Essay A

Category and candidate number								
Candidate name	Essay A							
School name								
Examination session	Month [May or November]: *May*					Year: *2004*		

EXTENDED ESSAY COVER

Candidates must complete this page and then give this cover and their final version of the extended essay to their supervisor

IB subject in which this extended essay is registered: **ITGS**

(For an extended essay in the area of languages, state the language and whether it is group 1 or group 2)

Title of the extended essay: "The Impact of Google on its consumer's privacy"

CANDIDATE'S DECLARATION

If this declaration is not signed by the candidate the extended essay will not be assessed

The extended essay I am submitting is my own work (apart from guidance allowed by the International Baccalaureate Organization)

I have acknowledged each use of the words, graphics or ideas of another person, whether written, or oral

I am aware that the word limit for all extended essays is 4000 words and that examiners are not required to read beyond this limit

Signature of candidate:

Date: 23/1/2004

UPERVISOR'S REPORT

he supervisor should complete the report below and then give this cover, enclosing the final version of the extended essay, to the iploma coordinator. If this report is not signed by the supervisor the extended essay will not be assessed and may be returned to ie school.

Iame of supervisor *[CAPITAL letters]*

Comments
appropriate, please comment on the candidate's performance, the context in which the candidate undertook the research for the xtended essay, any difficulties encountered and how these were overcome. These comments can help the examiner award a level ir criterion H. Do not comment on any personal adverse circumstances which may have affected the candidate.

devoted considerable effort, research and personal involvement in developing an interesting research question).

have read the final version of the extended essay, which will be submitted to the examiner.

o the best of my knowledge, the extended essay is the authentic work of the candidate.

spent ☐ 3½ ☐ hours with the candidate discussing the progress of the extended essay.

ignature of supervisor: _____   Date: *January 30, 2004*

ASSESSMENT FORM (for examiner use only)

Category and candidate number									

General assessment criteria
Refer to the general guidelines.

ACHIEVEMENT LEVEL

	X	maximum	Y
A Research question	2	2	
B Approach	3	3	
C Analysis/interpretation	4	4	
D Argument/evaluation	4	4	
E Conclusion	2	2	
F Abstract	2	2	
G Formal presentation	3	3	
H Holistic judgement	3	4	
TOTAL OUT OF 24	23		

Subject assessment criteria
Refer to the subject guidelines.

Not all of the following criteria will apply to all subjects, use only the criteria which apply to the subject of the extended essay.

Criterion J	4	
Criterion K	2	
Criterion L	4	
Criterion M		
Criterion N		
Criterion P		
TOTAL OUT OF 12	10	

Name of examiner [*CAPITAL letters*]:

Examiner number:

Signature of examiner: _____

Date: _____

"The Impact of Google on its consumer's privacy"
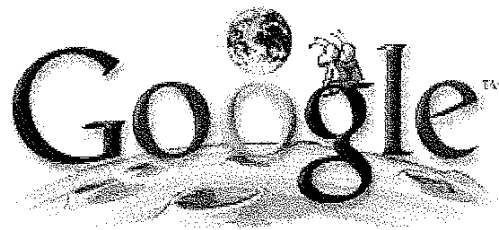
IB Extended Essay

Name:
IBCN:
Subject: ITGS
Supervisor:
Words: 3908 ✓
Date: February 2003 – January 2004

Abstract – "The Impact of Google on its Consumer's Privacy"

Words: 284

The incredible speed at which the Internet has grown in recent years has made it impossible to find useful information without using a search engine. Google, a company founded by two Stanford University graduate students, has developed into the unreachable leader on the search engine market. Tens of millions of Internet users were enticed by the simplicity of using the company's search service. No one could expect that Google doesn't respect the established ethical principles for collecting and storing end-user personal data. This paper investigates "What impact has the company had on consumers' privacy?"

The scope of the paper includes all aspects of Google's Privacy Policies. An overview of the history of the search giant is followed by an analysis of the reason(s) for its sudden popularity. The next section concerns the impact of the issues related to Google's Privacy Policy, stating the problems with how the company handles its consumer's personal information, and weighing up the advantages and disadvantages of Google's information gathering. Two feasible solutions, 'opt-in', allowing the end-user to choose whether Google should store information about him/her, and 'informed consent', making the end-user aware of the fact that using Google's service entails to personal information being collected about him/her, are then proposed and evaluated in the following part of the paper.

In the conclusion, the paper is summarised and the impact of the company's privacy issue on society is analysed. It is concluded that, if Google does not change their policies, it is up to the end-user whether he/she decides to use the service under such conditions. Further, unanswered questions and issues arising from the investigation are stated, and a short paragraph on Google's role in today's society wraps up the investigation.
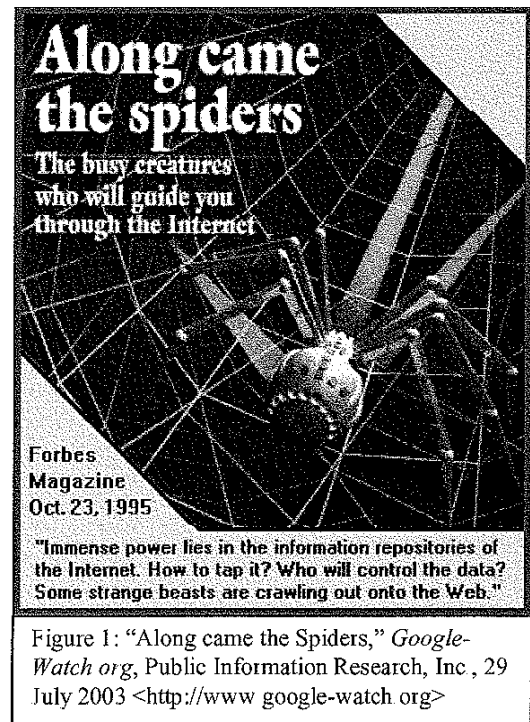
Table of Contents

*"The ability to ask
the right question is
more than half the
battle of finding the
right answer"*

- *Thomas J. Watson*

1.   Presentation of the issue

1.1 Development of the Internet

When *Dr. J.C.R. Licklider* was chosen to head the *ARPANET* research project in the early 1970's
to develop and improve the military use of computer technology[1], his team of computer scientists
could not have foreseen, that a mere three decades later around 580 million people (the figure
expected to increase by about 22.3 % in 2004)[2] around the world would be able to picture a life
without this ever-expanding vial of information – the Internet.

