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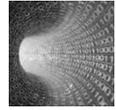
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Article

Conflicts of interest and incentives to bias: A microeconomic critique of Google's tangled position on the Web

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Abstract
Media scholars have studied and critiqued search engines – and in particular the dominant commercial actor, Google – for over a decade. Several conceptual and methodological problems, such as a lack of technological transparency, have made a detailed analysis of concrete power relations and their effects difficult. This paper argues that a microeconomic approach can aid media scholars in examining the complex interactions that underpin the dynamics of information visibility unfolding around the Google search engine. Using the concept of a 'three-sided market', we characterize the business model built around google.com as the foundation of the company's success. We then argue that the combination of search and advertising services, and in particular advertising *network* services, creates powerful incentives to orient the results page in self-serving ways, leading to fundamental conflicts of interest exacerbated by Google's dominant position in both markets. Based on search engines' mass media-like capacity to shape public discourse, we consider the identification of economic forces both as a prerequisite for a robust critique of the current situation and as a starting point for thinking about regulatory measures.

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Introduction

Scholars from humanities and the social sciences have studied search engines that forage the Web, index it and make it navigable through queries since the late 1990s (Introna and Nissenbaum, 2000). The principal thrust of these analyses has been the question of how these *machines* function as *media* – that is, how they orchestrate access to resources for understanding, debating and acting in the world. The particular fashion in which this is done, most importantly the *selecting* and *ranking* of results, has been considered crucial to how the Web contributes to political life in a large sense, both as a means of finding information and as a space for expression and deliberation. Search engines have consequently been framed as 'gatekeepers' (Diaz, 2008; Machill et al., 2008; Röhle, 2009), as a 'public good' (Goldman, 2010) and as 'capable of shaping public discourse itself' (Grimmelmann, 2010: 456), and have been analysed in terms of power, fairness, monopoly and so on. There have been at least four methodological and conceptual difficulties in these studies, however.

   First, the complex technology behind search engines, the huge quantities of data involved and the permanent battle waged against manipulation have made large-scale empirical analysis impracticable. Our knowledge of algorithms and data structures is largely conjectural and digital methods-based approaches (Rogers, 2004) are constantly obstructed by search providers. Second, scholars have struggled with adapting traditional concepts from media critique, such as *bias* or *manipulation*, to a configuration that organizes selection and evaluation procedures very differently than newsroom debates or editorial conferences. While humans are certainly responsible for 'editorial' decisions (Goldman, 2010: 462), these decisions are mainly expressed in the form of software which thoroughly transforms the ways in which procedures are imagined, discussed, implemented and managed. We are, in a sense, closer to *statistics* than to journalism when it comes to bias in Web search. The current debate on 'search neutrality', in which scholars, lawyers and lawmakers are attempting to define what 'fairness', 'abuse' or 'discrimination' could actually mean in this context, again shows how challenging the transfer of concepts from traditional mass-media critique can be (Grimmelmann, 2010). Third, the surface similarities between the business models of traditional media and Web search can be deceiving: while advertising indeed accounts for virtually all revenues collected by Google, the dominant actor and the focus of this article, the specific way in which business relations are organized implies very different configurations of both practice and power. Fourth, the larger economic embedding of Web search has become perplexing: Google offers a number of services that we would certainly qualify as 'mass-media related' (YouTube, Google Books, Google News, etc.), but also operates an online office suite, two operating systems, a cloud hosting service, two social networking sites, an email platform and a hardware manufacturer (Motorola). Google and other Internet companies defy familiar lines of industry segmentation, which poses significant analytical challenges.

In this article, we show how a close reading of 'Googlenomics' (Levy, 2009) can lead to a better understanding of the power relations crystallizing around Web search in light of these difficulties. While Google's business model is certainly unusual, it has the advantage of being well documented and having received considerable attention from economists.[1] Although the latter do not necessarily share the preoccupations of media scholars, we believe that a precise analysis of market configurations – and possible conflicts of interest – is necessary to assess certain political challenges, as well as to set the stage for possible responses in terms of regulation. In this sense, we hope to contribute to a political economy analysis of Web search (Van Couvering, 2008), but we focus on a microeconomic perspective rather than the more common macroeconomic approach.

