

sought to determine the nature of relationships between websites and judge their relative importance. It does this by counting the number of links to a page, with the underlying assumption being that more important websites have more hyperlinks pointing towards them than less important websites. This system proved superior to the schemes of the fledgling company's competitors, which were all based largely on keyword-relevance indexes and web directories, which were maintained by humans. The PageRank algorithm was a step more abstracted: not only did it avoid the need to have teams of humans to organise data into the categories of a directory but also it did not simply look at the content—as a keyword search does—but at which websites pointed to the content, lending a degree of legitimisation to it that drew from the architecture of the World Wide Web. This development was profoundly cybernetic, with PageRank constituting the introduction of a kind of second-order surveillance; the algorithm surveys other websites, thus automatically observing other observers. This served to incorporate the structure and content of the web into a dynamic feedback loop that fed into generating search results. In effect, this led to more and better results, hence the rapid explosion of Google's popularity.

The Google search engine involves a complicated and abstracted conjunction of processes that are central to how the cyber-capitalist firm began to draw everyday life into its circuits. Before Google can conduct a search, it must make an index of the World Wide Web. The company launches waves of software spiders that figuratively crawl across cyberspace, surveying the abstracted territory and weaving a data map as they go. Its current data map is truly vast, exceeding 100 million gigabytes and indexing over sixty trillion pages. The survey of cyberspace is a necessary precursor to conducting a search, and hence Google's spiders are constantly crawling and updating their map.

The next step involves a search query being entered. For example, if I type the word 'dachshund' into Google, the keyboard allows me to interface with my computer by registering the physical strokes of my fingers and translating them into digital information. This information is organised by my computer's operating system, which runs a browser that can navigate the web. Then, via an active internet connection, letter by letter the request is sent from my location in Melbourne—via a network of world-spanning fibre-optic cables—to Google in the United States. Upon arriving, the request is processed by around 1000 computers in several of Google's massive data farms. This massively complex system of networked computing machines operates in near-real time via an elaborate ensemble of protocols and regimes of standardisation and interoperability.

The request is resolved against content that has been previously indexed and ranked by Google's incessant mining and recombining of data. According to the company, the collection of algorithms used to deliver a search-query result draw on more than 200 factors, including 'user context' and 'safe search'. What's more, these search algorithms are revised as often as 600 times a year, so they are in almost constant flux. The amalgam of algorithms retrieves what it deems to be the 'best-suited answer' to my query. The results are given within an eighth of a second and are blasted back around the globe to my computer, which translates the abstract code into words, images, advertisements and hyperlinks relating to sausage dogs. This, in a highly simplified nutshell, is how the search engine works.

Google's search algorithm delivered results and this made the website extremely popular; however, it did not make any money. The fledgling company received funds from DARPA-linked 'angel investor' Andy Bechtolsheim and then, after incorporation, it received a 'Series A' round of funding—to use the start-up lingo—

from venture-capitalist firms Sequoia Capital and Kleiner Perkins Caufield & Byers (KPCB). Both firms have invested in various cyber-capitalist companies and have strong links to the Department of Defense and the CIA, thus making them a part of the military-industrial complex. Illustrating this connection, in the aftermath of the World Trade Center attacks, a member of Sequoia arranged to have a meeting with Defense Secretary Donald Rumsfeld, his senior lieutenants and a handful of tech-industry players, including Page and Brin. This meeting at the Pentagon began a classified project to increasingly merge military requirements with emerging technologies to develop start-ups like Google. This gave them a taste of what venture capitalism could achieve while working with a militaristic state with imperial reach.

As of 1999, the venture-capitalist investors began pushing the co-founders to hire a professional CEO to helm the company. They overcame their initial resistance to the idea upon meeting Eric Schmidt. His appointment was retrospectively described by Page:

We hired Eric as a more experienced complement to Sergey and me to help us run the business. Eric was CEO of Sun Microsystems. He was also CEO of Novell and has a Ph.D. in computer science, a very unusual and important combination for Google given our scientific and technical culture.