It was a milestone development indeed: having almost
ultimately removed physical borders, allowing the
instantaneous exchange of information from one side of
the planet to the other, and most importantly, providing
new opportunities for earning money, finding important
and useful information and communicating. The World
Wide Web, a network of interconnected networks,
flourished and encompassed the globe at the speed of
light[3]. In July of 1992 there were 992,000 hosts –
computers that are connected to a TCP/IP network[4] – and
50 websites while only under 11 years later, in January
2003 the *Internet Software Consortium*, an Internet
surveying company, counted an incredible 171,638,297
hosts and 28,200,000 websites[5]. The internet had grown
so rapidly that, in order to find useful information, one
was forced to rely on search engines (*see Figure 1*), or
more appropriately (in the last three years), on Google,
monopolising the search engine industry due to its
unprecedented accuracy and efficiency in finding the
most appropriate 'answers' to surfers' queries

Figure 1: "Along came the Spiders," *Google-
Watch.org*, Public Information Research, Inc., 29
July 2003 <http://www.google-watch.org>

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[1] G. R. Gromov, "The roads and crossroads of Internet's history," *Gregory Gromov*, 1 August 2003
<http://www.netvalley.com/intvall.html>

[2] Cyberatlas Staff, "Population Explosion!"*Cyberatlas*, 1 August 2003
<http://cyberatlas.internet.com/big_picture/geographics/article/0,1323,5911_151151,00.html>.

[3] G. R. Gromov, "The roads and crossroads of Internet's history," *Gregory Gromov*, 1 August 2003
<http://www.netvalley.com/intvall.html>

[4] "Host," Webopedia, 1997, (accessed 7 August 2003), http://www.webopedia.com/TERM/h/host.html.

[5] Internet Software Consortium, "Internet domain survey", *Internet Software Consortium*, 7 August 2003
<http://www.isc.org/ds/WWW-200107/index.html>.

good citations

1.2 Google - The most popular source of information on the internet

In fact, Google has become so popular and thus powerful, so quickly, that no one seems to be in doubt about its ethics. Its streamlined ad-free interface and dexterous service appear to create a 'halo' above the well-known four-colour trademark. Most daily Google users don't even suspect that Google may be collecting personal information about what individuals are searching for, chained to the unique *IP* address of their computer[6] and storing this information.

No matter what dark conspiracies may be going on at the Googleplex in San Francisco Bay, undoubtedly, Google has had a considerable impact on the Internet, be it good or bad. The question that emerges is: **What impact has the company had on consumers' privacy?**

This paper will investigate how Google 'morphed' from a research paper into the most popular search engine on the Internet. The issues related with the company's Privacy Policy will be presented, as well as advantages and disadvantages and solutions to the problems caused by the Policy followed by an evaluation of these.

2. The IT Background of the Issue

2.1 The History of Google

> *"The Internet is distributed by nature.. because no single entity is*
> *in control, nobody knows everything about the Internet "*
> - *John S. Quarterman of MIDS, a pioneer company*
> *of Internet analysis and performance measurement.*

To get a full picture of the recent developments of the Internet, and Google's involvement in them, it is important to see both the pro and the con side of the controversial issues related to the company. It may be useful to look at the origins of the company, that is entrusted with the search queries of 42% of internet search engine users – 52 million people[7], and how it has changed since its inception in late 1998.

Google grew out of a research paper by, then, Stanford University graduate students, Sergey Brin and Larry Page, into a small business, led from the Stanford dormitories. Having maxed out all of their credit cards to buy a terabyte of disk space, the graduate students were looking for an investor, whom they found in Andy Berchtolsheim, one of the founders of Sun Microsystems. His trustful $100,000 investment, moved Google Inc. into the garage of a friend, from where they led

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[6] "Abbreviation of *Internet Protocol* - it specifies the format of packets and the addressing scheme [on the internet]":
   IP, *Webopedia*, 7 August 2003, <http://www.webopedia.com/TERM/i/ip.html>
   [7] Michael S Malone, "Inside the Soul of the Web," *Wired Magazine*, Wired Digital, Inc., 8 August 2003 <http://www.wired.com/wired/archive/11.05/google.html>.

the 3-man strong business for the first months of its existence Already at its beta stage, Google.com was answering 10,000 queries a day In February 1999 the company had 8 employees and was handling around 500,000 queries a day and Google was forced to move into the company's first real office on University Avenue, Palo Alto. After securing a $25 million investment from Silicon Valley's two greatest venture capital firms Kleiner Perkins Caulfield & Buyers and Sequoia Capital, Google Inc had completed the last step on the way to becoming a dotcom giant Attracting celebrity staff such as Omid Kordestani, formerly at Netscape, Urs Hölzle from UC Santa Barbara or Peter Norvig, formerly head of the Computational Sciences Division at the NASA Ames Research Centre, and moving into the current headquarters, the Googleplex, the company had become a big player in the information industry, by then handling 3 million queries a day, in a bit over a year of operating, with a tendency to growth

The road was straight uphill from there, with Google officially becoming the biggest search engine on the Web in June 2000 (having indexed over a billion websites) and snatching various honours such as the Webby award or a People's Voice award for technical achievement in May of the same year The company grew and slowly spread all over the globe announcing partnerships with Yahoo!, NetEase (China's leading portal) and NEC's BIGLOBE in Japan, and most recently AOL After acquiring Deja com's assets, the internet's biggest Usenet archive was integrated into Google's searchable format Further the addition of advanced image search, the Google Toolbar, AdWords – their very own advertising concept, Google News, and the launch of Google Labs completed the wide reach of the website, giving the colourful "Well of wisdom" its current slick and divine look [8]

2.2 Why Google achieved success

2.2.1 Undivided focus on consumer needs

So why was this project, based on a Stanford computer science graduate student research paper called "The Anatomy of a Large-Scale Hypertextual Web Search Engine," so successful? There are many reasons that amounted to this success story that reminds us of "the American Dream" First and foremost, of course, Google's main quality was the main reason for its large-scale success. Google made full use of the contemporary wisdom – they learned from other internet companies' mistakes[9]. The fact that, all the way, Brin and Page did not let the 'big money' seduce them, and stayed focused on the 'raison d'être' of their enterprise – giving the customers the undivided attention of their service

> *"Take Netscape, It added too much and became a media company.*
> *Instead, Google focuses on search Have you noticed how our*
> *webpage has actually gotten simpler?"*
> *- Sergey Brin, co-founder of Google Inc.[10]*

[8] "Google: Corporate Information: Google History", *Google*, Google, Inc , 28 July 2003, <http://www.google com/corporate/history html> (Note: All information about Google's history is taken from this page)

[9] Mark Pontin, "The Men who Rule the Web," *Business Life* December 2002/January 2003: 60-1

[10] ibid

This was the greatest advantage that Google had, above all other search engines of that time. They strived to improve their technology and thus the service they offered their end-users, instead of widening their scope and becoming one of many portals. They kept the site simple to use: flashy graphics, obtrusive advertisements were banned – end-users could find virtually anything they were looking for in terms of information by simply typing the keywords and clicking find.