Despite the many papers on search published by microeconomists (see Taylor, 2012: 2–4), these texts are rarely referenced in the emerging field of 'Web search studies' (Zimmer, 2010). Considering the often narrow focus and prevalence of mathematical modelling in microeconomics (Varian, 2010), this (mutual) indifference is somewhat understandable; we hope to show, however, that there is much to be gained from doing away with it. To accomplish this, we introduce microeconomic concepts and language as analytical means, starting out by describing Google schematically in terms of its business model and outlining a number of implications. Building on this groundwork, our main contribution is then to develop an interdisciplinary argument that shows how Google's combination of search and advertisement activities, in particular as an advertising *network*, creates conflicts of interest and incentives to bias result rankings that are more complex and, in many ways, more problematic than the issues identified by traditional critiques of advertisement in mass media. This situation is aggravated by a monopoly position that appears, through a microeconomic lens, not simply as a historical accident, but rather as a *structural* effect of the way in which the search market is currently organized. In short, the purpose of this text is to introduce microeconomic reasoning into a media scholarly analysis and critique of Web search by applying it to one instance of the leading Internet company's staggering multiplication of activities.

The argument proceeds in three steps: first, we use the concept of a 'multi-sided market' to examine the complex constellation of actors positioned around Google's search engine and to portray the company's advertisement services as part of a techno-economic approach to organizing market interactions and, consequently, the dynamics of information visibility online. Second, building on this analysis, we discuss the economic incentives to 'orient' search results in self-serving ways which follow from Google's double role as both search and advertisement business. Third, we present the company's dominant position in both markets as an expected consequence of the economic structures in place. We conclude by arguing in favour of a stronger consideration of microeconomic work in critical media scholarship, in particular when it comes to thinking about grounds, arguments and directions for regulation.

A three-sided market

The basic exchange structure of Web search consists of *users* querying the *engine* to find information made available by *content providers* competing for attention; *advertisers* hoping to grow their visitor numbers or sales finance the system. The results page is the

visible outcome of a dynamic procedure of 'query-results-ads matching' (QRAM), which we define as the ensemble of complex interactions between these actors taking place every time a search is launched: a user enters a query and thereby initiates the production of an ordered list of 'organic' results ('left side') and, if advertisers are targeting the query or its semantic neighbourhood, an ordered list of 'sponsored' ads ('right side'), which are served together on a single page. This matching between a particular query, particular results and particular ads implies a dense network of technical, communicational and economic transactions, some of which are happening in real time, and draws together a large set of fundamentally heterogeneous contributions. Latour's (2005: 199–204) critique of the seeming 'localness' of face-to-face interactions provides a valuable means to conceptualize the complexities involved in the QRAM process.

The QRAM

First, the QRAM is not *isotopic*, in the sense that different actors from different places contribute to the final result; wide networks of users, content providers, advertisers, engineers, managers, algorithms and so on weigh on every page generated. Second, it is not *synchronic*, because contributions are made at different times and imply different durations. The query, the contents, the architecture of the system, etc. – each element refers to its own temporality and labour investment. Third, the QRAM is not *synoptic*, because actors operate at varying levels of visibility. While search results and advertisements clearly point to the contributions of content providers and advertisers, neither the indexing and search mechanisms nor the elaborate ad-matching machinery are discernible at the surface. Fourth, the interaction is not *homogeneous*, because even a fully digitized information environment allows for numerous forms of materiality and agency; typing a query is not the same thing as writing a ranking algorithm. Fifth, the QRAM is not *isobaric*, because actors *press* with varying intensity into the process. The force and capacity to shape outcomes is not only unequally distributed between the principal actor groups organizing around a search engine – users, content providers, advertisers – but also inside these groups themselves: particularly well informed and skilful users have more control over result sets, content providers with higher spending on search engine optimization (SEO) will rank higher and advertisers with bigger budgets can attract more visitors. The interactions making up the QRAM are also in constant evolution because actors are learning how to maximize their gains: users become competent at phrasing queries, content providers learn about user interests and ranking procedures, advertisers develop skills in designing campaigns and Google itself constantly develops both its platform and its capacity to extract profits from it.

Three observations are crucial here: first, while these five points apply to almost any kind of interaction, the QRAM is characterized by a high degree of mechanization on all levels. Technological expertise, including both engineering and management-of-engineering skills, is decisive and Google is very successful in shifting interactions and negotiations with other actors onto the technological level: information crawlers, self-service interfaces, automated price-setting, quantified ranking, and similar are Google's means to approach its business relations as engineering problems. In a sense, the company is the technology-focused shark in a pond of content-focused fish. Second,