Before going to Google, Schmidt studied electrical engineering, producing a PhD with the thesis title *Controlling Large Software Developments in a Distributed Environment*. He went on to work at a number of significant institutions in the development of cyber-capitalism, including Bell Labs and Xerox's Palo Alto Research Center, before climbing the ranks of Sun Microsystems and then becoming the CEO of Novell. Additionally, he taught a course at Stanford Business School called Entrepreneurship and Venture Capital. After his appointment as Google's CEO, Schmidt became a member of Barack Obama's Office of Science and Technology Policy, and led the Defense Innovation Advisory Board, which provides the Pentagon with advice from a Silicon Valley perspective.

Schmidt is an active participant in

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04 2018–05 2018

Nº 153

numerous über-elite organisations, such as the Bilderberg Group, the Trilateral Commission and the World Economic Forum. Worth more than \$11 billion, Schmidt has his own venture-capitalist firm, TomorrowVentures, and is the sole investor in Civis Analytics, a data-science company that sports an ideologically charged core principle creepily written in the second person: ‘You trust us because we find and respect the truth’. He also co-founded Google’s geopolitical arm ‘Jigsaw’ and, on the side, he dabbles in development-industry philanthropy and is involved in numerous thinktanks and advocacy groups. Schmidt was Google’s CEO for a decade, beginning in 2001, until Page resumed the role in 2011. Thereafter, Schmidt has remained a key executive and director of the board; together with the co-founders, he has substantial authority over the corporation.

The growth curve

After Bechtolsheim’s funding in 1998, and Sequoia and KPCB’s in 1999, the venture-capitalist firms applied increasing pressure on the start-up to generate returns on their investments. This intensified after the peak of the dot.com bubble in 2000, and even more after 2001, when the bubble began to hiss and spit. Steve Levy’s quasi-official biography of the company describes Google’s tack out of the doldrums with a sense of melodrama:

Then came a development that was sudden, transforming, decisive, and, for Google’s investors and employees, glorious. Google launched the most successful scheme for making money on the Internet that the world has ever seen. More than a decade after its launch, it is nowhere near being matched by any competitor. It became the lifeblood of Google, funding every new idea and innovation the company conceived thereafter.

According to Randall Stross, Google’s incredible financial success ‘was built upon the accidental discovery [...] that plain text advertisements on its search results pages produced enormous profits. This unpredictable development gave Google its vast financial base, which drove its expansion. This was retrospectively

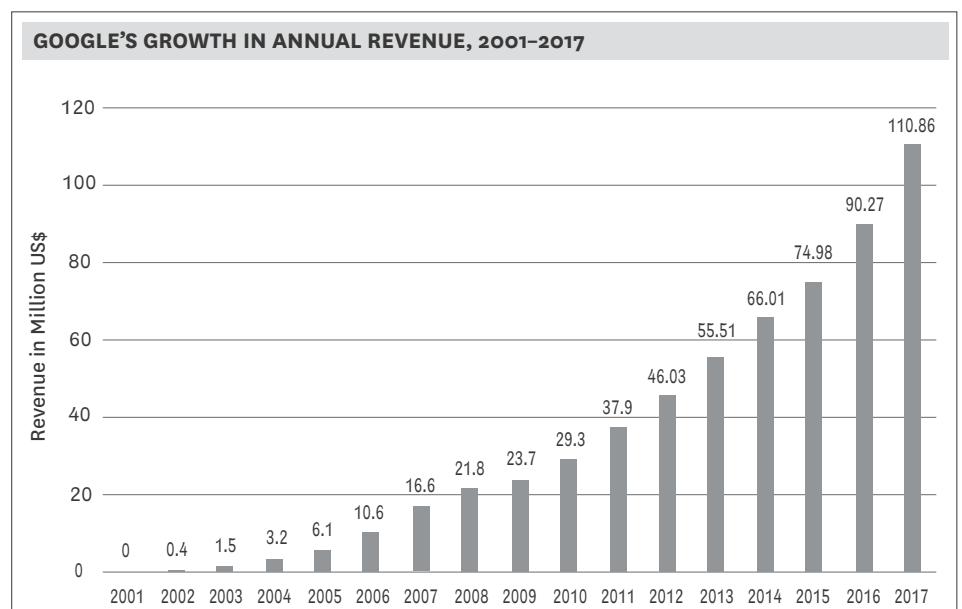
given an aura of historical inevitability’. While Stross’ account goes a step beyond many other versions of Google’s rise by noting the fabrication of a myth of certainty, he actively neglects a crucial important aspect of the narrative. We may ask: just why were these plain-text advertisements so effective? In a word: surveillance.