According to Safa Rashtchy, vice-president and senior research analyst at US Bancorp Piper Jaffray: *"Google has a totally different mentality from the other companies here in the Valley, by far its more a technological company than an entrepreneurial one."*[11]

2.2.2 Ground-breaking search engine technology

There was far more than business tactics involved in the company's achievements, of course. The groundbreaking PageRank algorithm (*see Figure 2*), developed by Brin and Page, was the foundation of Google's search algorithm. With its revolutionary concept of counting up the inbound links and the value of these links going to any given page A, to calculate a value or PageRank (out of 10) for page A, the search engine gave the most valuable and relevant websites at the top of the

Figure 2: How Google's PageRank works:

Andrew Gerhart, "Understanding and building Google PageRank," *Search Engine Optimization*, Orbidex, Inc., 25 September 2003 <http://www.searchengineguide.com/orbidex/2002/0207_orb1.html>.

list of search results, and therefore was considerably faster than its competition. This speed and efficiency made users happy and eliminated the frustration that other search services on the web created by having to look through endless pages of irrelevant results. Google saved millions of dollars, as they did not have to physically advertise their services. Most current users found it through word of mouth, and the ones that didn't, were enticed by the little 'powered by Google' tags on its partner's pages, or educational sites to which Google offers a free service (*see Figure 3 and Figure 4*).
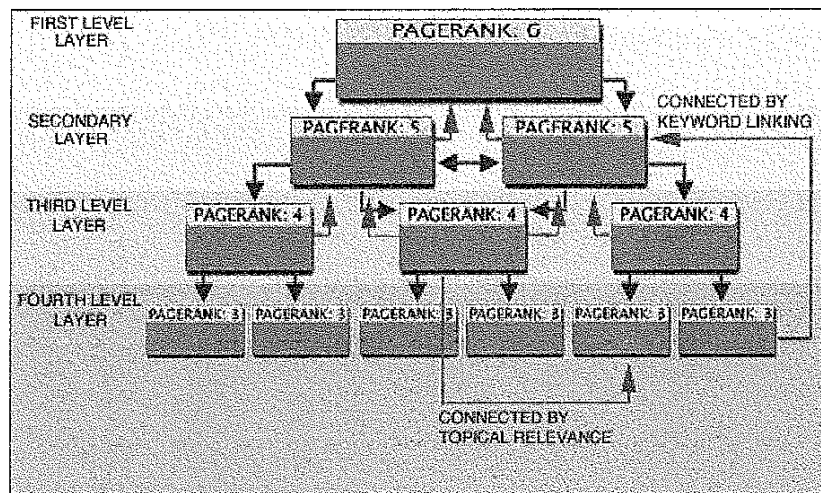
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[11] Mark Pontin, "The Men who Rule the Web," *Business Life* December 2002/January 2003: 60-1

Welcome Wilkommen Bienvenue Välkommen Bienvenidos Benvenuto Yin dee tom lap Kalos orisate Hos geldniz

ABOUT VIS PRE-PRIMARY SCHOOL PRIMARY SCHOOL SECONDARY SCHOOL ALUMNI

ABOUT VIS

Google Search Tips
powered by

ib

Google Search

Searched the web for **ib**   Results **1 – 10** of about **248**

/ SECONDARY SCHOOL / **IB** Information

Secondary News, General Curriculum Documents, **IB** Information Examination Schedules
External Examinations **IB** Diploma Requirements Passing The **IB** Extended Essay ...

www   t/secondary/ib_information/ - 14k - Cached - Similar pages

Figure 3:   website search powered by Google

washingtonpost.com PRINT EDITION | Subscribe
                                        to The Washington Post

NEWS | OPINION | SPORTS | ARTS & LIVING | Discussions | Photos &
ENTERTAINMENT   Video

SEARCH: ● Site ○ Web by Google [   ] go

Figure 4: www washingtonpost com, search powered by Google

3. The Impact of the Issue

3.1 Introduction to the Issue of Privacy

The invention and development of computer network technology brought humanity a lot of advantages, but, unfortunately, as with any marvellous new invention, it also created more than just a handful of new problems One of the main issues that the global dispersion of the Internet has brought upon society has to do with the collection and management of personal information about individuals by companies and governmental institutions – in one word, the issue is privacy

As technology continued developing it became easier and easier to collect personal information about people without them even knowing it In order to ensure the ethical treatment of personal information, laws and business policies concerning privacy were formulated according to a set of ethical principles (*see Figure 5*) The question is: to what extent does Google follow these principles?

1	Collect only the data needed
2	Inform people when data about them are being collected, what is collected, and how it will be used (Do not use invisible information gathering techniques)
3	Offer a way for people to opt out from mailing lists and from transfer of their data to other parties
4	Provide stronger protection for sensitive data For example, use an opt-in policy for disclosure of medical data
5	Keep data only as long as needed.
6.	Maintain accuracy and security of data
7	Provide a way for people to access and correct data stored about them

Figure 5: Privacy Principles for Personal Data from:
        Sara Baase, *A Gift of Fire Second Edition* (Upper Sadle River, NJ: Pearson Education, Inc , 2003) 61

3.2 Google's Privacy Problem

3.2.1 The problems of Google's Privacy Policy

> "I recently went out to visit the offices of Google It is a mind-
> bending experience. You can actually sit and watch a sample of
> everything that everyone in the world is searching for."
>   *- Thomas L. Friedman, NY Times journalist*
>   *and Pulitzer Prize laureate.[13]*

Unfortunately Google's Privacy Policy violates at least five of the seven ethical principles stated in Figure 5, namely principles 1, 2, 3, 5 and 7 This section explains how and why this is so

In Google's Privacy Policy (*see Appendix 7 1*), the concept of cookies is explained and the company justify their use of cookies (*see Figure 6*): " [to] improve the quality of [their] service and to understand [their] user base more "[14] It is also stated exactly what information is being collected about you: the time of day at which you performed the search, browser type, browser language, Google User Preferences, and your unique Google ID number together with your query. The company underlines that no personal or individual information is being collected[15], but since most users of the internet have static IP addresses, an IP address can easily be traced by a process called geolocation, and can be linked with the list of IP numbers on your ISP's databases (A search service on *www google-watch org* offers the possibility to type in an IP number and find the ISP it belongs to) revealing the name and other personal information about the owner of that IP address