mechanization affects how 'information politics' – the 'mediated versioning of reality' (Rogers, 2004: 163) – play out in practice. In the context of 'big data', information is not *managed* through the conceptual and normative frameworks of journalistic practice or political deliberation but in terms of statistical ensembles, network centralities and frequencies of every kind (words, views, clicks, links, etc.). We simply cannot approach a search engine with the same critical toolset as we would use for, say, Fox News. But as scholars have argued (Zimmer, 2010), the political, ethical and cultural challenges posed by search engines are equally relevant to democracy if 'search engines are the new mass media' (Grimmelmann, 2010: 456). Third, if we accept that economic motivations are decisive in actors' decisions, we arrive at a level of analysis that can make the enormous complexities somewhat more manageable. While 'Googlenomics' are far from banal, studying them adds to an analysis of the concrete *power relations* (Röhle, 2009) developing around the dominant search engine. The microeconomic perspective we are advocating should, however, not be taken as a replacement for other approaches; rather, it should be seen as an *extension* that is supported by the observation that, while Google's technological parameters are essentially opaque, their business practices and relationships are to a large extent documented and traceable. What this form of analysis can provide is not a 'smoking gun' in the form of concrete cases of 'bias' or 'discrimination', but a framework for identifying and analysing *conflicts of interest* – areas where economic motivations exert pressure to act in ways that can be qualified as harmful in a 'mass-media' interpretation of Web search, such as when considering the distribution of visibility to information, and therefore to actors, ideas, opinions, resources, and so forth. We begin our analysis by sketching the concept of a multi-sided market and how it applies to Google.

Multi-sided markets

Microeconomics studies particular markets and focuses on the question of how resources are allocated based on individual participants' decisions and interactions (Varian, 2010: 1). It holds that there are different *types* of markets that organize exchange in different ways, leading to distinct dynamics. The notion of a 'multi-sided market' has been widely discussed by economists since 2000 (Rochet and Tirole, 2006) and has been applied to numerous ICT and media fields.[2] A multi-sided market consists of a *platform* that brings together at least two distinct groups of end-users. The attendance of end-users on one side creates a positive externality which makes the good sold on the other(s) more attractive, and vice versa. A platform that enables interactions between the parties can internalize this kind of externality – that is, make profits (Armstrong, 2006). For example, a daily newspaper sells content to readers, but the presence of 'eyeballs' also constitutes an externality that can be sold to advertisers. In order to succeed, the platform's owner has to get end-users on all sides 'on board', because the sides are linked: if one group is absent, the demand from the others tends to disappear. This leads to a 'chicken-and-egg problem' (Caillaud and Jullien, 2003): if there are no end-users on one side, users on the others have little incentive to get on board. According to Evans (2003), there are two main solutions to this problem: either to subsidize one group of end-users – this is what newspapers do by selling their product below its production cost – or to invest in one side

of the platform, as can be seen in Microsoft's practice of spending heavily on tools and support for software developers to help them build programs that make the platform more attractive. If these subsidies and/or investments are well designed, powerful network effects and economies of scale can lead to a situation in which the appeal of one side of the market is strong enough to capture the entire market on the other (Wauthy, 2008: 49). This asymmetric 'divide and conquer strategy' (Caillaud and Jullien, 2003) leads to ferocious competition between platforms and implies an important opportunity cost: by choosing to favour one side, the platform reduces its potential to take revenue from that side's surplus. This is why it is essential to choose the 'right' side – that is, the one that exerts the strongest externality on the others.

Google Search as a three-sided market

Google Search can be described as a three-sided market. On one side, Internet users query the engine to find information, entertainment, and so on. On a second side, Google indexes 'content providers' that want users to reach their websites. On the third side, advertisers are trying to attract visitors *beyond* the traffic received from 'organic' results. Google subsidizes two of the three sides and charges the third: Internet users search the Web for free; content providers are charged neither for getting indexed nor for the traffic they receive from organic results; advertisers, however, pay for every click and thereby finance the platform. Because neither users nor content providers are billed – at least, if we do not count the extensive and valuable data they provide as a form of payment – Google can reasonably hope that they will get on board.[3] Because users are present on the platform, advertisers have a strong interest in being there as well. In a way not vastly dissimilar from traditional media, the search engine provides an 'audience commodity' (Smythe, 1995) or, more precisely, what Van Couvering (2008: 196) has called a 'traffic commodity'. Advertisers pay because visits can be either 'transformed' into product sales, influence, etc., or 'resold' to another set of advertisers. This is why media sites, themselves financed by advertisement, regularly advertise on google.com.

