.2022	Digital marketing education
What is Digital Advertising and Getting started as a Digital Advertiser	spiceworks.com	4 February 2021	Trade publication
What Is Digital Advertising? Types, Benefits & Examples (+Pro Tips!)	wordstream.com	31 May 2023	Advertising services solutions
Google Ads: What Are Google Ads & How Do They Work?	wordstream.com	8 January 2024 (accessed)	Advertising services solutions
Your Quick Guide to Paid Digital Advertising	magneti.com	7 September 2021	Marketing agency
What is Digital Advertising? Introduction to Digital Advertising	digitallogic.co	8 January 2024 (accessed)	Digital marketing agency
What is Digital Marketing and How Does It Work?	simplilearn.com	18 October 2023	Digital marketing education
What Is Ecommerce Digital Advertising and How Does It Work?	webfx.com	8 January 2024 (accessed)	Digital marketing agency
A Beginner-Friendly Guide to Google Ads for 2024	blog.hootsuite.com	17 October 2023	Trade publication
What Is Google Ads & How Does It Work? A Comprehensive Guide	semrush.com	11 October 2023	AdTech

advertising is good for the world, (2) the disassociation of branded adverts from the outlet that publishes them, and (3) the guides exclude any stakeholders beyond marketers themselves by making marketing performance metrics the predominant issue.

Findings

The sociotechnical imaginaries of programmatic advertising

Ideological justifications: the hegemony of the 'free' internet

The first representation frames the nature of the Internet as the most valuable human invention of all time, harnessing humanity's potential. At the core is the idea of the 'free' Internet, an imaginary in which capitalism is the backbone of the Internet. The argument is that people can have the free services offered over the Internet, including information, entertainment, and social connections, *if* they are willing to pay for them by consuming ads and giving up their privacy. The guides present the 'free' Internet narrative as

hegemonic, meaning it is dominant, monolithic, and unchangeable, arguing that the Internet would not exist without ads, hence representing Google as the pillar of the Internet (Newmann, 2024) and concluding that 'The Internet is built for advertisers' (Knibbs, 2017).

This idea does not argue that online knowledge should be free or that the Internet is meant to benefit humanity; quite the contrary, it portrays the Internet as a capitalist utopia in which tech entrepreneurs can become unimaginably wealthy by tapping into its monetisation potential. Indeed, nothing is really 'free' in this version of the Internet, just services that lure users' attention, monetising their clicks indirectly. The 'free' Internet is not a public good, and users should expect and accept costs, justifying harvesting user information such as browsing history, location, and search queries because advertisers promise that users will only be served relevant ads as they create ever-more detailed profiles.

The guides are initiatic because they promise to reveal the inner workings of the clicking machinery. Whereas the guides focus on a specific provider, Google Ads, they promise to reveal more than just how a specific firm operates. Instead, they pledge to uncover the secrets of online capitalism. Marketers interpret the algorithm like shamans do with spirit totems. The narratives cast the 'algorithm' as a mysterious entity that can be interpreted. While marketers cannot change the algorithm, they can interpret its design and call upon its blessing, 'making the algorithm work for you' (Beeson, 2024).

The imaginary is hegemonic because there is no alternative to the Google Ads market. The guides argue that marketers must learn to work within Google Ads' rules to unlock the secrets of the Internet. Since this digital infrastructure is so valuable, Google can afford a few hiccups. Some problems and bugs are expected to emerge occasionally in a complex system. In the ads market, serving ads to a few fake news outlets and diverting marketing funds to fund disinformation are acceptable 'normal accidents' (Braun, 2023), which can only be expected. The guides argue that they do not constitute evidence of a systemic failure or breakage.

Exchange boundaries: a marketplace for clicks

The guides offer a demarcation function, setting up the boundaries of a market exchange. The point of narrowly setting boundaries is framing what outcomes are part of the market exchange. In programmatic advertising, the exchange is between the ad space inventory that publishers present and the ads that advertisers put forward. Advertisers pay money to serve ads to target consumers wherever they are on the Internet. Under this boundary, platforms are silent intermediaries facilitating an exchange that would not occur otherwise. As Gillespie (2010) discussed, AdTech firms pitch themselves as platforms whose role is to distribute advertising without monitoring or policing content and outlets.

Marketers distinguish and operate in two distinct but partially overlapping markets: the *search market* and the *display network*. The most important of these two is 'search', in which the platform serves ads to respond to users writing search queries. The boundary of the search market is the search engine results in which users write queries to find relevant content across the Internet. The exchange is in selecting and purchasing 'keywords' to display to users, so the role of advertisers is identifying the most relevant keywords. The second market is the display network in which AdTech firms auction spaces for ads across the open Internet, triggering them once relevant content matches a target user.

