

Algorithmic Ideology. How capitalist society shapes search engines

Astrid Mager, HUMlab, University of Umeå/ Sweden

Introduction

Yesterday I did an online search on the controversy around biofuels for a project I am currently working on in Sweden. Like the majority of users, I employed the search engine Google. I put keywords such as “biofuel” or “biofuel debate” in the search box and browsed through a couple of websites, mostly going back and forth to Google. Besides links to research institutions working on biofuels, informative Wikipedia articles and newspaper debates on societal implications of biofuels, a range of commercial links were presented to me in the sponsored search results (the links appearing in the right column or on top of the main, “organic” search results). Tightly intertwined with my topical interest and my current location different biodiesels and bioethanols were advertised to me, all in Swedish. Biofuel commercials were haunting me through the web – from search engine results to websites and blogs I visited. My need for information was clearly transformed into a customer desire that Google tried to satisfy by showing me commercials related to my own search. More and more of the same ads were supposed to convince me to put a “green car” and the suitable biofuel in my virtual shopping cart – despite the fact that my original interest involved negative impacts of biofuels on environment and society.

This online search on biofuels points right to the focus of this article, the tight entanglement of search technology and capitalist society. In the last decade search technology underwent a radical process of commercialization according to Van Couvering (2008). Along with it grew criticisms of the business models underlying search engines, primarily based on user-targeted advertising like the one I introduced above. While early critiques of search engines scrutinized the increasingly popular PageRank algorithm and the information biases it constructs at the turn of the century (Introna & Nissenbaum 2000; Hindman *et al.* 2003), they switched over to questioning search engines’ models of revenue and profit maximization more recently, as I discuss in the following pages. This research contributed to a valuable understanding of the economic dynamics and the “capital accumulation cycle” (Fuchs forthcoming) search engines embody and implications these pose on a societal level. Theo Röhle’s (2009) and my own work (Mager 2009), however, showed that search engines, and Google’s powerful position in particular, are negotiated and stabilized in social practices.

Building on this line of work this article seeks to unfold the heterogeneous network of actors and interests participating in the negotiation of search technology. Drawing on the

tradition of the social construction of technology (Bijker et al. 1987; Pinch & Bijker 1997) and 17 qualitative interviews with various stakeholders involved in the development of search engines I investigate how the capitalist ideology gets inscribed in search algorithms by way of social practices. I show how the “new spirit of capitalism” (Boltanski & Chiapello 2007) gets aligned with and woven into the mathematics of search algorithms and how website providers and users comply with and stabilize this dynamic. Further, I exemplify how privately owned search engines and their commercial orientation are enacted in a socio-political context characterized by a techno-euphoric climate of innovation, a neoliberal policy of privatization and legal frameworks that fail to grasp global search technology. This analysis broadens our understanding of how search technology and its algorithmic ideology are negotiated in a wider societal context and helps to reconsider its commercial orientation since “the processes that shape our technologies go right to the heart of the way in which we live and organize our societies. (...) Understanding them would allow us to see that our technologies do not necessarily have to be the way they actually are” (Bijker & Law 1992, p. 4).

Commercialization of search technology

Having investigated the search engine industry over time Van Couvering (2008) argued that search engines started out in the academic realm and got commercialized over time. She identified three chronological periods: In the first period of “technological entrepreneurs” (1994-1997) a number of search engines – mostly directories at the time – developed from the academic discipline of information retrieval, a combination of computer and information science. The second period of “portals and vertical integration” (1997-2001), which coincided with the dot-com boom and bust, was characterized by a shift from search engines to portals such as Yahoo!. During this period, developers created content channels to segment the audience and make lucrative sponsorship deals. An exception was Google, which introduced its new PageRank algorithm in 1998. The innovative algorithm used the number and quality of links a website gets to evaluate a website’s value (based on the much older tradition of citation analysis, as Mayer (2009) discussed). In the third period of “syndication and consolidation” (from 2002 onwards) search was passed from media corporations to technology companies and great revenues were generated from pay-per-click advertising, which enabled big companies like Google to buy their rivals.