But Google also invests in the first two sides by constantly improving its indexing and search technologies to make sure they *stay* on board, and while the net revenue flow obviously points into Google's direction, it is important to underline that the company spends significant resources on appealing to advertisers beyond simply providing 'eyeballs'. It does this mainly by persistently refining behavioural targeting through *extensive* data collection and by supplying a comprehensive set of free tools and services: the AdWords platform provides self-service access and significantly lowers the threshold to becoming an advertiser in the first place; Google Analytics and the different AdWords tools help with planning and evaluating advertisement campaigns and with understanding traffic patterns; and the AdWords Academy offers online and offline support and training.

Although Google's founders were initially reluctant to use ads to finance their operations (Brin and Page, 1998: 18), the company has become the largest contender in online advertisement, attracting a remarkable 44.1% of the global Internet advertisement expenditure in 2011 (ZenithOptimedia, 2011). Despite efforts to develop other revenue sources, advertisement still accounted for 96% of the company's approximately

$35 billion dollars of revenue in 2011 (Google Inc., 2011). The core of this business is the three-sided market organized around google.com, which is emblematic for the ways in which the company uses complex technological means to manage its business relationships.

Ad auctions

In 2011, AdWords, the pay-per-click advertising system for the google.com domain, was responsible for two-thirds of Google's revenues (Google Inc., 2011). Hailed as a particularly ingenious way of selling and serving ads (Levy, 2009), Google integrates a position auction model (Varian, 2007) into the QRAM, where advertisers place bids targeting specific queries. But ads are not simply ranked into the available slots according to the amounts bid for a user click; an algorithm assesses how well each ad's text and landing page 'fit' a query and this *quality score* feeds into the calculations determining both the placing of ads and the actual price paid by a company if a user clicks on their link. By integrating this score into the mechanism, Google can both maximize profits by ranking ads according to expected clickthrough rates – better 'fits' lead to more clicks – and coerce advertisers into adhering to the company's paradigmatic vision on how users perceive advertisements. Google operates on the belief that users find large numbers of irrelevant ads distracting or invasive (Wojcicki, 2007), and has consequently designed its system to privilege sales price over volume. This is why localization, profiling and data analysis are prominent: if Google can serve the most 'relevant' ads to users, it can grow clickthrough rates (clicks per impression) on its own site and conversion rates (sales per visitor) on advertisers' sites, leading to higher bids, and potentially making *more* money from *fewer* ads served.

Furthermore, the QRAM produces a fundamentally 'strange' commodity: not only are outcomes the product of complicated dynamics, but also their consumption generates value for the platform by providing automated feedback data that is used to tweak search *and* advertising. Both this double utility of behavioural data and the relevance factor for ad placements show how closely linked the search and advertisement components have become. This logic has been extended further into the Web through Google's strategy of 'concentric diversification'; that is, through expansion into technologically similar markets where the company can leverage its considerable know-how. The three-sided market built around the search service constitutes the financial, technological and data-stockpiling motor that fuels this transposition of the search/advertisement model into new markets and, most importantly for our argument, into ad *network* services.

The Ad networks

Although the largest part of Google's revenues comes from ads on google.com, the company has continuously expanded its reach as an advertisement network. The AdSense programme, which provides a technical and commercial infrastructure with little organizational overheads for publishers that want to serve ads on their sites, monetizes both clicks and impressions and uses a targeting mechanism that takes into account both visitor profiles and page contents. While ads are generally created by advertisers directly

inside Google's online interfaces, in 2008 the company opened the AdSense infrastructure to third-party vendors such as ad agencies. The acquisition of DoubleClick, also in 2008, brought this two-layered approach to larger customers, with Google serving either as a provider of technical infrastructure for content delivery and performance monitoring or, through the DoubleClick Ad Exchange and the Google Display Network, as a direct middle-man between publishers and advertisers. While the majority of revenues flow from selling clicks and impressions *directly* to advertisers, Google invests heavily in providing technical, logistical and commercial services to ad agencies which handle large clients' accounts and to publishers with their own ad sales teams. Formats were extended beyond the classic text boxes years ago, and now include multimedia, mobile and even TV ads. Having started out with services for micro-advertisers, the company has been working its way up to bigger clients by adapting its considerable expertise in infrastructure (serving), information processing (tracking and targeting) and intelligence (analytics) to the practices of a more traditional, less distributed part of the advertisement world. But by constantly expanding the reach of its products and services, Google plays an increasing number of roles that produce a complicated network of relationships marked by various conflicts of interest. As a *publisher* that serves ads on its own sites, Google competes with its AdSense partners, and as a *reseller* of advertisement space, it competes with the ad agencies that work with the AdSense and DoubleClick serving platforms. These are complicated and unusual relationships that are difficult to untangle. According to Devine (2009), the regulators approving the purchase of DoubleClick in 2008 underestimated the implications of this acquisition and created the conditions for the emergence of a monopoly in the online advertisement market at large – a suggestion which seems to be confirmed by current numbers (ZenithOptimedia, 2011).