In the early days of Google, the search engine collected data on the people who used its website, and the company’s engineers groomed the process in order to improve the results. Afterwards, this data was treated as waste and deleted. Then, in an effort to turn a profit, the company began to use data gathering in combination with its analytic capabilities to target advertisements to specific people. This surveillance-driven advertising now accounts for around 98 per cent of Google’s total revenue. Thus, the surveillance-commodification complex is at the core of what enabled Google to become one of the fastest-growing companies in history, allowing it to grow from garage project to global institution in under a decade.

Another visualisation of this can be seen in a graph that shows the increase in revenue. Fascinatingly, of the billions of searches that Google conducts daily, a whopping 15 per cent of them have never been conducted before. This fact points towards the massive creativity of collective subjectivity—the *general intellect*, to use a Marxist term—which is to say the curiosity and diversity that emanate from the people whose everyday lives have been entangled in the web. People are becoming more sophisticated and complex with how they navigate the web, with search-query length increasing nearly 5 per cent annually. Google appropriates and exploits this collective creativity for its own profit-making potential; it is not the source of it.

Google was not the first company to do search. Altavista, Yahoo, Inktomi and Ask Jeeves all preceded it. Yet when Google arrived on the scene, it blasted past the earlier companies and continued to gain ground against the big companies, like Yahoo and AOL, that outsourced work to it. By the time these older companies realised how profitable search could be, it was too late, and they were left to play catch-up by attempting to vertically integrate search. Google expanded exponentially, following the uneven spread of global internet connectivity. Globally, only three companies managed to maintain a lead over Google in specific geographic and linguistic niches: Baidu in China, Naver in Korea and Yandex in Russia. These three search engines all began in the formative period around 2000 and proved to be the only ones to partially escape Google’s global onslaught.

Collectively, cybernetic-capitalist firms form a kind of oligopoly over networked computing, which as a whole permeates many aspects of everyday life. According to Nielsen, of the top ten smartphone apps of 2015, Google owned five (YouTube, Search, Play, Maps, Gmail), Facebook owned three (Facebook, Messenger, Instagram) and Apple owned two (Music, Maps). Within this small collection of centralised corporations—itsself a kind of loose ‘oligopoly’—the phenomenon of monopoly exists in various forms. Most common are platform monopolies, such as Google’s Search, Maps, advertising and YouTube. Other examples include Amazon.com on books, Facebook on social media, and both Microsoft and Apple within their oper-



ating systems. In addition, some cyber-capitalist firms have a ‘monopsony’—a power leveraged over suppliers in situations where there is only one buyer for their products, such as the power that Apple has over its suppliers. Aspects of Google’s particular pattern of monopoly control can be seen in the below table. It shows the massive market dominance that the tech giant has in a wide range of areas.

When discussing the top cybernetic-capitalist firms, David Harvey’s concept of ‘monopolistic competition’ can help explain some of the patterns. He argues that monopoly power is foundational rather than aberrational in capitalism, and that it co-exists in a ‘contradictory unity’ with competition. As the tech giants have seized control of the internet they have also acquired significant power over the structures of production and financing. In this, one can follow Harvey and speak of a ‘class monopoly’. In this formation, the various cybernetic-capitalist firms are united in two ways. First, their top executives are outstandingly rich; then, as publicly traded corporations, these tech firms have a legal obligation to maximise shareholder returns. Both these patterns are familiar in capitalism and transfer into the more abstracted cybernetic version.