In 2000 Google presented an automated advertising system called AdWords that targeted ads based on users’ search terms. Imitating a technology originally invented by the search engine GoTo Google allowed advertisers to bid on how much they would like

to pay to appear on top of sponsored search results in relation to individually chosen search terms. While previous business models were taken over from classical media and hence focused on audiences, such as those by portals like Yahoo!, the new models had traffic, the flow of visitors from one website to the other, at the core of their mechanism. Especially Google was very successful with its business model based on the “traffic commodity” (Van Couvering 2008). Later it began to syndicate cost-per-click ads to partner websites through its AdSense program, which allowed advertisers to relate their ads to a website’s contentⁱ. The last decade of search engine history shows that Google has become a big player on the search engine market because of its PageRank algorithm, but also because of its clever business strategy. Jarvis (2009, p. 5) described its success as follows:

Google thinks in distributed ways. It goes to the people. There are bits of Google spread all over the web. About a third of Google’s revenue – expected to total \$20 billion in 2008 – is earned not at Google.com but all its sites all over the internet.

While techno-utopians such as Jarvis celebrated Google as a new “role model” to follow to become successful, critics have started to scrutinize the multi-faceted impact Google and other search engines have on our culture and economy (Halavais 2009; Vaidhyanathan 2011)ⁱⁱ. A major criticism in this body of work concerns the “consumer profiling” conducted by search engines enabling to adjust ads to users’ individual interests. „Consumer profiling is broadly defined as an ongoing distribution and cataloguing of information about desires, habits, and location of individuals and groups” (Elmer 2004, p.9). Based on users’ search history, locations, and search terms search engines develop highly detailed “user profiles” capturing desires and intentions of individuals and groups of users. Especially the multitude of Google services including Google search, Google mail, Google maps, Google Earth, Google Analytics, Google’s recently launched social networking platform Google+, and its share in the smart phone operating system Android provide a myriad of “data points” to create detailed user profilesⁱⁱⁱ. These user profiles are turned into value through selling them to advertising clients. Elmer (2004) coined this business model the “service-for-profile” model. Users get services for free, while “paying” with their data.

The concentration - and potential interconnection - of large sets of heterogeneous user data within a single company triggers serious privacy concerns. This aspect was conceptualized in the field of surveillance studies, where Google – and other technologies such as social networking platforms – were discussed as new “Panopticon” exerting user surveillance (Elmer 2004). Pasquinelli (2009, p. 153) further argued that „the metaphor of the Panopticon must be reversed: Google is not simply an apparatus of dataveillance from above, but an apparatus of value production from below”. Drawing on Marxian thinking he elaborated that Google’s PageRank algorithm exploits the collective

intelligence of the web since each link Google uses to measure a websites' value represents a concretion of intelligence to create surplus value. Fuchs (forthcoming) further reasoned that it is important to include users' activities to understand Google's "capital accumulation cycle". Google not only exploits website providers' content, but also users' practices and data. It sells the "prosumer commodity" (Fuchs forthcoming) to advertising clients. He thus concluded "Google is the ultimate economic surveillance machine and the ultimate user-exploitation machine" (Fuchs forthcoming). The question, however, is why both website providers and users comply with this scheme of exploitation and how other socio-political actors stabilize its dynamic within the broader context of capitalist society? To answer this question I draw on concepts developed in the tradition of the social construction of technology (SCOT).

Social construction of technology and capitalist spirit

In the late 1980s a number of scholars started to challenge the idea that technology development would follow a simple, linear model explaining a technology's trajectory from production to usage. They convincingly demonstrated „our technologies mirror our societies. They reproduce and embody the complex interplay of professional, technical, economic, and political factors.“ (Bijker & Law 1992, p. 3) One of the first, by now well-known, case studies showing how societal values are embedded in technologies was the analysis of the social construction of the bicycle. Having traced the historic development of the bicycle, Pinch and Bijker (1987) exemplified that the bicycle was negotiated and constructed in a complex network of actors and their interests. The bicycle, as we know it today, may be seen as satisfying both sporting cyclists with their interest in fast bicycles and the general public with their interest in safe bicycles. Reaching this compromise was facilitated in a wider societal context characterized by the emancipation of women towards the end of the nineteenth century because women became central users of bicycles at that time. This case study outlined the central analytical categories for the analysis of the social construction of technology including the identification of "relevant social groups" and their interests. Focusing on the economic context, Carlson (1992) further argued that the failure and success of a technology should be seen in relation to the "frames of meaning" attributed to a technology and how they correspond to socio-economic cultures present at a particular point in time. Edison's invention of motion pictures, for example, failed because Edison's own frame of meaning was deeply anchored in the producer culture of nineteenth-century America, while Edison's movie audience and competitors were part of the twentieth-century consumer culture.