Our analysis will focus on the conflicts of interest resulting from this multiplication of roles that relate directly to the results page. If search engines are indeed mass media that shape our appreciation of the world, the economic incentives to orient search results are highly significant, given Google's global market share.

Incentives to bias

The most debated critical question related to search engines is certainly that of bias (Diaz, 2008; Introna and Nissenbaum, 2000; Goldman, 2010). After a quick assessment of what is commonly addressed with this term, we approach the question from the standpoint of microeconomic theory and show how specific *incentives to bias* arise from Google's combination of search and advertisement.

Bias

The question of bias rises from the fact that search engine results are *selected* and *ranked*, and thereby 'give prominence to some at the expense of others' (Introna and Nissenbaum, 2000: 169). This is how they function as active 'intermediaries between content and users' (Röhle, 2009: 120), as 'attention lenses' (Grimmelmann, 2010: 435) and, ultimately, as *media*.

A distinction can be made between *systematic* bias, where an engine favours certain types of sites by designing and configuring indexing and ranking mechanics in certain ways, and *selective* bias, where individual sites are promoted or penalized. The first type refers to what Grimmelmann (2009) has called the 'Google dilemma': a search engine that does not select and rank would be useless, and no imaginable mechanism could dodge the deeply political effects of information arbitration. There is no search without bias. However, one can certainly question a company's design decisions and their 'editorial' effects, and Google has indeed been criticized for its focus on the *popularity* of a site rather than the richness of its content (Diaz, 2008; Introna and Nissenbaum, 2000).

Concerning the second type of bias, one could imagine that competitors may be manually removed or penalized, a practice that Google is regularly accused of. Over the last years, the company has conceded on several occasions that manual intervention is now indeed a standard practice. While manual removals or penalties have been publicized for some time, confirmation that individual sites are whitelisted for certain metrics came much more recently (Sullivan, 2011). Would Wikipedia be classified as a 'link farm' otherwise? In line with these practices, Google has started to talk about results in terms of 'opinion' (Metz, 2010).

This distinction between two types of bias largely covers the distinction between manual intervention and algorithmic design, but it is ultimately problematic, because search engines conflate the two in ways that are extremely difficult to get a hold of conceptually and empirically. As Brin and Page (1998: 18) note in the annex to their paper on what was to become Google, 'a search engine could add a small factor to search results from "friendly" companies, and subtract a factor from results from competitors. This type of bias is very difficult to detect but could still have a significant effect on the market'.

One consequence of this difficulty has been that investigators have looked at specific aspects rather than the full picture. So called 'own-content bias' – the favouring of sites belonging to an engine's own pool of services – has recently emerged as a focal point, and empirical trials have indeed shown *some* preference for affiliated content (Wright, 2011). It would be extremely difficult, however, to frame most of Google's alleged anti-competitive business practices, currently under investigation by both the European Commission and the US Federal Trade Commission, as wilful and abusive manipulation. We therefore propose a different approach that eschews the empirical question of which biases actually exist and instead asks which forms of bias would actually serve Google's interests. In short, we propose to analyse the economic incentives that weigh on ranking.

Incentives and advertisement

According to the OED, an *incentive* is an 'exciting cause or motive' – something that 'incites to action' – and microeconomics is as much an analysis of *economic motives* than of specific market configurations (Varian, 2010: 566–580). It reasons on the basis of the hypothesis that a company's main interest is to maximize profits. While this goal may seem rather straightforward, its application is much more ambivalent in practice: for example, when it comes to choosing between short-term profits and long-term viability.

In the case of the three-sided market discussed above, the different interests and strategies of actors participating in the QRAM imply a constellation that introduces significant uncertainties for both actors and analysts. Microeconomists usually approach this complexity through mathematical modelling, often reducing factors to an absolute minimum, which is not the correct path to take for the more general argument we want to make here.

Moreover, it is certainly not uncommon to think about media in terms of economic incentives. One of the principal axes of mass-media critique in fact presents reliance on advertisement as the main source of income as a danger to editorial integrity if content is adapted to please advertisers (McChesney, 2008). Given Google's dominant position in both the search and advertisement markets, this critique does not translate well. In 2009, the company was estimated (Helft, 2009) to have between 1.3 and 1.5 million advertisers, which goes a long way towards diluting the pressure that could be exerted by any individual company; additionally, Google takes the liberty to refuse a wide variety of ads (Diaz, 2008). On the contrary, content providers often believe that they *need* to advertise with Google to obtain sufficient levels of traffic. This does not mean, however, that there are no economic incentives to orient editorial decisions, i.e. selecting and ranking.

