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Google. Who's looking at you?

It wants to know everything about you. It wants to be your best friend — or your Big Brother. Are your secrets safe with Google?

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In the blissed-out California sunshine, the glistening glass-and-steel curves of the Googleplex seem to sweep you up off the pavement with the promise of a glimpse into the future – and a good time. It is 8am on a Monday morning and battalions of high-tech foot soldiers arrive at the gilded palace of the online revolution. Laptops and lattes in hand, they step off conga lines of biodiesel-powered buses, chatting loud and fast about the latest skyrocketing Silicon Valley start-ups, which have names that sound like Teletubbies: Jajah, Orgoo, Ningo. Geek by geek, they head inside to begin surfing and controlling the quadrillions of bytes of information that surge through Google's giant servers, and which crash on to our desktops and mobile phones every minute of every day.

The sidewalk outside Google's corporate headquarters in Mountain View, 40 minutes' drive south of San Francisco, is about as close as most people get to a company that has cornered the market in internet searching and become the killer app of the modern information economy. For all its success, Google is a closed system, as impenetrable as its complex search algorithms.

Its multibillionaire founders, Sergey Brin, 34, and Larry Page, 34, scarcely do interviews, and reporters rarely make it through the company's doors to talk to top executives. But the dome-headed maths nerds are facing their first big setback. Suddenly, they need to talk. So, a few weeks ago they invited The Sunday Times into the heart of the search industrial complex.

Google likes to think of itself as "crunchy" – wholesome and worthy – and, walking into the Googleplex, it looks, at first sight, a pretty crunchy kind of place. There's free coffee and muesli in the No Name breakfast cafe. Everyone gets around the campus on free bicycles. In the car park, the canopies that protect the neat ranks of hybrid Toyota Priuses from the sun are made from solar panels that power each building in the 1.5-million-sq-ft complex. There are swimming pools, massage chairs and free medical checkups. A model of Sir Richard Branson's SpaceShipTwo prototype commercial spacecraft hangs from the rafters in the lobby. This is rocket science, after all.

Marissa Mayer is waiting in an anonymous-looking whitewashed conference room in Building 43, the engine room of the search engine. Like all Google key executives, she is annoyingly young – 32 – and, even more annoyingly, wealthy – worth hundreds of millions of pounds, thanks

to the generous stock options granted to the firm's founding staff. She does her best to deflect the wealth issue by wearing flats, a studiously plain grey-black dress, and a \$50 plastic watch – a combination that shrieks: "I know you know I'm a zillionaire, but please treat me as just one of the girls."

The young, fast-talking blonde is the firm's poster girl. It's her job to sell Google's vision of a connected future. "We've only achieved 2% of what we can do," she smiles. "The world of search will get much, much bigger."

Her task used to be really, really easy. Google made cool stuff – the best search engine and some whizzy online services, such as Gmail, Google's e-mail system – and handed it out free. We grabbed it and told all our friends about it, so they grabbed it too. Google became the most popular internet service in the world. Thanks to its keyword online advertising system that matches ads with search queries, it generated billions – £8 billion last year alone.

But as it prepares to celebrate its 10th birthday, Google has developed serious engine trouble. A series of missteps have left it facing claims that it has gone from a benign project – creating the first free, open-all-hours global library – to the information society's most determined Big Brother. It stands accused of plotting some sinister link between its computers and us: that it wants, somehow, to plug us into its giant mainframe – as imagined in The Matrix or Terminator.

The crisis began a few months ago when Google's chief executive, Eric Schmidt, popped up in London and made

some extravagant remarks about the firm's ambitions. He declared that the company's goal was to collect as much personal data as it could on individual users so that it could improve the quality of its search results and even start making recommendations, like a trusted friend. "We are very early in the total information we have," he said. "We cannot even answer the most basic question about you because we don't know enough about you. The goal is to enable Google users to be able to ask questions such as 'What shall I do tomorrow?' and 'What job shall I take?'"

His comments provoked a firestorm. Right-to-privacy campaigners howled that a machine that knows so much about us that it can tell us what to do would be the biggest-ever threat to personal privacy. No totalitarian regime, no Bond villain had dreamt up anything so creepy. "At what stage," one critic asked, "did the company whose motto is 'Don't be evil' evolve into the Evil Empire?"

What's going on? Is Google trying to take over the world's information and worm its way into our consciousness? When he said he could implant a Google chip in our brain, was Brin not joking, after all? Or have we all got the wrong end of the memory stick?

You only have to spend a few hours in the Googleplex, talking to Mayer and fellow Googleytes, to realise that, if anything, Schmidt was being conservative. Instead of worrying that they are going too far, Google's top team talk, with poker faces, about a "300-year mission" that will eventually see almost everything – including, perhaps, one day you and me – linked to the web and searchable online.

Google's techno-dream comes in three bytes. The first is loosely referred to as "universal search". Scribbling frantically on a whiteboard, Mayer, Google's head of search products and user experience, says the web is currently "very limited and primitive". It consists mainly of words, images and some music, mostly created in the last few years. There is much, much more that could – and should – be online. At its simplest level, this includes every film, TV show, video or radio broadcast ever made; every book, academic paper, pamphlet, government document, map, chart and blog ever published in any language anywhere; and any piece of music ever recorded. Google is currently developing new software that will scan millions of new sources of information to give richer search results.