The analysis is all highly relevant to the RQ. C → 4

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[13] Thomas L Friedman, qtd in: "Is Google God," *Google Watch*, Personal Information Research, Inc , 29 July 2003 <http://www google-watch org/friedman html>

[14] "Google Privacy Policy," *Google*, Google, Inc , 26 February 2003 <http://www google com/privacy html>

[15] ibid

```
anyuser@google[1] - Notepad

PREF=ID=366b840c281d670d  Your unique Google User ID number
LD=en
NR=10
NW=1         Google User Preferences
CR=2
TM=1065957093   A code representing the time you first visited Google.com
LM=1073827257   A code representing the time the preferences were last changed
S=gUHIUOUWDEIip1MH   Presumably a check sum to assure data integrity
```
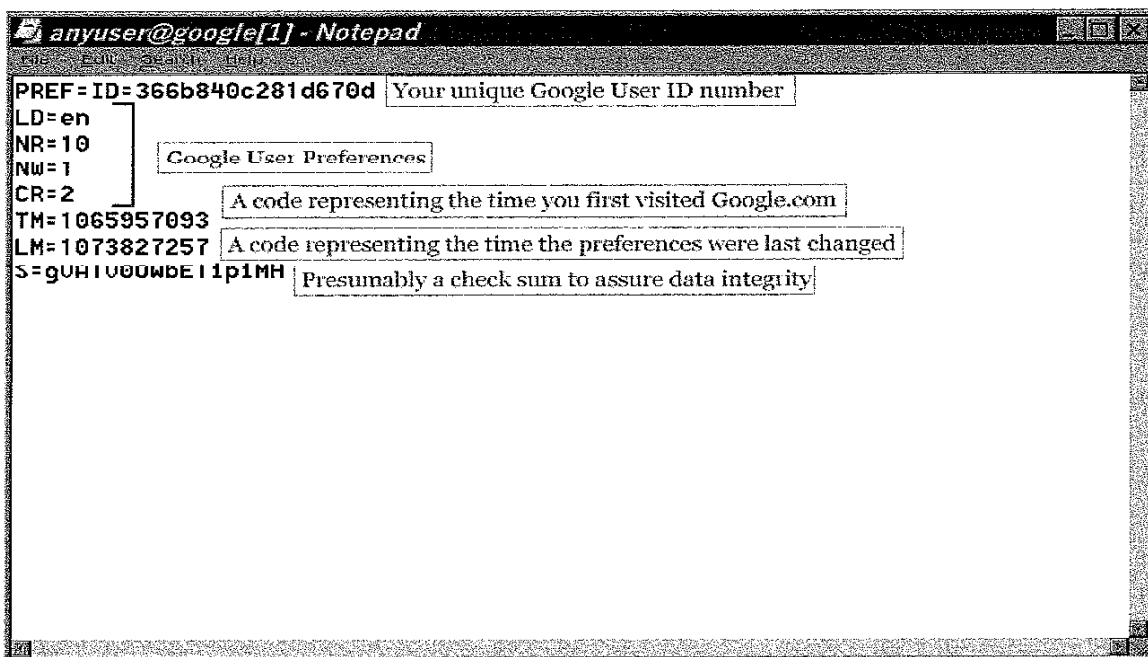
Figure 6: A screenshot of the Google cookie from my computer

It may not sound so harsh, that everything you search for on Google, is stored together with a piece of information that can be traced to you. However, people search for things (ranging from information about diseases to pornographic sites) on the Internet, that they may not even tell their closest of friends

> "Quis custodiet ipsos custodies? (Who will guard the guards
> themselves?)"
>
> > - Juvenal

A detail that could make Google users worry is the ultimate sentence of the third-last point on the company's Privacy Policy (see Appendix 7.1): "Please be aware, however, that we will release specific personal information about you if required to do so in order to comply with any valid legal process such as a search warrant, subpoena, statute, or court order."[16]

This phrase is disturbing due to its incongruence with the second point in Google's Privacy Policy, where it is clearly stated that Google does not collect any unique information about every individual user. How can they disclose specific personal information about individual users if, as claimed, they do not collect it? Thus the question remains, exactly what information is collected?

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[16] Google Staff, "Google Privacy Policy," Google, Google, Inc , 26 February 2003
<http://www.google.com/privacy.html>

Sadly, that is not the only problem with the company's Privacy Policy. While writing about the cookies they use, Google only gives its users half the story. It is not stated that they are the only Internet company that use near-to immortal cookies, which expire in 2038.[17] This implies that your IP number, a unique ID number that is issued to every new user upon first visit of the Google website, and dated entries of everything you've searched for on Google are kept in a database and will stay there for another 35 years. It may be even more disconcerting that, according to the Patriot Act, if a subpoena, court order or any other form of legal action is performed, and personal information about you is disclosed as a result of this, you may never find out about it, as Google, according to its business policies: *"[does] not comment on the details of any pending legal matters involving Google."*[18] They do not seem to respond to direct queries, as I have experienced, having received no reply to an email to Google's International Public Relations representative, Debbie Frost (*see Appendix 7.2*).

S S #2 described

J → 4. Ethical issue is fully explained!

3.2.2 Advantages of Google's data gathering

Having stated the negative sides of the issue, what advantages does Google's Privacy Policy have?

Google handles over 200 million queries a day, a third of all estimated daily searches[19], and records every single query in cookies. This makes it an incredibly powerful tool for identifying criminal or terrorist activity on the Internet. Since over 46% of people with an Internet connection use Google, there is a high chance that someone looking for an Al-Qaida training video, or for information about how to join a similar organisation may refer to Google. In fact, Google's powers of discovery were believed to be so powerful, that federal agents were not allowed to run data searches about suspects on it, until recently.[20]

Figure 7: Languages used to access Google. Courtesy of *Google Zeitgeist.*

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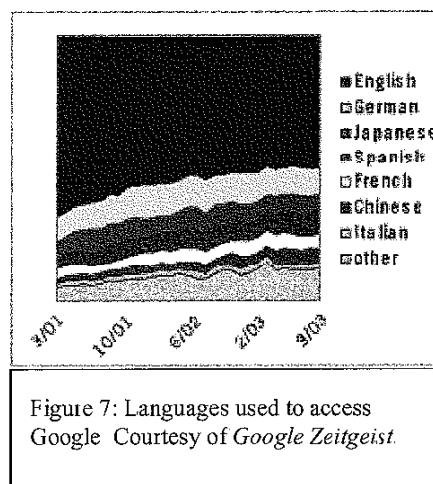
[17] Daniel Brandt, "We asked Google about privacy", *Google Watch*, Personal Information Research, Inc., 29 July 2003 <http://www.google-watch.org/krane.html>

[18] Google spokesperson, qtd. in: "Google sued by SEO Firm over PageRank," *Computer Business Review Online*, CBR, Inc., 12 August 2003 <http://www.cbronline.com/cbr.nsf/printweb/7D9CA98539EF014980256C5A00107E95?Opendocument>.