The initial critique of advertisement on results pages by media scholars focused on the separation between 'organic' and 'paid' results. While Google has, from the outset, insisted on a visual separation between the two, authors such as Diaz doubt that this separation goes far enough when paid links regularly show up in the same column and above the 'first hit' – 'Google, after all, has an enormous interest in blurring that line' (Diaz, 2008: 22). Machill et al. (2008: 596) thus point to the fundamental conflict of interest between user benefits and ad revenues, which leads to a permanent 'balancing act'. Economists have approached the problem via the basic conundrum that '[h]igh quality search results have the potential to eat into a search engine's profits' (White, 2008), because if organic results were consistently more attractive than ads, there would be little reason to click on the latter. Taylor (2012) not only confirms the resulting incentives for quality degradation, but adds that reduced competition further enhances these incentives, which 'can thus spill-over into the quality of search services enjoyed by consumers' (Taylor, 2012: 20). This means that, in this model, the balancing act will tilt in favour of advertisement revenues with growing market share.

The equation becomes even more complex if we take into account that Google derives profits not only from advertisement on its own pages, but also from its activities as an ad network and platform. In the following section we will therefore focus on incentives following from this double role, which implies that we consider organic links not only as 'competition' for paid links, but also as opportunities for revenue in their own right.

Role multiplication and incentives to bias

To develop this analysis we need to distinguish several categories of left-side links according to their potential for generating revenue. We will then argue that there are commercial motivations to treat these categories differently in organic ranking procedures.

1. *Ad garden links* point to other Google properties – the company's 'garden' – where ads are served and user information is collected.

2. *Competitor links* point to sites that provide similar services ('substitute products') to Google.
3. *Ad affiliated links* lead to sites that advertise on google.com via the *AdWords* programme.
4. *Ad network links* direct users towards sites serving ads with *AdSense* or *DoubleClick*, where both clicks and impressions provide revenues for Google.
5. *Ad potential links* reference sites with the economic resources to become AdWords or AdSense partners, but which are currently not.
6. *Ad competitor links* point to sites that advertise with a rival service.
7. *Ad resistant links* are sites that do not advertise and are not likely to do so.

This list could be further extended by including additional relationships between Google and other sites – from partnerships to personal contacts to multiple ad networks appearing on a single site – but these categories already point to the most *systematic* aspects. The first two link types concern the already mentioned critique of direct own-content bias, as well as its flip side, competitor discrimination; for both cases strong economic incentives do exist, and the continuous allegations of anti-competitive behaviour indicate a certain level of public awareness. Ad affiliate links point to the 'classic' idea that media might have to favour advertisers to keep them happy, but it is difficult to see how Google would profit from providing 'free' traffic to AdWords partners by ranking them higher on the left side.

If we step beyond revenues derived directly on the results page and consider organic results as opportunities for profit, the configuration becomes more complicated but also less contradictory in terms of 'left side vs. right side'. Through its advertisement network, Google is able to profit from the left side and there are clear incentives to favour *ad network* links, because there is a direct revenue opportunity if users are sent to a site participating in the AdSense or DoubleClick programmes. Commenting on the debates around Google's monopoly position, the prominent industry observer Danny Sullivan (2009) underscored this conflict of interest by arguing that 'the focus really should be on whether a company that delivers so much traffic to sites should also be one of the primary ways many of those sites also earn revenue'. A director of traffic acquisition for a large French news magazine, who we interviewed during the research for this paper, was very much aware of this situation and considered it important to be both a buyer and a seller on the AdSense platform – if only as a precautionary measure.

It must also be considered that links lead not only to individual pages but also to network topologies. The potential for revenue maximization for every link could therefore be calculated according to users' follow-up navigation opportunities. A page that is not an AdSense partner but links to one could be considered more valuable to Google than one that does not. This additional consideration shows how complex and subtle these matters can become, while remaining economically significant due to the huge numbers involved. The problem is exacerbated by the observation that users rarely venture beyond the first couple of results, making even small changes in position relevant.

Furthermore, there are incentives to reduce the standing of both *ad potential* and *ad competitor* links. Limiting the traffic these sites receive may push them into joining the AdWords programme to benefit from Google's capacity to provide visitors. As we have

just seen, technological opacity and Google's ambiguous role may simply generate a level of uncertainty about how well isolated from each other search and advertisement really are that is sufficient to convince companies to sign up when traffic is low.