Mayer illustrates the idea by googling her hero, Apple's founder, Steve Jobs, on her PC, which already uses an experimental version of universal search. The results include video news archives, the latest news on the iPhone, highlights of Jobs's career, and up-do-date news stories. "You get six searches for the price of one," she says in her curiously giggly voice.

So far, so uncontroversial – but there's much more. Mayer and co argue that to be true to its mission statement of "organising all the world's information and making it universally accessible and useful", Google should be about more than searching for words, images and music; it should be about finding objects and, eventually, people. Any item that can be fitted with a radio-frequency identifier – an electronic tag called an RFID – can be linked to the internet over local or national WiFi networks. Retailers already use this technology for stocktaking, and fleet managers track buses and taxis this way. Why not, asks Mayer, "take the things you care about – your watch, your phone – stick little tags on them and watch for their receiving signals"? This is not a joke. "It would have been really useful to me yesterday when I lost my cellphone while it was out of power. It took me half an hour to find it had fallen behind a dresser." And why not go one step further and tag your partner or your children, so that you can find out where they are whenever you want? Googleytes point out that we already do this with newborn babies and pets.

The second part of Google's techno-dream is "personalised search". Google has just launched iGoogle, a new turbocharged version of its regular search service. It allows Google to monitor our search and web-surfing history, so that it can find out who we are, how old we are, what job we do, whether we are married and have children, where we go on holiday, what we do in our spare time – anything, in fact, that it can glean from our web-surfing, which, since we do so much online these days, means pretty much everything. Google wants us to sign up for iGoogle on our PC, and also to install it, along with Gmail, Google Maps and Google Earth software, on our mobile phone, so that it knows not just who we are but where we are in the world, 24 hours a day, thanks to the satellite-positioning chips starting to be included in mobile phones.

"Our goal is that you can, if you want, search for anything, anywhere, any time," says Douglas Merrill, 37, Google's chief information officer.

The final piece of the Google future is called "cloud computing". Instead of using the internet to search for information that we then copy and use to work on documents stored on the hard drives of our computers, using the software on those computers, Google wants

us to create all our documents online, to work on them online using Google's web-based software, and to store them

online on Google's vast global network of servers. Google has recently launched its own web-based software programs – called Google Apps – that enable us to create password-protected word files and spreadsheets, edit them and store them online. These applications – along with Gmail, Calendar, Google's online diary, Picasa, its picture-management and storage system, and Presentations, its online version of PowerPoint – mean Google will provide all our computing and storage needs, not on our PCs but, as Mayer puts it, “in the computational cloud”.

Google's overall goal is to have a record of every e-mail we have ever written, every contact whose details we have recorded, every file we have created, every picture we have taken and saved, every appointment we have made, every website we have visited, every search query we have typed into its home page, every ad we have clicked on, and everything we have bought online. It wants to know and record where we have been and, thanks to our search history of airlines, car-hire firms and MapQuest, where we are going in the future and when.

This would not just make Google the largest, most powerful super-computer ever; it would make it the most powerful institution in history. Small wonder that the London-based human-rights group Privacy International has condemned its plans as “hostile to privacy”, and EU ministers called Google's vision “Orwellian”. Even John Battelle, one of the net's leading evangelists, who co-founded the technology bible Wired magazine, and wrote *The Search*, the definitive study of Google's rise, now says: “I've found myself more and more wary of Google, out of some primal, lizard-brain fear of giving too much control of my data to one source.”

It all begs one key question: why? What makes a bunch of California geeks who are relaxed enough to spend their lives creating extraordinary products – and then give them away for nothing – suddenly want to take over the world, or at least its information?

To Googleytes, the most surprising thing about the row over its plans for the future is that anyone is surprised at all. Its founders have always envisaged a vast super-computer that connects everything and everyone. Ask Craig Silverstein. He knows because he was there at the beginning, when Brin and Page were graduate students messing about with algorithms at Stanford University, California, when they should have been out getting laid. Silverstein is a man for whom the word “geek” could have been invented. He is young – 34 – thin, has a beard and speaks softly. He does not like to travel more than once a year. He was Google's first employee and, even though he is now worth £250m, he still turns up to work every day because he

“likes solving complex software-engineering problems”. We meet in another anonymous meeting room with no windows. For a firm that expects us to tell it everything about ourselves, Google is remarkably coy about revealing the simplest information about itself – such as what its executives' offices look like. Interviews in the executive suite are banned for fear that journalists might uncover its software secrets.

Over coffee, Silverstein, now director of technology, explains that, from the earliest days, Brin and Page envisaged a super-connected computer. “The vision of search has always been broader than has been portrayed in the press,” he says. “We would explain it every chance we got.