[19] John Markoff, G. Pascal Zachary, "In Searching the Web, Google Finds Riches," *The New York Times on the Web*, The New York Times Company, 13 April 2003 <http://www.nytimes.com/2003/04/13/technology/13GOOG.html?p >

[20] Mark Pontin, "The Men who Rule the Web," *Business Life* December 2002/January 2003: 59

Courtesy of the 'GET' method for collecting search terms (which is used by most search engines as it allows you to "*bookmark a search, link the search and pass data inside the link*"[21]) the relevant search term ends up on the same line with the I P. address (implying that the approximate geographic location, city, of the user can be found from this address) of the computer from which the search was initiated (*see Appendix 7.3*) in Google's web log. For 2 years, since Greg Rae and two other software engineers at Google conceptualised a program that displays all search terms together with their geographic location showing up as a dot on a world map on the top half of the screen, employees at the Mountain View Googleplex can see millions of queries from all over the planet running down that screen, appearing at the bottom and scrolling up to the top prior to vanishing 5 seconds later (*see Appendix 7.4*).[22] Although it may sound unrealistic and exaggerated, through the inception of Google, humanity has achieved to build a well of wisdom – a way of combining the knowledge of almost all peoples and cultures on the planet – that is accessible to almost anyone from almost anywhere. And what is even more interesting from a social aspect, is that the water in the well – the world map with dots representing the location of queries appearing, is like a cloudy mirror of the "*development, prosperity and thus freedom of*
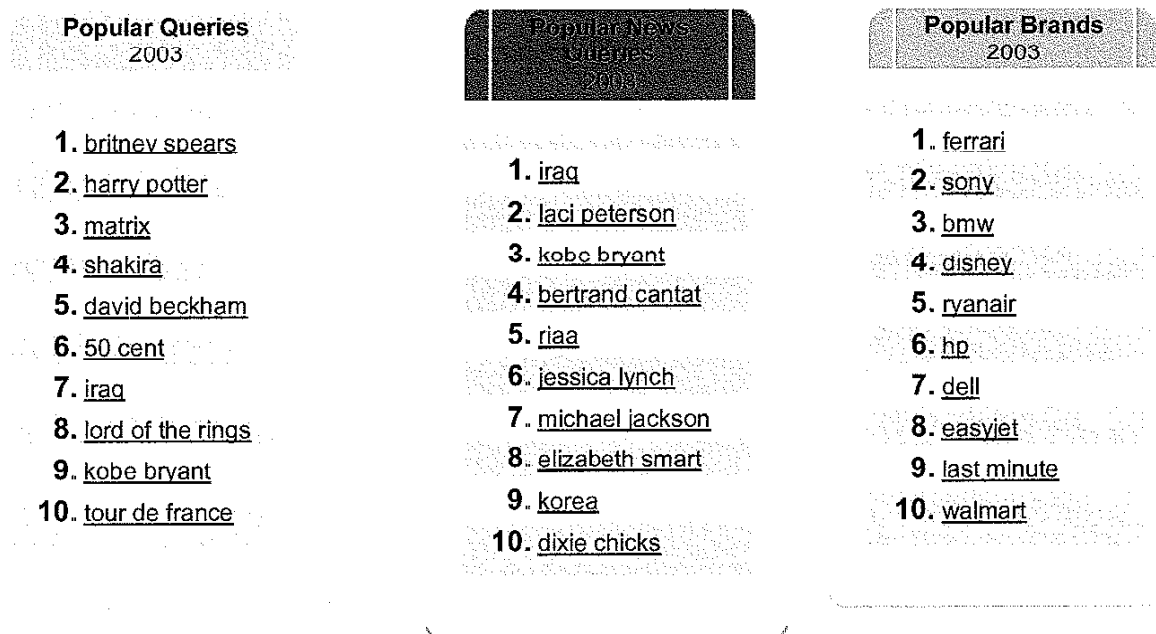
Popular Queries 2003	Popular News Queries 2003	Popular Brands 2003
1. britney spears	1. iraq	1. ferrari
2. harry potter	2. laci peterson	2. sony
3. matrix	3. kobe bryant	3. bmw
4. shakira	4. bertrand cantat	4. disney
5. david beckham	5. riaa	5. ryanair
6. 50 cent	6. jessica lynch	6. hp
7. iraq	7. michael jackson	7. dell
8. lord of the rings	8. elizabeth smart	8. easyjet
9. kobe bryant	9. korea	9. last minute
10. tour de france	10. dixie chicks	10. walmart

Figure 8: 2003 Year-End Google Zeitgeist:
Search patterns, trends and surprises
   Google Staff, "Google Zeitgeist,"
Google.com, Google Inc., 11 January 2004
<http://www.google.com/press/zeitgeist.html>.

[21] "Google Search Term Demonstration," *Google Watch*, Public Information Research, Inc., 29 July 2003 <http://www.google-watch.org/cgi-bin/undemo.htm>.
   [22] Michael S Malone, "Inside the Soul of the Web," *Wired Magazine*, Wired Digital, Inc., 8 August 2003 <http://www.wired.com/wired/archive/11 05/google.html>.

people around the world[23] This program is an incredibly valuable 'social meter', which can, quite accurately, at any time portray the level of technological development of any place on the planet.

Otherwise, collecting such information gives Google the opportunity to constantly improve their service by seeing how often users are satisfied with the first result, or the first page of results. Google uses the aggregate information very cleverly to put together interesting statistics, which they offer to public viewing under the title *Zeitgeist* at *www.google.com/press/zeitgeist.html*. On this site you can find the current Top 10 gaining queries as well as the Top 10 declining queries, plus monthly, 'seasonly' and yearly statistics (*see figure 7 and figure 8*) such as the ten most searched for female artists in Spain, or the 5 most popular animals in Italy. According to Daniel Brandt, President of Public Information Research Inc., the *"fastest, most efficient, and most revealing approach to data mining the internet [would be to] pay Google for a back-door on who's searching for what."*[24]

3.2.3 Summary of the problem

The inadequacy of Google's privacy policy for a search engine with the reach and magnitude of Google is apparent. The company is dangerously central to the Internet: *"They're the traffic cop at the main intersection of the information society,"* says Jonathan Zittrain, co-director of the Berkman Center for Internet and Society at Harvard Law School. *"They have an awesome responsibility."*[25] The fact that the company records information about what 46% of websurfers search for daily is clearly a breech of privacy, as the search queries can be trivially traced to their origin – the individual surfer. Since there is no clear justification for such policies that are not simply breeching privacy but are already bordering with surveillance, this constitutes a problem.

