

EXHIBIT E

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Postcards From Planet Google

By JENNIFER 8. LEE

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people who shouldn't marry "she smoked a cigar" mr. potatoheads in long island pickup lines to get women auto theft fraud how to.

Stare at Live Query long enough, and you feel that you are watching the collective consciousness of the world stream by.

Each line represents a thought from someone, somewhere with an Internet connection. Google collects these queries -- 150 million a day from more than 100 countries -- in its databases, updating and storing the computer logs millisecond by millisecond.

Google is taking snapshots of its users' minds and aggregating them. Like a flipbook that emerges when successive images are strung together, the logged data tell a story.

So what is the world thinking about?

Sex, for one thing.

"You can learn to say 'sex' in a lot of different languages by looking at the logs," said Craig Silverstein, director of technology at Google. (To keep Live Query G-rated, Google filters out sex-related searches, though less successfully with foreign languages.)

Despite its geographic and ethnic diversity, the world is spending much of its time thinking about the same things. Country to country, region to region, day to day and even minute to minute, the same topic areas bubble to the top: celebrities, current events, products and computer downloads.

"It's amazing how similar people are all over the world based on what they are searching for," said Greg Rae, one of three members of Google's logs team, which is responsible for building, storing and protecting the data record.

Google's following -- it is the most widely used search engine --- has given Mr. Rae a worldview from his cubicle. Since October 2001, he has been able to reel off "anthrax" in several languages: milzbrand (German), carbonchio (Italian), miltvuur (Dutch), antrax (Spanish). He says he can also tell which countries took their recent elections seriously (Brazil and Germany), because of the frenzy of searches. He notes that the globalization of consumer culture means that the most popular brands are far-flung in origin: Nokia, Sony, BMW, Ferrari, Ikea and Microsoft.

Judging from Google's data, some sports events stir interest almost everywhere: the Tour de France, Wimbledon, the Melbourne Cup horse race and the World Series were all among the top 10 sports-related searches last year. It also becomes obvious just how familiar American movies, music and celebrities are to searchers across the globe. Two years ago, a Google engineer named Lucas Pereira noticed that searches for Britney Spears had declined, indicating what he thought must be a decline in her popularity. From that observation grew Google Zeitgeist, a listing of the top gaining and declining queries of each week and month.

Glancing over Google Zeitgeist is like taking a trivia test in cultural literacy: Ulrika Jonsson (a Swedish-born British television host), made the list recently, as did Irish Travelers (a nomadic ethnic group, one of whose members was videotaped beating her young daughter in Indiana) and fentanyl (the narcotic gas used in the Moscow raid to rescue hostages taken by Chechen rebels in late October).

The long-lasting volume of searches involving her name has made Ms. Spears something of a benchmark for the logs team. It has helped them understand how news can cause spikes in searches, as it did when she broke up with Justin Timberlake.

Google can feel the reverberations of such events, and others of a more serious nature, immediately.

On Feb. 28, 2001, for example, an earthquake began near Seattle at 10:54 a.m. local time. Within two minutes, earthquake-related searches jumped to 250 a minute from almost none, with a concentration in the Pacific Northwest. On Sept. 11, searches for the World Trade Center, Pentagon and CNN shot up immediately after the attacks. Over the next few days, Nostradamus became the top search query, fueled by a rumor that Nostradamus had predicted the trade center's destruction.

But the most trivial events may also register on Google's sensitive cultural seismic meter.

The logs team came to work one morning to find that "carol brady maiden name" had surged to the top of the charts.

Curious, they mapped the searches by time of day and found that they were neatly grouped in five spikes: biggest, small, small, big and finally, after a long wait, another small blip. Each spike started at 48 minutes after the hour.

As the logs were passed through the office, employees were perplexed. Why would there be a surge in interest in a character from the 1970's sitcom "The Brady Bunch"? But the data could only reflect patterns, not explain them.

That is a paradox of a Google log: it does not capture social phenomena per se, but merely the shadows they cast across the Internet.

"The most interesting part is why," said Amit Patel, who has been a member of the logs team. "You can't interpret it unless you know what else is going on in the world."

So what had gone on on April 22, 2001?

That night the million-dollar question on the game show "Who Wants to Be a Millionaire" had been, "What was Carol Brady's maiden name?" Seconds after the show's host, Regis Philbin, posed the question, thousands flocked to Google to search for the answer (Tyler), producing four spikes as the show was broadcast successively in each time zone.

And that last little blip?

"Hawaii," Mr. Patel said.

The precision of the Carol Brady data was eye-opening for some.

"It was like trying an electron microscope for the first time," said Sergey Brin, who as a graduate student in computer science at Stanford helped found Google in 1998 and is now its president for technology. "It was like a moment-by-moment barometer."

Predictably, Google's query data respond to television, movies and radio. But the mass media also feed off the demands of their audiences. One of Google's strengths is its predictive power, flagging trends before they hit the radar of other media.

As such it could be of tremendous value to entertainment companies or retailers. Google is quiet about what if any plans it has for commercializing its vast store of query information. "There is tremendous opportunity with this data," Mr. Silverstein said. "The challenge is defining what we want to do."

The search engine Lycos, which produces a top 50 list of its most popular searches, is already exploring potential commercial opportunities. "There is a lot of interest from marketing people," said Aaron Schatz, who writes a daily column on trends for Lycos. "They want to see if their product is appearing. What is the next big thing?"

Google currently does not allow outsiders to gain access to raw data because of privacy concerns. Searches are logged by time of day, originating I.P. address (information that can be used to link searches to a specific computer), and the sites on which the user clicked. People tell things to search engines that they would never talk about publicly -- Viagra, pregnancy scares, fraud, face lifts. What is interesting in the aggregate can be seen an invasion of privacy if narrowed to an individual.

So, does Google ever get subpoenas for its information?

"Google does not comment on the details of legal matters involving Google," Mr. Brin responded.

In aggregate form, Google's data can make a stunning presentation. Next to Mr. Rae's cubicle is the GeoDisplay, a 40-inch screen that gives a three-dimensional geographical representation of where Google is being used around the globe. The searches are represented by colored dots shooting into the atmosphere. The colors -- red, yellow, orange -- convey the impression of a globe whose major cities are on fire. The tallest flames are in New York, Tokyo and the San Francisco Bay Area.

Pinned up next to the GeoDisplay are two charts depicting Google usage in the United States throughout the day. For searches as a whole, there is a single peak at 5 p.m. For sex-related searches, there is a second peak at 11 p.m.

Each country has a distinctive usage pattern. Spain, France and Italy have a midday lull in Google searches, presumably reflecting leisurely lunches and relaxation. In Japan, the peak usage is after midnight -- an indication that phone rates for dial-up modems drop at that time.

Google's worldwide scope means that the company can track ideas and phenomena as they hop from country to country.

Take Las Ketchup, a trio of singing sisters who became a sensation in Spain last spring with a gibberish song and accompanying knee-knocking dance similar to the Macarena.

Like a series of waves, Google searches for Las Ketchup undulated through Europe over the summer and fall, first peaking in Spain, then Italy, then Germany and France.

"The Ketchup Song (Hey Hah)" has already topped the charts in 18 countries. A ring tone is available for mobile phones. A parody of the song that mocks Chancellor Gerhard Schröder for raising taxes has raced to the top of the charts in Germany.

In late summer, Google's logs show, Las Ketchup searches began a strong upward climb in the United States, Britain and the Netherlands.

Haven't heard of Las Ketchup?

If you haven't, Google predicts you soon will.