Drawing on this line of work I elaborate how search engines are negotiated in a network of actors, interests, and practices within contemporary frames of meaning, the capitalist ideology in particular. According to Boltanski and Chiapello (2007, p. 3) ideology is “a set of shared beliefs, inscribed in institutions, bound up with actions, and hence anchored in reality”. With this definition they aim to go beyond the concept of ideology as a moralizing discourse and argue that ideology is intertwined with and embedded in actual practices, such as management practices. On the basis of French management literature they argued that the capitalist ideology transformed from the 1960s until the 90s and culminated in a globalized capitalism employing new technologies and being dependent on multinationals’ interests. Coinciding with this shift is a preference for flexible, mobile, and unattached employees, such as those who work at internet companies in Silicon Valley. Google’s success, for example, is built on flat hierarchies, a flexible work force and a global scale, central characteristics of the new form of capitalism. Google, however, also well corresponds to the new mode of exploitation that rose with the new spirit of capitalism. “*A form of exploitation that develops in a connexionist world* – that is to say, a world where the realization of profit occurs through organizing economic operations in networks” (Boltanski & Chiapello 2007, p. 355; italics in original). Rather than taking over classical business models based on audiences (such as portals that collapsed during the dot-com crash) Google followed a new business model based on the “traffic commodity” (Van Couvering 2008). Contrary to Edison, who failed to understand the economy of the day when developing motion pictures, Google managed to align its technology with a business model that perfectly fits the “connexionist world” and its “global informational network capitalism” (Fuchs 2010a). “Google thinks in distributed ways”, as Jarvis (2009) argued. How search engines and their capitalist ideology are stabilized in social practices I elaborate in the analysis by focusing on “relevant social groups” and their interests involved in the construction of search technology.

Study and methods

The empirical basis for this analysis consists of 17 qualitative expert interviews. Following the method of theoretical sampling I identified central actors involved in the development of search technology. Theoretical sampling is a method from the Grounded Theory methodology (Glaser & Strauss 1968) and enables the researcher to choose new research participants and data sources on the basis of data previously gathered. I started this process with technical people including computer scientists, programmers, software developers, and people working in information retrieval (mainly from big, universal search engines); six interviews altogether. To go beyond the technical realm and investigate how search technology is shaped by the broader societal context I identified

further actors on the basis of dominant issues discussed in the first interviews including search engines' business models, privacy issues, media debates and legal frameworks. Accordingly, I interviewed an expert in search engine optimization, an economic journalist, a net activist, a jurist, and two policy makers concerned with internet technologies; also six interviews. My interviewees were partly from the US-American context, where most big search companies are developed and based (primarily the first category of interviews with technical people) and the German context to cover the European perspective and challenges global search technology pose in local socio-political contexts (especially the latter category of interviewees)^{iv}. Finally, I interviewed five scholars working on search engines and their societal implications as contextual material to saturate my data (both from the US and Germany, one from Ireland). Given the dominant role Google plays on the search engine market these interviews strongly circulated around Google, but not exclusively.

All 17 interviews were conducted between October 2010 and February 2011, half of them were carried out face-to-face, the other half using video Skype. The qualitative, in-depths interviews were structured using a list of questions that ensured the comparability of the interviews, yet left enough flexibility for individual viewpoints of my interviewees and their different backgrounds (Flick 2009). The interviews were fully transcribed, coded and analyzed along actors and interests involved in the social construction of search engines. The coding scheme, comprising categories and sub-categories, was developed with the qualitative text analysis software Atlas T.I. and followed the Grounded Theory approach (Glaser & Strauss 1968).