The Google IPO

Google had its initial public offering (IPO) on 19 August 2004. After consulting with Morgan Stanley and Goldman Sachs, Google decided to launch itself at the stock market in a controversial manner, as it explained in its IPO letter. It decided to use a ‘Dutch auction’, whereby it priced its shares using a bottom-up method, with all bids being received and the share price becoming the highest price at which it could sell all shares, a number that came to \$85. This opened the sale of the company up to a more general public beyond investment-bank insiders, and hence it was seen as a challenge to Wall Street’s power brokers. Google was already hugely popular and profitable, and this gave it a degree of freedom from the control of venture capitalists. That freedom, combined with Google’s massive ambition and ‘do-no-evil’ attitude, enabled the strategy—one that would have been impossible for many other companies on the verge of an IPO.

What was anticipated as the ‘hottest IPO of this short century’ was labelled a ‘disaster’ by investment bankers, who insisted that Google could have achieved a 37 per cent higher price if it had followed traditional IPO channels. In what may be read with a dash of irony, the *Wall Street Journal* accused Google of ‘hubris’. Nevertheless, on the day of the IPO, Google’s shares were valued at \$54.21 each, giving the company a market value pegged at \$23 billion, and its co-founders found themselves worth \$3.8 billion each. Since then, the company has continued to grow massively, expanding into new areas in which it has proceeded to exert monopoly power. As I write this sentence on 10 March 2018, NASDAQ reports that Google’s shares are worth \$1161, massively above their original price. At the same time, Page and Brin

are worth \$53.5 billion and \$52 billion respectively, giving them a combined personal wealth approximately equal to the GDPs of nation states like Slovakia and Sri Lanka. Such exorbitant wealth puts Page and Brin many orders of magnitude above ‘the 1 per cent’, to use the term popularised by Occupy Wall Street. By my calculation, they are—to hazard a conservative estimate—part of the 0.00000001 per cent.

At this point, it is worth reflecting on who Google’s shareholders are, as it is their returns that the company has a legal obligation to maximise. Some of Google’s biggest shareholders are also some of its top executives, with, for instance, the co-founders together holding around \$26 billion worth of shares in 2014. That said, about 70 per cent of the tech firm is owned by financial-institution holding companies. So, while the shares were initially issued in a bottom-up manner, their ownership filtered upwards into the hands of the world’s most powerful investors. The largest of these shareholders is the Vanguard Group, an American investment-management corporation that boasts being ‘the world’s largest mutual fund company’, with about \$3.4 trillion in assets in 2015. According to NASDAQ, on 31 March 2016 the Vanguard Group owned 7.46 per cent of Google, holding 18,015,935 shares worth \$12.94 billion. Financial corporations like Vanguard can exert significant pressure on companies through helping to determine the share price and also through choosing the composition of the boards of directors. The overarching demand for profit maximisation looms over the centralised control wielded at the corporation’s apex.

The centralisation

Tracing the decision-making power within an organisation can be a revealing exercise in attempting to understand how it is composed and what kind of culture it fosters. Since the beginning, Google has been a highly centralised and hierarchical organisation. When

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GOOGLE’S MARKET DOMINANCE OVER ITS COMPETITORS

	Google	Nearest Competitor
Global desktop-search market, 2017	81%	Bing, 7%
Global mobile-search market, 2017	95%	Yahoo, 3%
Web-browser market share, 2017	59%	Microsoft, 19%
Mobile-operating-system market, 2016	88%	Apple iOS, 12.1%
Online-advertising revenue, 2015	\$59.06 billion	Facebook, \$8.25 billion, 2014
Searches per month, 2015	114.7 billion	Baidu, 14.5 billion
Online advertising in US (% total), 2015	\$30 billion (50%)	Facebook, \$8 billion (13%)

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04 2018–05 2018
Nº 153

they went ‘public’, the co-founders declared themselves and Schmidt the supreme leaders of the corporation: ‘We run Google as a triumvirate’.

The intense centralisation of decision-making power has been evident in Google since its IPO. In their controversial letter to Wall Street investors, the co-founders expressed concern over a standard public-ownership model for Google. They wrote that such a structure ‘may jeopardise the independence and focused objectivity that have been most important in Google’s past success and that we consider most fundamental for its future. Therefore, we have implemented a corporate structure that is designed to protect Google’s ability to innovate and retain its most distinctive characteristics’. This took the form of a split stock system, with an explanation from the co-founders contained in the following intensely ideological passage:

Our intense and enduring interest was to objectively help people find information efficiently. We also believed that searching and organizing all the world’s information was an unusually important task that should be carried out by a company that is trustworthy and interested in the public good. We believe a well-functioning society should have abundant, free and unbiased access to high quality information. Google therefore has a responsibility to the world. The dual class structure helps ensure that this responsibility is met. We believe that fulfilling this responsibility will deliver increased value to our shareholders.