4. Solutions to the Problems arising from the Issue

4.1 The opt-in solution

One way to solve the privacy problem would be to follow MSN.com's example (*see Figure 9*) and notify every Google user about the cookies that the company uses, as well as the information it stores in its weblogs disclosing all information about it: like the time of expiration and exactly what information is recorded, and offer them an opportunity to opt-in when they first access the Google website. Once opted-in to the Google policies, users should have the opportunity to opt-out at any point in time, as well as having the opportunity to view their personal record. To encourage users to accept the policies, the company could give users access to 'preferences' options on the site.

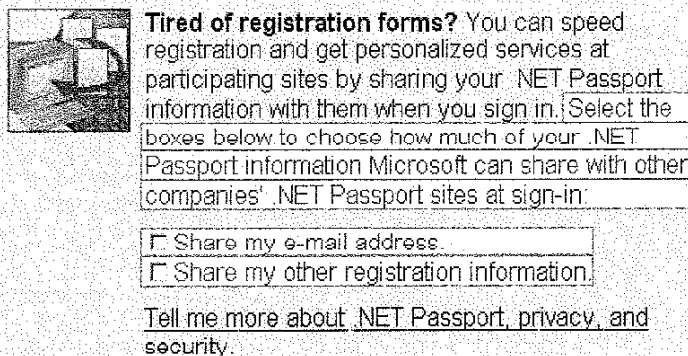---

[23] ibid

[24] Daniel Brandt, "We asked Google about privacy," *Google Watch*, Personal Information Research, Inc., 29 July 2003 <http://www.google-watch.org/krane.html>.

[25] John Markoff, G. Pascal Zachary, "In Searching the Web, Google Finds Riches," *The New York Times on the Web*, The New York Times Company, 13 April 2003 <http://www.nytimes.com/2003/04/13/technology/13GOOG.html?p..>

Tired of registration forms? You can speed
registration and get personalized services at
participating sites by sharing your .NET Passport
information with them when you sign in. Select the
boxes below to choose how much of your .NET
Passport information Microsoft can share with other
companies' .NET Passport sites at sign-in:

☐ Share my e-mail address.
☐ Share my other registration information.

Tell me more about .NET Passport, privacy, and
security.

Figure 9: Part of the MSN '.NET' registration form with an opt-in policy
    MSN Staff, ".NET Passport registration form," *MSN com*, Microsoft Corporation,
11 January 2004 <http://www.msn.com>

4.2 The informed consent solution

Overture Privacy Policy

In general, Overture does not collect, store, use or disclose personally identifying
information except in very specific instances, such as, for example, when you enroll
as an advertiser in the Services, as defined below. Whenever we collect such
information, you will have a choice regarding whether to provide it, how it will be
used, and to whom it will be disclosed. The instances in which Overture does collect
and use information are specifically described in this Privacy Policy. Overture
provides fun, easy to use services, including Overture Search (located at
www.overture.com)(the "Services"). The Services may also be located on third
party Web sites and/or applications. The Services are made available by Overture
Services, Inc. and, its subsidiaries and affiliates (collectively "Overture"). Overture
values its users and their concerns about privacy. To this end, Overture engages in
consistent information practices and uses its best efforts to make clear disclosures
regarding those practices. This Privacy Policy is a part of that effort.

What does this Privacy Policy cover?
This Privacy Policy applies to collection, use, storage and disclosure of information
by Overture. If there are any exceptions, we will clearly disclose them prior to
collecting any information, and will give you an opportunity to choose not to
participate or provide the information. By using the Services and our Web site, you
consent to the collection and use of your information as we outline in this Privacy
Policy. Overture may decide to change this Privacy Policy from time to time.

Figure 10: Overture's Informed consent Privacy policy
    Overture Staff, "Overture's Privacy Policy," *Overture com*, Overture Services, Inc , 25 January 2004
<http://www content overture com/d/USm/about/company/privacypolicy jhtml>

Another solution could be a form of *informed consent*, an idea that *Overture Services Inc* , a
competing search engine, fancied (*see Figure 10*). In other words the company would notify
every user through a statement of service, about the fact that the company uses cookies, and about
what sort of information is stored in these cookies as well as in the weblogs of the site perhaps
showing the user a sample cookie Together with this new policy, Google could introduce new
cookies, which would be reset within a more reasonable time period (such as a few months) than
the current ones If any users may be found suspicious due to frequent queries of a criminal or

terrorist nature, such as searches for ways to join a terrorist group or other criminal groups, their cookies may be kept in place until further notice (this of course must be noted in the privacy policy) and their activity may be reported to agencies such as the Federal Bureau of Investigation.

4.3 Evaluating the feasibility of the solutions

The first solution would allow the users of Google to know exactly what information is stored about them at any given time and would allow them to prevent Google from storing any such information, thus solving the privacy problem. This solution would also have the advantage that Google would be the first large-scale search engine that uses such policies and would thus speak for the integrity of the service A disadvantage would be that this almost completely eliminates the terrorist-fighting potential of the service

The second proposal, *informed consent*, would not completely eliminate the privacy issues of Google, but would minimise them with respect to making use of the crime- and terrorist-fighting potential that the service has It would most definitely be an improvement in comparison to the current situation

Both solutions stated above are adequate to solve Google's privacy problem, but since the company's service is potentially so powerful in tracing criminal and terrorist activity, which is so hard to do using other methods and so important at present, the second solution is more beneficial, as most people that would come under the category of terrorist or criminal will definitely not want Google to keep records of their queries, which can be viewed by the U.S. government at almost any time, and will, therefore, most probably not opt-in to a Google cookie

5. Conclusion and unanswered questions arising from this investigation

5.1 Conclusion

It may seem like the American dream of two graduate students come true in less than five years, but Google is far more than just an ordinary company Because of its unfair Privacy Policy, and the immense amount of information that the company thus collects, it can be used as anything ranging from an anti-terrorist agency, to a social meter – showing how development is spread across the planet

Thus, Google has affected the international society and will continue to do so as the influence and value of the internet become more central to this society Economically, Google has created a whole new window of opportunity for online businesses of all sizes with its AdWords advertising programme allowing companies, big and small, to get to a wide spectrum of potential customers through query relevant adverts From a cultural point of view, the commercialisation of the Internet has caused clashes as it created a broadband bridge between western and eastern cultures allowing members of eastern societies to get an extensive taste of the west and vice versa Google further tightened this cultural gap empowering anyone on the internet to find almost anything As

a result of the fear that Google could cause political damage the Chinese government blocked access to the search engine ahead of a Communist Party Congress in November 2002.