Empirical analysis: Algorithmic ideology

My actor- and interest-centered analysis clearly shows that engineers, website providers and users were considered the most dominant "relevant social groups" in search engine development. One third of the interviewees described engineers as the central driving force, the "people who architect the code" (software developer). Others mentioned website providers, who create websites and link connections the search algorithm needs to index, rank and display results according to keywords. Moreover, users and automated user feedback in form of data traces were seen as central driving force since search results are increasingly adapted to users' interests, locations and desires. An information retrieval expert described the "customization" of search results like this:

Imagine you're a spy and you've been watching these people their whole life. You know everything about them, everything they've eaten, every place they've gone to, and if you imagine, if you see them sit down at a computer and they're about to do a search and if they have a query, let's say it's very vague of a query in general, but given all the

context and everything you know about them you can probably still provide very good results.

In reply to my question what “good results” means in this context the interviewee explained the quality of search results is evaluated according to standardized measures including “ranking evaluation methods” and “user-driven matrixes”. This quotation clearly exemplifies the engineer-driven logic underlying the construction of search algorithms. Having grown out of the academic field of information retrieval search engines clearly incorporate what Vaidhyathan (2011) coined “techno-fundamentalism”.

In the last decade, however, the techno-fundamentalist ideology got more and more aligned with and overshadowed by the capitalist ideology^v. “Google is not just search, in fact Google is not primarily search, it’s advertising, right?” (search engine scholar). Most engineers are working for privately owned, for-profit companies such as Google, the search engine centrally discussed in the interviews. Accordingly, website providers’ and users’ activities do not only serve refinements of the algorithm, but also the generation of profit. Website providers’ content and users’ data are exploited by Google to create surplus value, as argued earlier (Pasquinelli 2009; Fuchs forthcoming). Google perfectly corresponds to the “new spirit of capitalism” and the new mode of exploitation that arose in the “connexionist world” (Boltanski & Chiapello 2007). User data was described as “goldmine” in this respect because it enables search engines to relate ads to users’ interests and desires – especially when coming from multiple search tools and services provided by a single company. “I do get Google’s value isn’t in its algorithms anymore, it’s in its databases, its consumer data” (search engine scholar). Google is particularly successful with its business model, but other search engines – Microsoft’s Bing was dominantly mentioned in the interviews – and social networking platforms have adopted similar modes of exploitation (Fuchs 2010b). How both website providers and users comply with and stabilize search engines and their “service-for-profile” model in their practices I discuss below.

Website providers and users stabilizing capitalist spirit

Website providers aim to gain visibility in the multitude of web information and reach users to communicate their content. Users, in turn, want to conveniently find information meeting their needs. Search engines have managed to satisfy both website providers’ and users’ needs with their services. Especially Google has become an “obligatory passage point” website providers and users have to pass to reach their own goals (Mager 2009; Röhle 2009). As a consequence, providers and users of web information solidify search engines and their capitalist “spirit” – both consciously and unconsciously.

To achieve their aim of gaining visibility website providers have started to use techniques of search engine optimization (SEO). Especially commercial websites trying to market their products, services and ideas employ SEO strategies to improve their rank in search engine results, because “a higher ranking is a lot of money sometimes” (computer scientist). They adapt and optimize their sites to be found, indexed and displayed more easily in the result lists. A SEO professional explained the importance to be visible to the “right audience”:

It really doesn't matter if you're visible in a search engine if it's for the wrong things. The worst example is your website is number one for Britney Spears, but you're a B-to-B software company. That doesn't really help you.

This quotation shows how carefully websites are adapted to search algorithms these days. It illustrates that website providers not only provide content and links search engines use to index the web, but also deliberately please search engines by designing their sites according to search algorithms. These “good” SEO practices of optimizing websites are stabilizing the technology – Google even suggests certain SEO practices and webmaster tools on its website^{vi}. Contrary, “bad” SEO including spamming techniques and other illicit practices used to push up websites in search results threaten to destabilize the technology. Accordingly, search engines such as Google have started to respond by “punishing” websites with excluding them from the index (Röhle 2009). My interviewees described the battle between search engines and marketers as “war”:

So there's definitely a kind of, ah, a kind of a war going on between the search engine and the marketers, marketers are pressuring the search engines to be more crafty, more authentic in how they rank. (information retrieval expert)

This warlike relation shows how marketing strategies alter search algorithms by forcing engineers to “tweak” the algorithm to maintain the quality of search results – a central precondition for its own “capitalist accumulation cycle” that requires user traffic. Website providers' strategies of gaining user, or rather customer attention, may be seen as intervening in and stabilizing the mathematics of the algorithm. Moreover, their marketing practices contribute to a commercialization of organic search results because optimized, often commercial websites tend to get a better presence in search results than smaller, non-profit websites in certain issues areas such as health (Mager 2010).

Similarly, users' practices stabilize search engines and their exploitation scheme. “I know Google and others always say well you can always opt out, but no one really knows that that's even an option. This and they don't even know that they're tracked” (computer scientist). This quotation hints to a typical characteristic of the new spirit of capitalism. “Very long chains, comprising a large number of mediations that are difficult to relate to one another, are often required to level an accusation of exploitation” (Boltanski & Chiapello 2007, p. 373). Users' ignorance, partly achieved by search engines' hidden,

“spy-like” ways of operation, is an essential element in the stabilization of search algorithms and their economic logic. The default settings primarily serve the search engines’ interest in collecting data rather than users’ interest in protecting their privacy and thus “inevitably entrench economic and political interests (...)” (Elmer 2004, p. 26). Privacy concerned users who try to opt out of the system by reconfiguring browsers, turning off cookies, and using other tools of “digital self-defense” (net activist) experience barriers too^{vii}. Similarly to website providers who do not play by the rules, users who try to opt out of the system are disciplined by search engines:

We’re caught up in a physical exchange, yeah, (...) you’re giving that information in exchange for the service, and you’re punished if you don’t say yes. Not punished in a negative way, but punished with less than other people have. (search engine scholar)

This quotation illustrates that users are willing to enter alliances with search engines to reach their goal of conveniently finding web information they want – partly motivated by search engines’ system of “punishments and rewards” (Röhle 2009, 2010). Their practices, in turn, contribute to improvements of search algorithms, but also the “service-for-profile model” Google, and others, perform.

Finally, both website providers and users, stabilize search engines and their business models with their own advertising and consumer practices. Besides SEO strategies, marketers also pay money to be present in sponsored search results related to specific keywords. Their advertising strategies figure as a necessary precondition for search engines’ business models. Users, however, also play a central role in maintaining this dynamic according to a computer scientist: “the raw data, I know it’s a very narrow measurement, shows that people are very much interested in those kind of ads”. One may argue that more than 60% of internet users do not distinguish between organic and sponsored search results, as a study suggests (Fallows 2005), and thus click on the ads. But one may also argue that search engines actually well correspond to the dominant cultural frame of consumerism. A graduate student in human centered design and engineering put it like this:

Obviously they’re pushing this information at us as quickly as they can, but the reason they’re pushing this information at us is because we’re gobbling it up. I mean, we’re consumers, and we’re also producers. I think the driving force behind this information economy is our, kind of, probably, possibly a little bit unhealthy desire to just keep consuming, and communicating, and producing at such a frenzy rate.

According to Bauman (2007) our society shifted from a society of producers to a society of consumers. „Consumerism“ arrives when consumption takes over that linchpin role which was played by work in the society of producers.” (Bauman 2007, p. 28) Search engines may be seen as having perfectly incorporated this shift because advertising, an essential part of consumerism, lie at the heart of search engines and their revenue

models. “New needs need new commodities; new commodities need new needs and desires” (Bauman 2007, p. 31). Website providers and users stabilize this dynamic with their need for profit maximization and desire “to keep consuming” (both search services and the products they advertise). An information retrieval expert hence concluded:

Search engines are strongly advertising- and marketing-driven. And thus, if you think about it, a product of an interest group, which is extremely unproductive, at least in a materialist sense, which only sells air in fact.