When Google launched itself on the stock market, it did so with two tiers of stock: Class A stock, valued at one vote per share, and Class B stock, at 10 votes per share. This ensured that the triumvirate controlled 37.6 per cent of the company. The trio have since increased their control over the company by buying out other Googlers with Class B stock. They even issued a new set of stock, Class C, whose owners have equal economic rights but are unable to influence decision making. In 2012, according to a regulatory filing, the trio controlled 66 per cent of voting power at Google. Thus, the apex of

the corporation consists of three white, male multi-billionaires who wield monopoly control over the corporation, which in turn participates in the oligopolistic control that cybernetic capitalism has over an increasing amount of daily life. In short, these are monopolies within monopolies.

A case can be made that minimising the voting power of shareholders is understandable and respectable. In the high-frequency global market today, many traders, investors and speculators—and their algorithms—use the system far less to invest in the long-term success of a company than to surf the fluctuations of market prices, extracting profit through this extraordinarily unproductive and parasitic activity. In this chaotic environment, even ‘low-frequency’ shareholders are often only interested in a company’s immediate gains, frequently pushing for decisions that will maximise share prices in the short term. Having the ‘triumvirate’ monopolise decision-making power does give Google a degree of insulation from the immediate demands of shareholders. This allows it to engage in more long-term planning, investment and research. Such insulated centralisation was part of the co-founders’ plan since their IPO, where they ‘respectfully declined’ to offer quarterly predictions and earning guidance in favour of keeping a long-term focus. However, replacing shareholder control with apex-management control seems to be replacing one form of hierarchical domination with another. This ruled out more democratic possibilities, such as transforming the company into a workers’ self-directed enterprise that could serve social needs rather than the abstract and impossible demands of infinite accumulation.

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Within cybernetic capitalism there has been a tendency towards having charismatic leaders occupy positions of power while simultaneously downplaying their significance by insisting on their own ‘democratic’ nature. Google is a fine example of this, even if the term ‘charismatic’ may seem somewhat overblown for most software engineers. This contradictory situation is a result of the peculiar ideological cocktail that goes into making cybernetic capitalism’s key institutions like Google. This involves a contradictory combination of the horizontal laboratory ethic of a cybernetic scientist, the depoliticised countercultural practices of a techno-hippie, the entrepreneurial zeal of a monopolistic free-market swashbuckler and the ambition of a victorious conqueror.

Despite this intense concentration of decision-making power, Google’s elite insist that they have created ‘a very flat organization’. Marissa Mayer explains that, in comparison to companies like General Electric, which has twelve employees for every one manager, Google has a ratio of forty to one. However, instead of understanding this as meaning that Google is ‘very flat’, it may also be seen as evidence of the concentration of power and hierarchy in the corporation’s structure. Despite the rhetoric, Google’s employees ‘have almost no ownership and voting power’, not to mention the utter lack of ownership or voting power bestowed upon the billions of people who use Google. Like most other large corporations, cybernetic or otherwise, Google is, as Noam Chomsky observed, ‘tyrannical in [its] internal structure’.

Be that as it may, Google has been determined by *Fortune Magazine* to be the ‘Number One’ company to work for seven times in ten years, owing to its high pay rate and a range of labour-aristocratic niceties, such as free gourmet food, hybrid-car subsidies, great health-insurance plans etc. This sits oddly next to the fact that Google also has one of the highest employee-turnover rates of the United States’ top corporations: the average employee works at Google for just one year. Perhaps this is because people who have worked at Google are considered in hot demand elsewhere in Silicon Valley, as well as in Washington, and they can cycle through the tech company en route to other positions that potentially have more chance of a big pay-out, such as with a start-up growing at high speed. **a**

The next article in this series, to appear in *Arena Magazine* no. 154, is entitled ‘Surveil and Commodify: Twenty Years of Google’.