According to the guides, Google Ads' display network extends over the open Internet, spanning most indexable web pages. The market exchange sets parameters for what types of users and publishers to select and at what cost.

By framing the exchange so narrowly, the AdTech platform is limited to serving ads to the target consumer, and thus, any other consequence is an externality unrelated to this market exchange. Although some guardrails exist for not displaying ads on objectionable websites, and not every website is allowed monetisation, the requirements are less than strict. Bradley Nickel, a blogger, found that monetising a fake news website is straightforward, 'it takes less than a couple hours to get a brand new site up-and-running, it doesn't technically break any laws, and these fake news proprietors can often "fly under the radar" by focusing on building evidence of credibility to net a few thousands bucks a month' (Nickel, n.d.).

Issues and stakeholders: a focus on marketer performance metrics

The guides justify the existence of programmatic advertising by addressing the needs of one specific stakeholder group: digital marketers. The problem is narrowly defined as whether marketing practitioners can meet their performance metrics for their organisations. AdTech firms promise to help marketers meet their metrics and achieve a 'return on investment' (ROI) as the overarching metric that should matter most for marketers. The guides equip marketers intending to maximise their ROI by fine-tuning levers and sliders on their dashboards. Marketers should assess the exchanges by optimising click-through rate (CTR) and cost per click (CPC).

The guides set up the metrics on a basic unit: the 'click', the act of selecting an option on a digital interface by pressing a button or touching a screen. Advertisers pay each time a click drives website traffic, established in the pay-per-click (PPC) metric. The guides explain in detail the metrics and how to interpret them. The guides also put forward calculation tools required to decipher and interpret whether the Google algorithm works *for* them. 'Algorithmic calculation' (Callon & Muniesa, 2005, p. 1242) circumscribes the group of calculative agencies that organise encounters by establishing the rules governing such encounters. In digital advertising, exchange occurs through an automated auctioning market that displays ads according to certain conditions. Advertisers programme their ads to target people or keywords, and they are automatically served when certain conditions are met, including whether the auction matches the maximum price.

Large sections of the guides explain the inner workings of Google Ads' algorithmic calculation. First, Google gives each ad a 'quality score', which assesses the type of ad, the keyword's relevance, the advertiser's history, and the expected click-through rate (CTR). Then, the auction automatically ranks each ad by considering the quality score and the maximum bid. Finally, the system serves ads automatically by displaying them with their partners in the ranking order. This complex calculation nudges marketers to maximise their quality score by complying with the criteria that the machine finds relevant.

Another proposition is assuring marketers that this digital advertising system is precise enough to serve ads to targeted audiences. In the digital advertising market, targeting means layering the parameters that yield the most optimal combination of impressions and clicks. There are two broad categories for targeting: people targeting and contextual targeting. People targeting means segmenting the type of user who will be served ads

based on a combination of a particular demographic grouping and certain interests called affinities or past online behaviour. Contextual targeting serves ads falling under a specific topic, like an advert for an upcoming music festival. It can also include keywords and placement in particular web pages or apps.

Loud silences: how sociotechnical imaginaries dislodge disinformation from digital advertising

The sociotechnical imaginaries of programmatic advertising disentangle this commercial practice from its harmful effects by creating *orthodoxy*, a dominant imaginary in which disinformation is a normal accident and, thus, acceptable. In contrast with the orthodoxy, the literature on disinformation is *heterodoxy*, an alternative narrative in which advertising exists within the public sphere and thus has a social function.

To exemplify the distinction between orthodox/heterodox imaginaries, one example is how the prevailing narrative about automobiles frames the car as a symbol of freedom, modernity, and social status. Meanwhile, heterodox narratives describe automobiles as polluting, congesting cities, and endangering pedestrians. Most technologies are accompanied by stories and narratives that set up the orthodoxy. For instance, Artificial Intelligence (AI) has been framed as a transformative catalyst for humanity. However, whereas the orthodoxy portrays AI as the next step in human evolution, Crawford's (2021) investigation of the hidden costs of AI, such as its planetary-scale extraction of natural and human resources, provides a counterargument to the hype surrounding it.

Figure 2 compares the orthodox and heterodox sociotechnical imaginaries of programmatic advertising, revealing differences in the outcomes that can be considered part of the advertising market. It also reveals the assumptions and silences that the dominant sociotechnical imaginary mobilises. The heterodox view reveals some risks or challenges of programmatic advertising.