All these examples show how the capitalist spirit gets embedded in search algorithms by way of social practices. Both website providers and users should not merely be seen as victims of search engines and their new modes of exploitation. Rather, they should be conceptualized as actively stabilizing the technology with their marketing, search and consumer practices – partly consciously, partly unconsciously. This implies that both actor groups would also have the power to destabilize search engines and their new exploitation modes because “there is always the possibility of resistance that calls into question the power relationship” (Castells 2009, p. 11), as I discuss in the conclusions. Resistance, however, would be facilitated by a socio-political context, which critically examines search engines and the capitalist ideology it embodies. Currently though socio-political actors stabilize for-profit search engines rather than destabilizing them.

Culture of innovation and politics of privatization

Besides the core actor-network of engineers, website providers and users, the broader societal context – competitors, mass media, policy, and legal frameworks more specifically – was described as shaping search technology. When talking about competitors my interviewees dominantly referred to upcoming search engines such as Bing, but also social media like Facebook and Twitter supposed to change search algorithms due to their “real time information” (computer scientist). The relation between different internet businesses was basically described as a “fight for data and users” (computer scientist) to gain market share mirroring the capitalist ideology of competition and profit maximization. Google’s investment in the smart phone operating system Android was described as a clever move to build alliances with competitors such as mobile phone companies. It enabled Google to extend its power of default, its power of being the default search engine in users’ devices and practices, to the mobile phone market.

Mass media was conceptualized as further stabilizing Google, and others, by providing the breeding ground for a techno-utopian culture of innovation. The media was seen as a

central actor in solidifying contemporary consumer culture by constantly featuring new services, products, and ultimately companies – together with advertising campaigns. Alternative technologies and open source developments, on the contrary, are rarely presented and discussed, as the economic journalist argued. Critical media coverage, in contrast, was seen as potentially destabilizing big players. My interviewees referred to the controversies around Google China and Google Street View that threatened Google’s “brand value that always kind of relied on its ethical nature” (search engine scholar). While Google’s activities in China were globally discussed, Google Street View was most critically discussed in European media. In Germany, where parts of my interviews were conducted, these debates culminated in a ban of Google cars in certain cities. Further, Google introduced the possibility to censor one’s face and property in the Street View program (assuming users are aware of the possibility). This clearly shows that the media participates in the shaping of search engines. It further shows that local media debates mirror local value systems. Especially privacy and data protection are differently discussed in Europe and the US. A German politician from the liberal party said in this context:

Well, I see that in Germany in particular, or let’s say in the German speaking-European context, this distrust of the uncontrollable companies, which are not subject to the German or European data protection law and make profit with our data.

The politician from the German Green party said he expects more critical debates on Internet services and privacy in the future, not least due to more “scandals”. Mass media was seen as playing a central role in this development, but also educational institutions, net activists and public campaigns were mentioned in this respect. The overall techno-euphoric tone and culture of innovation currently created by the majority of media – tightly intertwined with the capitalist ideology of unlimited economic growth – however, makes the media an ally in the stabilization of big, for-profit search engines, rather than a guardian of socio-cultural values.

Finally, politics was described as a central actor stabilizing search engines and their capitalist ideology. A search engine scholar clearly argued that we should not “blame Google”:

The need for search has existed at least since the 80s and under a neoliberal moment, there is, we are to blame for not having collectively put the public pressure on that (...) and it could all have been quite cheaply publicly funded and it would be publicly accessible. But we didn’t do this. So along comes a private firm that’s doing it. So we, at a neoliberal moment, have passed it to this private corporation, which seemed a very tiny, little start-up and now is, arguably one of the most important institutions on the planet.

At a later point he added that Europe seems to “have completely bought into this Americanized model of how it happens.” This quotation clearly shows how the politics of

privatization solidifies corporate, for profit search engines such as Google. In an age where more and more societal areas have been passed to the free market – not least to save money and raise efficiency on parts of governments – search technology is one more area that is permeated by the capitalist ideology. The politics of privatization led to policy's loss of control over the governing of search technology and the societal implications they pose in terms of privacy and data protection. "Public services and the state" are "missing from the debate" (Van Couvering 2008). Particularly the global character of the new spirit of capitalism triggers crucial problems in terms of setting legal limits, as the liberal politician admits: "Well, that's one of the basic problems we are facing as a legislator, that ah, everything that relates to the Internet is no longer tangible by national jurisdiction."