Rather than favouring its AdWords clients on the left side, it is in Google's interest to both widen its pool of advertisers and have them spend more. Besides further expanding market share and ad targeting capabilities, this could mean directing organic traffic in ways that force content providers to advertise in order to gain sufficient numbers of visitors. The *PageRank* logic, with its built-in 'the rich get richer' dynamics (Rieder, 2009), already makes sure that smaller sites have difficulty receiving significant amounts of traffic from organic results. For them, buying advertisement through a simple self-service platform is often cheaper than investing in SEO. Using *ad resistant* links to 'clog up' results pages is another way to reduce traffic to potential advertisers. From this perspective, the observed omnipresence of Wikipedia pages in Google's lists appears in a particular light: while the seemingly 'special relationship' between the two sites has been much discussed, especially after the Wikimedia Foundation received a $2 million donation from Google in 2010, the assessment that first place for Wikipedia means second place for somebody else has not been taken into account. Organic results are therefore relevant not only for what they include, but also for what they push out. This holds true for own-content bias as well: the more slots taken up by Google's own sites, the higher the pressure for competitors to become advertisers.

If we consider search engine rankings to have 'significant social implications' (Goldman, 2010: 461), the 'double oligopoly' (Machill et al., 2008: 596) – which is becoming a double *monopoly*, with Google dominating both Web search and online advertising – creates a preoccupying situation where both opportunities and incentives to orient search results proliferate. While the specific configuration deviates significantly from 'traditional' forms of mass-media dominance, Google has become a central normative force on the Web. And although its editorial thrust, embedded in code and practice, cannot be easily situated along well-known political lines such as 'left' vs. 'right', it has clearly become both an arbiter and an interested party in the quest for visibility online. The logic of the three-sided market built around google.com, which we have identified as the foundation of Google's business success, only fortifies this position further by rendering competition structurally improbable.

Structural tendencies towards monopoly

In contrast to markets where specialization produces price differentiation and segmentation – a more expensive car is generally also a better car – Google's subsidizing of the user side means that the quality of search technology and the price paid by users (zero) are not linked. We can therefore suppose that users will use the 'best' technology, simply defined in terms of user satisfaction, which leads to 'winner-takes-all' forms of competition (Pollock, 2010: 15). The observation that markets dealing with information often show a tendency towards concentration is not new. In his foundational paper on the economics of information, Stigler argued that '[s]ince the cost of collection of information is (approximately) independent of its use […], there is a strong tendency toward monopoly in the provision of information: in general, there will be a "standard" source' (Stigler, 1961: 220). Pollock (2010: 18) correspondingly

concludes that a configuration in which 'users care about quality but are not charged, while advertisers care about users and are charged, explains the highly concentrated nature of the search engine market and makes it probable that the market will continue to evolve down this path towards monopoly.'

Consequently, market entry has become extremely difficult: in order to compete with the dominant company on *quality*, enormous investments in R&D, infrastructure and organizational capacity are necessary. Even Microsoft, Google's last global competitor in the search market, has not been able to disrupt the enormous economies of scale which Google derives from a mature platform with all three sides on board. Forced to provide search services for free, Microsoft uses the profits gained in another market to sustain its efforts to succeed in search. Ironically, advertising on google.com is part of the company's strategy.

To make things worse for competitors, Argenton and Prüfer (2011) have recently argued that a 'peculiar […] type of *indirect network externalities*' (Argenton and Prüfer, 2011: 2) – query logs and the statistical intelligence derived from them – is sufficient to account for the 'tipping market effect' (Argenton and Prüfer, 2011: 20) observable in Web search since 2003: capturing and analysis of user behaviour improves search quality and, consequently, the search engine with the most users achieves technological dominance, attracts even more users and again ameliorates the service – that is, the market 'tips' over. We should add that analytical competences spill over into advertisement, because they directly improve behavioural targeting capacities. As a consequence, advertisers have further incentives to join the platform: not only are users already there, but they can also be engaged more efficiently. While we consider the economic motivations to provide extensive user personalization to be relatively low, it is clearly in Google's interest to collect as much information about users as possible.

For all these reasons, the outcome of a strategy consisting of fully subsidizing two sides of the market with revenues derived from the third one will inexorably be, if not a monopoly, at least an 'almost monopoly' (Pollock, 2010: 28). With Google receiving around 85% of search requests worldwide (ZenithOptimedia, 2011), this assessment fits empirical realities rather well – with the exception of markets like China and Russia, where national leaders continue to resist.