It may be ethically incorrect to store and view such personal information from a privacy point of view, but if this information is truly only used to improve the service for its customers, this speaks for the company's policies. On the other hand, there is no clear reason why Google needs to store such sensitive private information that can be. In the end it is up to the user if s/he agrees to use Google under such conditions or prefer to resort to other services with different policies.

5.2 Unanswered questions and issues arising from this investigation

Since Google is such a vital part of the infrastructure of today's Internet, throughout the run of this investigation questions and issues have arisen that do not fit the span of this paper. Many ethical issues: Is it safe for such a powerful information-finding and -gathering service to be a private corporation independent of the government or even a more international institution such as the United Nations (since only one third of Google's over 200 million daily queries come from inside the United States, and the other two thirds are in 88 other languages[26])? Who is authorised to see the sort of personal information that Google collects and how can someone gain such authorisation? Do other search engine companies also have similar policies? As well as social issues: How does Google affect the development of the Internet in terms of the success of new websites or e-businesses? Does the government use Google to monitor online activity and if so, how do they use it and according to which policies? Do other search engines have similar problems with privacy issues? arise in the run of this investigation but cannot be answered or addressed in this paper as they are beyond its scope.

Google has become a kind of oracle for many people. In today's 'Information Society', people get answers from Google. The way the company controls the flow of queries and results, allows its log analysts to intervene and make sure that the answers are the best available (*see Appendix 7.4*):

> "*They got referred to the right places... I can see how the system responds. And if it doesn't give the right information, I'll find better sites and attach them for future queries... I know people trust in this thing [Google]. They believe it will have the answer. And I don't want it to fail them.*"
> - Greg Rae, Google log analyst[27]

Thus, Sergey Brin and Larry Page, two Stanford graduates have brought the 'American Dream' to life and have created an immensely powerful service, which, romantically speaking, could be the 'Information Society's' version of God.

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[26] Thomas L. Friedman, qtd in: "Is Google God," *Google Watch*, Personal Information Research, Inc., 29 July 2003 <http://www.google-watch.org/friedman.html>

[27] Greg Rae, qtd in: Michael S. Malone, "Inside the Soul of the Web," *Wired Magazine*, Wired Digital, Inc., 8 August 2003 <http://www.wired.com/wired/archive/11.05/google.html>

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7. Appendix

7.1 Google Privacy Policy

Google Google Privacy Policy

Privacy Policy

Google respects and protects the privacy of the individuals that use Google's search engine services ("Google Search Services"). Individually identifiable information about you is not willfully disclosed to any third party without first receiving your permission, as explained in this privacy policy ("Privacy Policy").

Google and Cookies

Upon your first visit to Google, Google sends a "cookie" to your computer. A cookie is a piece of data that identifies you as a unique user. Google uses cookies to improve the quality of our service and to understand our user base more. Google does this by storing user preferences in cookies and by tracking user trends and patterns of how people search. Google will not disclose its cookies to third parties except as required by a valid legal process such as a search warrant, subpoena, statute, or court order.

Most browsers are initially set up to accept cookies. You can reset your browser to refuse all cookies or to indicate when a cookie is being sent. Be aware, however, that some parts of the Google Search Service may not function properly if you refuse cookies.

What Information Do We Collect?

Google does not collect any unique information about you (such as your name, email address, etc.) except when you specifically and knowingly provide such information. Google notes and saves information such as time of day, browser type, browser language, and IP address with each query. That information is used to verify our records and to provide more relevant services to users. For example, Google may use your IP address or browser language to determine which language to use when showing search results or advertisements.

Links to Other Sites

The sites displayed as search results or linked to by Google Search Services are developed by people over whom Google exercises no control. Other links, such as those for the Google-friends mailing list archive, are also on sites not controlled by Google. These other sites may send their own cookies to users, collect data, or solicit personal information. Google may choose to exhibit its search results in the form of a "URL redirecter." When Google uses a URL redirecter, if you click on a URL from a search result, information about the click is sent to Google, and Google in turn sends you to the site you clicked on. Google uses this URL information to understand and improve the quality of Google's search technology. For instance, Google uses this information to determine how often users are satisfied with the first result of a query and how often they proceed to later results.

With Whom Does Google Share Information?

✓ excellent use of appendix

Google may share information about you with advertisers, business partners, sponsors, and other third parties. However, we only divulge aggregate information about our users and will not share personally identifiable information with any third party without your express consent. For example, we may disclose how frequently the average Google user visits Google, or which other query words are most often used with the query word "Linux." Please be aware, however, that we will release specific personal information about you if required to do so in order to comply with any valid legal process such as a search warrant, subpoena, statute, or court order.

Your consent and changes to the Privacy Policy

By using the Google Search Services and our web site, you consent to the collection and use of your information as we have outlined in this policy and to our Terms of Service Policy. Google may decide to change this Privacy Policy from time to time. When we do, we will post those changes on this page so that you are always aware of the information we collect, how we use it, and under what circumstances we disclose it.

Who can I ask if I have additional questions?

Feel free to contact us any time and we'll answer any additional questions you may have. Our email address is help@google.com.

7.2 Email to Google's International PR representative Debbie Frost

IB Extended Essay

File Edit View Tools Message Help

Reply Reply All Forward Print Delete Previous Next Address

This message is High Priority.

From: akuleskov
Date: Donnerstag, 22. Mai 2003 20:50
To: dfrost@google.com
Subject: IB Extended Essay

Dear Ms Frost,
I am   , an International Baccalaureate (IB) student at the Vienna
International School One of the requirements for the IB diploma is a research essay of
3500-4000 words I have decided to write my extended essay in the subject "Information
Technology in a Global Society" and have chosen a research topic primarily concerning
Google

You would greatly help me with my research by answering the following questions

To what extent do the founders of Google believe they are involved in the way the internet
is changing everything?

Is Google seen by its employees to be an entrepreneurial or a technological company?
And why?

yours gratefully,

7.3 Example of IP address identification using the GET method[28]

There are two methods for collecting your search terms, **GET** and **POST**. Search engines use GET because you can bookmark the search, link the search, and pass data inside the link. However, your search terms end up on the same line as your IP address in standard web logs all over the world with the GET method. This is "referrer" information, which is available to the distant webmaster every time you click on a link from a search results page. The webmaster knows that someone at your IP address accessed his page, and also knows *what you were thinking* from your search terms.