Overflow 1: synthetic content and non-human clicks

The consequence of setting up a marketplace for clicks and using metrics such as click-through rates (CTR) is that what is exchanged and measured in this market are, precisely, clicks. After all, a click is profitable, even from a bot. As clicks become financially valuable, their source gains prominence because it can include non-human traffic and synthetic social media accounts called bots. These accounts simulate human engagement, such as likes, shares, and comments, but result from either automated software or multiple accounts of individuals hired to create them, called bot farms. Marketers can end up paying for engagement that is not only fake but also unproductive, as it does not lead to meaningful interactions.

Clicks are valuable, but engagement is even more so – comments are better than likes, and shares are better than comments. Bots can subscribe to newsletters, and AI-enhanced bots can post comments that appear to be human. They are a significant challenge in the digital advertising market as they generate inauthentic traffic to brands, committing ad fraud by monetising automated traffic. For example, fake accounts with a seemingly authentic track record may appear as authentic users after posting for some time. This situation creates an illusion of a highly engaged audience meant to trick the algorithm, which assigns a quality score and ranking to every post published on it. The algorithm calculates the

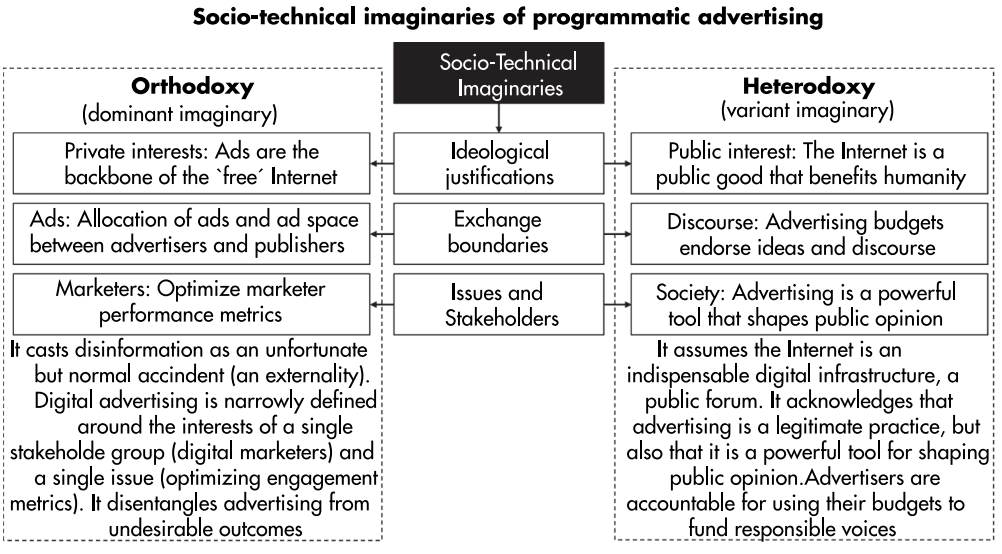

Figure 2. Sociotechnical imaginaries of programmatic advertising.

potential popularity of the post and the author. When a post is liked by several individuals with a higher following than the average user, it generates a signal for the algorithm to predict that the content is potentially viral and serve it to more users' feeds.

The issue of fake social media accounts is a significant concern. With the aid of AI models, it is possible to generate thousands of social bots mimicking human-like conversations. Malicious actors use social bots to manipulate perceptions or raise issues, for instance, to deface a political opponent or commit ad fraud. The result is inauthentic traffic populated by human-acting bots available for rent to conduct ad fraud and media manipulation campaigns at scale.

Overflow 2: incendiary content

When marketers pay for engagement, they get engaging content. The content that thrives online is often emotional, controversial, funny, and shocking; what it does not have to be is true. Existing research shows that content likely to go viral evokes strong positive emotions like amazement and awe or negative emotions like anger and anxiety (Berger & Milkman, 2012). Controversy thrives on social media (Venturini, 2022), especially when influencers post incendiary opinions, podcasts host norm-breaking demagogues, and fake news websites monetise incendiary content (Bahar & Hasan, 2024; Ulver, 2022).

By emphasising engagement metrics, advertisers financially reward the outrage machine by manipulating the algorithm to serve provocative content to users. This leads to controversial, incendiary, and polarising content precisely because this type of content receives engagement and, thus, money. A significant part of the issue concerning the growth of incendiary content on social media is the continuous effort of content creators to outperform themselves by catering to fringe but highly engaged audiences that demand more and more extreme content. For example, online pranks used to be harmless, but now they are dangerous and sometimes illegal (Swain, 2024).