I don't think the press misunderstood it. It was just that they were focused on what the users were into at the time.” He recalls one example that shows that Brin and Page imagined that one day even the smallest “stuff” would be online. “When we were doing the first research, we used to eat in Whole Foods [an organic supermarket chain]. We talked about using search to find out what aisle the salt is on. Instead of having to look at the big signs at the top of each aisle, you could use a search engine to tell you where in the store everything is, and maybe graph it out for you.”

Brin and Page were obsessed with recording, categorising and indexing anything and everything, and then making it available to anyone with internet access because they genuinely believed – and still do – that it is a morally good thing to do. It may sound hopelessly hippie-ish and wildly hypocritical coming from a couple of guys worth £10 billion each, but Brin and Page insist they are not, and never have been, in it for the money. They see themselves as latter-day explorers, mapping human knowledge so that others can find trade routes in the new information economy.

“Google has been trying to democratise information to make it possible for everyone in the world to access the information they need to do the things they need to do,” Silverstein says. Belief in the value of information for its own sake was behind the firm's highly controversial decision to cave in to demands from the Chinese government for censorship so as to break into the giant local market. Some information, Google reckoned, is better than none.

In spite of the growing public paranoia over its omnivorous intentions, Google is convinced that the more we find out about what it is up to, the more we will agree with it. The man whose job it is to persuade us to live on planet Google is Sep Kamvar, the firm's head of personalisation. He's a good choice. The 30-year-old shaggy,

flip-flop-wearing, softly spoken surfer dude could not look less Big Brotherish if he tried. We meet – shock! – in yet

another whitewashed conference room. He makes his pitch by first appealing to my wallet. Cloud computing and data storage are free for personal users. If I sign up, I will never again need to spend hundreds of pounds buying software and zip drives to back up my data. Google will do it all for me. The vision of a paperless future – where all documents reside online – sounds tempting. Being tied to a physical PC box is old-school.

Personalisation, Kamvar concedes, sounds “scary” but is in fact designed to help Google to help me. The more he and his fellow Google engineers know about me, the better they can tailor search results to my needs and interests. They can also start making recommendations

I might find useful. Kamvar illustrates his point with a simple example: “Say you are in Britain and you’re interested in new restaurants in your area. You search for ‘new restaurants’. Google, now, will give you information about new restaurants in Britain. If you want new local pizza or pasta restaurants, you have to work through the list searching for the Italian restaurants

in your area. It’s inefficient. If, however, you share your web history with Google, it will know that you like Italian food best because you search for it the most, and it will know the area you.

From a garage to the globe

1997 Larry Page and Sergey Brin, two 24-year-old Stanford University computer-science graduate students, register the domain name ‘google.com’. The word ‘google’ is an accidental misspelling of ‘googol’, which refers to the number 10 to the power of 100 (or 1 followed by 100 zeros)

1998 Google becomes a private company and ‘launches’ on the worldwide web. Its headquarters are based in a garage in Menlo Park, northern California

2000 Google begins to sell ads linked to key search words

2001- 2 Advertising revenue and deep-pocketed venture capitalists help Google to ride out the dotcom crash

2003 Google expands rapidly, driving internet use and threatening industries as varied as music, newspapers, television, advertising, telephones, travel and pornography

2004 Google floats on the Nasdaq. Its shares initially sell for £40. Today they fetch more than £300, valuing the company at almost £100 billion

2006 Google buys YouTube, the largest and most popular video-exchange website

2007 Google announces its £1.5 billion plan to buy DoubleClick, the leading display-advertising business that also tracks web-users’ search behaviour

What makes google go?

- Two factors explain Google’s extraordinary success – its search-related services and its advertising business. Search brings in the crowds. Advertising brings in the money

- Google dominates the market for search because in 1998 its founders, Sergey Brin and Larry Page, invented a better way to index and rank web pages

- Before Google, search engines simply looked for keywords and their position on web pages to determine their content and importance. Unscrupulous publishers manipulated the system by filling their pages with popular keywords, usually hidden from view, to earn high rankings in search results

- Instead of analysing the content of each page, Brin and Page devised PageRank, a complex mathematical algorithm that tallied how many other influential sites linked to that page

- The partners reckoned that sites that were ‘well connected’ would be of higher quality. They were right. Google delivered more useful search results than its rivals

- Thanks to PageRank – and dozens of other constantly evolving filtering, classifying and indexing systems – Google is now the most popular internet-search engine. In the US, the world’s biggest online market, Google’s share of queries is around 60%, Yahoo’s 23%, Microsoft’s 12%, Time Warner’s 4.5%. In the UK and much of Europe, Asia and Latin America, Google handles three out of every four search queries

- Google's second big breakthrough came with its advertising system, called AdWords. When you search for a topic on Google, small paid-for text ads show up next to search results

- While it didn't invent search-triggered ads, Google figured out a far more efficient way of turning web-users into buyers. Rather than doling out premium space to the highest bidder, as its competitors did, Google used another algorithm to work out how relevant the ad text was to a given query and the odds someone would actually click on it. This meant ads were targeted at the users most likely to respond to them. The result was that Google's 'click through' rate (the number of times users click on ads) was twice as high as its nearest competitor's. It has captured more than half the search-engine advertising market

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