Data protection and privacy were repeatedly mentioned in the interviews as a good example of the way global search technology affects and partly contradicts local regulations. The global scale of search engines with computer servers storing data all over the world let user data – and their commercial exploitation – widely escape national jurisdiction. Since existent regulations have become partly futile in global capitalism new regulations need to be developed reaching across national borders. Especially Europe with its stricter privacy regulations is invited to take in a stronger role in this respect because we

already saw that European data held by US companies is often protected to a greater degree and that, at some point, it becomes more expensive for companies to do double standards than to just provide the same level of protection for all their users. (search engine scholar)

In Germany an Enquete Commission on "Internet and Digital Society"^{viii} was formed by the German parliament to discuss how to proceed with questions related to the Internet and data protection, copyright issues, international trade and net neutrality. The European Commission and the Internet Governance Forum (IGF)^{ix}, an initiative by the UNO, were mentioned as further institutions supposed to take action in terms of data protection. Lawsuits, however, were seen as the most effective way to create limits for search engines because "internet businesses are all based on transgressing the law" the journalist reasoned referring to YouTube and Google Books.

Similarly to challenges involved in the global fight against climate change, the road to a global Internet policy was imagined to be long and rocky because political bodies are slow and often lack technical expertise. "By the time government decides how to regulate the technology that we're using now we'll actually have a whole different set of technologies that we are integrating" (computer scientist). Further, interests of states and search companies partly overlap in terms of data collection because states also fall back on user data for purposes of law enforcement in post 9/11 surveillance societies

Kurz and Rieger (2011) argued in the German context. Consequently, more hybrid forums would be needed in the future where politicians, jurists, computer scientists, net activists, privacy experts, and stakeholders from civil society come together to reach a common understanding of current challenges and future developments in terms of search the jurist concluded. An aspect I further discuss in the conclusions.

Conclusions

Drawing on the tradition of the social construction of technology (SCOT) this article showed how the “new spirit of capitalism” (Boltanski & Chiapello 2007) gets inscribed in the fabric of search algorithms by way of social practices. I elaborated how the “techno-fundamentalist” ideology gets aligned with the capitalist ideology and exploitation schemes of the “connexionist world”. Further, I discussed how both website providers and users stabilize the algorithmic ideology by entering alliances with search engines to reach their own goals – also achieved by search engines’ clever “system of punishments and rewards” (Röhle 2009, 2010). Finally, I exemplified that for-profit search engines and their capitalist spirit are solidified by mass media providing a techno-euphoric culture of innovation and policy pursuing a politics of privatization. This analysis provides a valuable contribution to contemporary search engine critique mainly focusing on search engines’ business models and societal implications, as discussed at the beginning of this article.

My research suggests shifting the focus of attention from impacts search engines have on society towards social practices and power relations involved in the construction of search engines. Search engines should not be seen as merely overruling or “exploiting” society, but rather as being enacted and stabilized in contemporary society and its dominant “frame of meaning” (Carlson 1992), the new spirit of capitalism. This shift of perspective enables us to understand that search technology, as every other technology, could be otherwise. If website providers or users broke out of the core network dynamic, the power of search engines and their schemes of exploitation would fall apart. If mass media and activists initiated a more critical debate about search engines and the myriad of data they collect, store and process big players such as Google would be destabilized. Finally, if politics and law took on a stronger role in the negotiation of search technology limits would be set regarding the fight over user data search engines, but also social networking platforms like Facebook perform day by day. Since all these actors participate in the negotiation of search engines within the broader context of capitalist society they all have the power to renegotiate search engines, start off social or political interventions, and pave the way towards change. “When resistance and rejection become

significantly stronger than compliance and acceptance, power relationships are transformed” (Castells 2009, p. 11).