Discussion

Theoretical contributions to the domain theory: disinformation research

The study examines how digital marketers distance themselves from allegations that their budgets support fake news and disinformation. One reason is linked to the sociotechnical imaginaries claiming that digital advertising is the pillar of the 'free' Internet, representing Google as the *de facto* digital infrastructure of the Internet. The imaginaries portray digital ads as crucial for the 'free' Internet, framing the Internet as a product of the programmatic advertising market rather than a public infrastructure. This imaginary justifies the emergence of negative consequences as bugs or aberrations that can only be expected in a complex system.

Sociotechnical imaginaries help marketers and platforms distance their commercial activities from negative social impacts, including funding disinformation, fake news, and incendiary content (Braun, 2023; Samuel et al., 2021). Part of this process occurs through 'promissory work' (Pollock & Williams, 2010) that assembles representations, focusing on a narrow issue: optimising marketer performance. The selection of digital marketers as the only relevant stakeholder group solidifies the negative effects as something unrelated to this community.

The market exchange is defined as the competitive allocation of ad space between publishers and advertisers. Such a narrow framing helps marketers ignore the consequences of their ad allocation because they only set the parameters of their purchases but do not conduct the exchange themselves. Meanwhile, AdTech platforms frame themselves as intermediates without responsibility for policing content. This circular argument casts the funding of fake news as surprising and unfortunate. Table 2 summarises how the sociotechnical imaginaries of programmatic advertising constitute representational work that helps frame the market while concealing its overflows.

Figure 3 shows how online disinformation can be conceptualised as either an externality or an overflow of programmatic advertising. Regarding the heterodoxic view, programmatic advertising is a 'market for clicks' that produces two overflows: inauthentic clicks and incendiary content. Inauthentic clicks generated by bots occur because the emphasis on engagement metrics and click monetisation leads to using bots to inflate traffic artificially. Bots are a problem for marketers because they constitute ad fraud and wasted advertising budgets. The second overflow encourages fake news publishers and other purveyors of disinformation to monetise their content through advertising revenue. As programmatic advertising is designed to monetise user engagement, the more clicks, views, and shares a piece of content gets, the more money it generates for the creator. To maximise their profits, content creators may produce sensational and controversial content that elicits strong emotions from their audience.

A common explanation for the rapid spread of disinformation on social media is that 'bad actors' can 'hack' or 'exploit' social media's advertising tools to disseminate malicious messages, including misinformation (Hempel, 2018; Paul, 2021). This narrative acknowledges that bad actors are responsible for disseminating disinformation by abusing advertising tools. However, as digital ad revenues have become the primary source of income, digital platforms have designed their advertising tools to create a marketplace for clicks prone to be flooded by bots, inauthentic clicks, and incendiary content.

Table 2. Sociotechnical imaginaries of programmatic advertising produce framings and overflows.

Representation	Sociotechnical imaginaries			Externalities	Overflows
Orthodoxy	Ideological justification	Private	Ads are the backbone of the 'free' Internet	Disinformation, hate speech, polarization, and fake news are surprising and unintended byproducts of digital advertising	
	Exchange boundaries	Narrow	Allocation of ad space between publishers and advertisers		
	Issues and stakeholders	Single	Optimizes marketer performance metrics		
Heterodoxy	Ideological justification	Public	The Internet is a public infrastructure		Expected outcomes of programmatic advertising include synthetic content, non-human clicks (bots), and incendiary content
	Exchange boundaries	Broad	Advertising shapes public opinion		
	Issues and stakeholders	Multiple	Advertising affects society and can be misused		

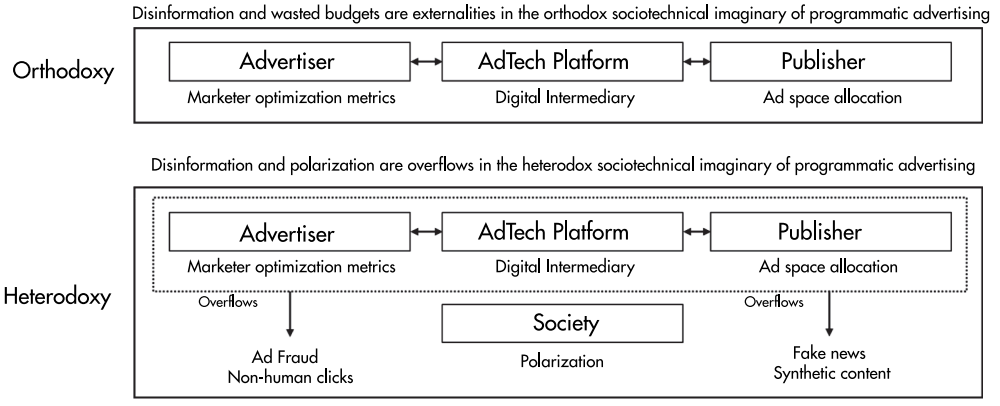

Figure 3. Disinformation is either an externality or an overflow of programmatic advertising.