What does this mean? While Google's market dominance is widely commented on in media research (Diaz, 2008; Grimmelmann, 2010), an economic analysis indicates that this monopoly is neither accidental nor simply attributable to particular merits or misconducts of the market leader. Rather, it is a *systemic* effect of how this three-sided market is organized, which should be taken into account in analyses of power relations as well as in deliberations about possible countermeasures. Furthermore, there is little reason to believe that this situation is temporary: dominance in online advertising and persistent expansion into new markets create a virtuous circle – 'virtuous' from Google's point of view – where activities mutually sustain each other.

Conclusion

In this article, we have tried to show how microeconomic reasoning provides us with an analytical perspective that frames Google dispassionately as an actor motivated by economic opportunity, rather than the missionary or hegemonic yearnings often ascribed to

it. In this light, the company's monopoly in Web search and its successful attempt to gain what could be seen as a controlling stake in the online advertisement market are not explained by a particular zealousness, but by the company's capacity to exploit the network effects derived from the multi-sided market structure and the synergies between the two business activities. In a sense, Google is the logical outcome of the Internet's unshackling of Stigler's (1961) information economics from the limits which physical space imposes on the centralization of information services.

'Googlenomics' can be seen as part of a 'broader re-negotiation of the boundaries between […] commercial and non-commercial' (Röhle, 2009: 129), but occurrences on both sides of that boundary are equally affected. This means that, from a media and communication perspective, analysis and critique have to adapt to a new situation in which money, power and visibility flow in new and complicated ways, content is managed as data, advertising is priced and distributed by algorithms and media bias is a set of parameters applied to millions of units at a time. From a regulatory perspective, it follows that '[t]he agencies tasked with enforcement must recognize the limitations of traditional antitrust analyses when applied to innovative markets and consequently broaden their inquiries' (Devine, 2009: 59). The conflicts of interest arising in particular from the combination of search and advertisement services – and role multiplication through concentric diversification in general – are clearly crucial here. For both media scholars and regulators, microeconomics can extend analyses of concrete configurations of power and identify control points, structural dynamics and crucial resources for argumentation. While we doubt that their proposal would suffice, Argenton and Prüfer's (2011) suggestion that search companies should be required to share query log data with their competitors is an example of an original policy proposition that is directly derived from microeconomic analysis.

We hope to have made clear that the incentives weighing on Google's 'editorial engine' are hardly comparable to those of other operations financed by advertising. Because incentives need to be analysed in terms of link topology and multiplicity of roles, their influence on results is inconspicuous and difficult to demonstrate. What emerges from our account is that Google's mesh of tangled activities – as search provider, as advertising network and, through its plethora of services, as content provider – introduces strong motivations to organize search results in self-serving ways. Every new product the company launches, every new market it enters, only aggravates this situation. But even if we limit our observation to Web search, we can see that there are complex tensions between the left side and the right side, even if they do not fit the classic schema of advertisement critique. The founders of Google were keenly aware of this when they wrote that 'the issue of advertising causes enough mixed incentives that it is crucial to have a competitive search engine that is transparent and in the academic realm' (Brin and Page, 1998: 19).

While economists generally organize their normative arguments around the notion of *consumer welfare*, where the merits and faults of a market configuration are simply assessed in terms of their effects on prices, media scholars are concerned with welfare in a larger and more political sense. By taking into account micro and mezzo levels, economic reasoning can nonetheless help with developing a more robust analysis of the power dynamics that shape *every single results page served*. Even if search engines

deviate, in significant ways, from traditional mass media, we consider their capacity to 'shap[e] public discourse itself' (Grimmelmann, 2010: 456) as sufficiently developed to justify the application of the same attention and care that characterizes our liberal democracies' handling of traditional media industries, in terms of rights and responsibilities as well as regulatory provisions and limitations. We hope that we have added to the groundwork for such a political and intellectual endeavour by sketching, however roughly, a *political microeconomy* analysis of a company that has come to epitomize the enormous challenge that the Internet represents to our understanding of what mass mediation looks like.

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Notes

1. This article cites a number of working papers from economics, an area in which working papers have become the preferred mode of publishing and often circulate for years before appearing in an academic journal.
2. The application of the 'multi-sided market' concept to search engines is not uncontested (Luchetta, 2012; Pollock, 2010), but this debate is largely internal to economics.
3. Currently, sites are automatically indexed, unless they opt-out via a robots.txt file.

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