To exert this power of resistance, however, certain steps are necessary. First, it is essential to understand that privately owned search engines benefit from our marketing strategies, consumer desires, ignorance, compliance, innovation fetish, politics of privatization, and, most of all, globalized capitalism that increasingly escapes local socio-political cultures and frameworks. It is important to see that our own actions and willingness to be seduced by search engines and their convenient services help to stabilize search engines and the commodification of information (Mager 2010) and user data they trigger (Fuchs forthcoming). We have to understand that global capitalism benefits from states’ inability, and partly unwillingness, to govern and regulate for-profit search engines and to finance research on alternative technologies. Bauman (1998, p. 42) argued “far from acting as cross-purposes and being at war with each other, the political “tribalization” and economic “globalization” are close allies and fellow conspirators”. This article gave some insights in tensions and conflicts of interests between global search technology and local debates and regulations. More research is needed on the way US-American search engines relate to European/ local laws and cultural value systems. Europe and its critical perspective or “unique capacity to grumble” (Lovink 2009, p. 51) is especially invited to see itself as central part of the picture rather than on the edge. Whether the newly founded research institute “Internet and Society” in Berlin^x, sponsored by Google, is an appropriate way to pursue this undertaking or whether it may end up further stabilizing Google and its “ethical brand value” remains to be seen.

Second, more hybrid forums are needed where heterogeneous expertise could be bundled and a common ground for future developments and challenges in the field of search engines could be found – both on a global and a local level. Since search engines and their capitalist orientation are collectively stabilized a collective effort involving different actors and interests is required to think about alternative ways of search engine construction. Political expertise should be bundled with legal advice, but also technical know-how lacking so far. Net activists could provide a valuable contribution to the dialogue, but also engineers, journalists, educational institutions and proponents from civil society. Vaidhyanathan (2011) imagined a “human knowledge project” to approach the “task of organizing the world’s information and making it universally accessible in” a non-corporate way. The field of science and technology studies offers more classical ways of governing technology. Public participation events may be carried out to raise awareness about search engines and their commercial orientation. Moreover, focus group discussions with different stakeholders and decision-makers may be conducted to think

about ways of embedding and shaping global search technology in local socio-political cultures. Whatever the concrete measures for renegotiating the future of search technology may be this article showed that a switch of perspective is needed to reconsider search technology and its algorithmic ideology first.

ⁱ More information on Google AdWords and AdSense could be found on Google's website: <http://www.google.com/intl/en/ads/> (10 September 2011)

ⁱⁱ In 2010 the book „Google and the Culture of Search“ by Hillis, K., Petit, M. & Jarrett, K. will be published by Routledge. Parts of their interesting analysis on knowledge and power in the contemporary “culture of search” were presented at the AoIR conference in Gothenburg, 2010.

ⁱⁱⁱ The great detail of user profiles has become clear during the release of three months of search engine data by AOL in 2006. See, for example, the NY Times article “A Face Is Exposed for AOL Searcher No. 4417749”: <http://select.nytimes.com/gst/abstract.html?res=F10612FC345B0C7A8CDDA10894DE404482> (10 September 2011)

^{iv} All quotations from German interviewees presented in the empirical analysis have been translated into English by the author.

^v Internet companies' strong belief in information technology and capitalism has also been coined “Californian Ideology”. Boltanski and Chiapello (2007), however, have shown that the fundamental shift the capitalist ideology has been undergoing reaches far beyond the Californian border.

^{vi} Google's webmaster guidelines: <http://www.google.com/support/webmasters/bin/answer.py?answer=35291> and Google Analytics' webmaster tools: <https://accounts.google.com/ServiceLogin?service=websiteoptimizer&continue=http://www.google.com/analytics/siteopt/%3Fhl%3Den&hl=en> (10 September 2011)

^{vii} The Firefox Add-on „TrackMeNot“ or the search engine „Scroogle“ are valuable exceptions because they allow users to employ the full services, while anonymizing search queries and messing up user profiles at the same time. URLs: <https://addons.mozilla.org/en-US/firefox/addon/trackmenot/> and <http://scroogle.org/> (10 September 2010)

^{viii} German Enquete Commission „Internet and Digital Society“: <http://www.bundestag.de/internetenquete/> (10 September 2011)

^{ix} Internet Governance Forum: <http://www.intgovforum.org/cms/> (10 September 2011)

^x Institute for Internet and Society: <https://sites.google.com/a/internetundgesellschaft.de/betasite-en/> (10 September 2011)

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