Theoretical contributions to the method theory: constructivist market studies (CMS)

Sociotechnical imaginaries (Jasanoff & Kim, 2015) constitute representational work that stabilises markets and sets their boundaries. In terms of method theory, CMS, whereas previous work has explored the generative aspect of market representations (Hagberg & Kjellberg, 2015; Murto, 2021), this paper shows how sociotechnical imaginaries detach controversies from markets, setting aside harmful effects by framing them as externalities for which the market actors are not responsible. Consequently, the contribution extends previous research on market controversies (Doganova & Karnøe, 2015), framing them as sites and situations that are not entirely stable and where framings are the most prone to failures (Venturini, 2010).

Sociotechnical imaginaries are collaborative and future-oriented, creating myths – part real, part magical thinking – that an organised group can use to justify their common project (Palo et al., 2020). However, while previous research studied their role in steering action, this paper shows that imaginaries can hide as much as they reveal. Whereas the study of narratives in sociotechnical imaginaries is not new, what is new is learning how they detach from controversies, inoculating certain markets by 'negotiating protections against future criticism' (Diaz Ruiz & Kjellberg, 2020, p. 447). The study of orthodox/heterodox imaginaries in markets thus extends Doganova and Karnøe's (2015) research by showing how representations can deflect attention from the controversies at the heart of market-making.

As controversies in advertising remain unaddressed, the narratives become 'loud silences' that speak volumes through their absence. This means removing controversies from guides and training material perpetuates malpractice, yet the controversies (and their criticism) remain in the public domain. Therefore, extending Pollock and Williams (2016), this paper shows why promissory organisations carefully select what heterodox narratives to emphasise or ignore. See again Figure 3, which shows how, in digital advertising, the firms promising to help digital marketers achieve metrics ignore negative societal overflows.

The distinctions between *economic externalities* (Laffont, 1989; Varadarajan, 2020) and *sociotechnical overflows* (Callon, 1998a) are conceptually relevant. Overflows juxtapose several of the assumptions of externalities, including determining what outcomes can be decoupled from a market. In this case, the digital advertising guides frame fraudulent advertising outcomes as an externality that professional marketers can be surprised to find and, thus, are not responsible for their prevention. Whereas negative externalities are entirely detached from the market, overflows are seen as integral outcomes of the market, which means they can be corrected if channelled differently. For instance, if engagement optimisation remains the dominant frame of digital advertising, this framing can be rigged through fake accounts (social bots) or algorithm manipulation in the form of incendiary content. However, engagement does not need to be the endgame of digital marketing. If engagement metrics become less relevant, influencers will have a harder time exploiting the game marketers play, which today includes inflating follower counts and producing whatever content generates clicks, even if it relies on polarisation or synthetic users (bots).

While previous work distinguished between externalities and overflows (Callon, 1998a; Kastberg, 2014; Varadarajan, 2020), this paper shows how the distinction has ethical implications when externalities allow market actors to disentangle their actions from their consequences – framing externalities as unexpected and unrelated to their moralities and responsibilities. Extending Lusch (2017), this paper shows that representational practices can make malpractice acceptable by framing it as an externality, not an overflow. Sociotechnical imaginaries decouple undesirable outcomes from market exchanges, relieving marketers of their responsibility by making harmful effects seem surprising. Consequently, digital advertisers can send money to AdTech without thinking about how their ad spending impinges undue costs upon society. After all, a brand manager does not need to make a moral judgement on whether their brand is funding hate speech if they outsource control over where their ads are displayed.

Concluding remarks

As online disinformation becomes a defining feature of social media, it is essential to research whether and how digital advertising funds conspiracy theories and fake news. However, there is still much work to be done. As the digital advertising market grows, marketers must take responsibility for how their budgets are utilised to make informed decisions regarding the type of content they support. Therefore, digital marketers should advocate for more accountability from advertising and social media platforms. More research into how advertising funds fake news and misinformation is necessary to assert democratic oversight over AdTech firms to ensure that advertisements do not fund hate, while still protecting democratic freedoms.

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