Only two items are shown below, the remote address and the "referrer" information. Not shown are these pieces of information, which would be on the same log line:

- **the date and time stamp**
- **the name of the file that was accessed on our site**
- **the status code (whether the request succeeded)**
- **the number of bytes transferred**
- **the type of browser used**

Below we show some recent information from our **NameBase** log, to demonstrate how some Internet addresses come close to qualifying as "personally identifiable information." Then we took recent entries that were referred from searchers at Google who clicked on our **CIA on Campus** site. The fact that the user clicked on a link from the Google search results page caused their Google search terms to appear in this other log of ours.

The **portion in green is the IP block owner** for the IP number on that line. We found this using our search at the bottom of this page. This information doesn't appear in standard logs, but the data is widely available. Another database allowed an IP-to-country lookup (not always accurate) to show where that Internet surfer is located. (Google has a better geolocation database, judging from this May 2003 article in *Wired* magazine, which can often identify the city you are in.) The top list is current (an auto refresh is here), while the bottom list of referrers updates every 30 minutes.

By the way, **the top line is you**.

List of Internet addresses:

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[28] Daniel Brandt, "Google Search Term Demonstration," *Google-Watch org*, Public Information Research, Inc , 29 July 2003 <http://www google-watch org/cgi-bin/urldemo htm>.

**chello080110041142.209.12.vie.surfer.at 80.110.41.142   CHELLO
BROADBAND GMBH   AUSTRIA**
cache-ntc-ae10.proxy.aol.com 198.81.26.143   AMERICA ONLINE
UNITED STATES
bwia-piarco.rave-tt.net 66.178.52.35   NEW SKIES SATELLITES INC
UNITED STATES
adsl-131.147.146.info.com.ph 203.131.147.146   ASIA PACIFIC
NETWORK INFORMATION CENTER
miami.shipley.com 208.204.140.3   SHIPLEY COMPANY, INC.   UNITED
STATES
202.57.109.198 202.57.109.198   WORLDTEL CEBU AND ILO-ILO
PHILIPPINES

7.4 Article from *Wired Magazine*: "Inside the Soul of the Web"[29]

Issue 11.05 - May 2003

Inside the Soul of the Web

24 hours watching the world look for answers at Google.

By Michael S. Malone

Mankind's questions unscroll day and night on a computer screen in an office hallway in Mountain View, California.

Workers here at Google were once fascinated to watch the queries climb up and off the screen, two per second, 173,000 per day. But they rarely stop to glance anymore. Most Google employees long ago lost interest in the words and the astonishing numbers they represent: Each of these questions, culled randomly from six giant server farms scattered around the world, represents 1,500 inquiries, totaling 260 million Web searches per day.

Tucson, Arizona > Krispy Kreme Donuts
Stamford, CT > Rhumba
Canberra, Australia > Naturist Boy
AOL, US > How to Pray to the Rosary

The display sits on a shelf on the second floor of Google's headquarters, which bears a college laboratory meets frat house look. Code writers wander down the corridor in shorts and sweatshirts, often pushing a bicycle or walking a dog. There is a big red ball partially blocking the passage. On the door of the office directly across from the screen, an engineer has posted his doctoral thesis, which was recently accepted by UC Berkeley.

In the two years since it was installed, the monitor has acquired a collection of tchotchkes, like tiny offerings. There's Crash Bandicoot riding a bomb. Gromit in an airplane. A Dilbert M&M's dispenser. A Japanese toy chicken inexplicably wearing a blond wig. A Linux plush penguin. A Halloween spider. And the toothed mechanism from the inside of a music box that, when cranked, plays "As Time Goes By."

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[29] Michael S. Malone, "Inside the Soul of the Web," *Wired Magazine*, Wired Digital, Inc., 8 August 2003 <http://www.wired.com/wired/archive/11.05/google.html>

Haiti > Jeune et democratie
Princeton, New Jersey > Fishnet stocking
Soldotna, Alaska > Poem procrastination
Iran > Pulpotomy

The computer screen is divided horizontally. On the bottom, the Google queries, 10 visible at a time, stream up and, after 5 seconds, disappear. Each also carries the location of the questioner, often down to the city, but sometimes only the country, the Internet portal (e.g., AOL), or, when the source is untraceable, just question marks. To honor good manners, the program filters out obscene requests. Whether out of ignorance, faith, or belief in the safety of numbers, an estimated 52 million people around the world, 42 percent of all search engine users, entrust the site with some of their deepest, most vulnerable thoughts and desires.

Alexandria, Virginia > Marijuana for sell
Netherlands > Hottest young boys for free
St. Louis, Missouri >Attracted to my professor
Holmdel, New Jersey > Horse + penetration

The top half of the screen displays a map of the world that shows where it's day and night. Tiny colored dots twinkle on and off across the continents, each representing a different language and a burst of several thousand questions. Europe, Japan, Israel, Korea, and most of North America are dense, nearly permanent galaxies of dots. In Africa, the Middle East, and South America, the dots are so few that you can often identify precise locations - BrasHlia, Caracas, Johannesburg, Nairobi, the airport in the Cape Verde Islands.

It becomes apparent that this is a map not just of Google's users but of the spread of technology, and thus of prosperity in the new century. In an imprecise but important way, it is also a measure of human freedom.

AOL > Eminem
Dallas, Texas > Walden Pond
Calgary > Anti flag lyrics
??? > Emancipation Proclamation
Sao Paolo > Politics federal de menaus
Bloomfield, Michigan > Wine + Las Vegas

When you first study the queries, they seem random and inexplicable, an infinite melange of the technical, the perverse, and the trivial. But after a few hours, as your eyeballs begin to rattle from the endless vigil, patterns emerge. Even in cyberspace, there is morning, afternoon, and night.

It is early morning now in Mountain View. In three-hour stretches over the next several days, I will watch the equivalent of an entire 24-hour cycle. On the map the sun is over the Amazon Basin. On the East Coast it is mid-morning, and the queries arriving from there have the crisp earnestness of caffeine-fueled commerce. There are interminable searches about software upgrades, network servers, definitions of financial instruments, and, inevitably:

Orlando, Florida > Ulcer symptoms

In the wall behind the display, there is a cut- out section, like a drive-up window. Just beyond sits Greg Rae, one of three engineers who created this program two years ago. Now, as the site's log analyst, he devotes much of his day to studying the ceaseless scroll. Wearing gym shorts, T-shirt, and wire-rimmed glasses, Rae is a very tall man in his twenties who looks ready for a workout followed by a long night in a university library. He has now watched several million queries roll by.

Michigan > Honda 400 ATV shocks
? > Fat brides
Honolulu, HI > Timid dog
Bombay, India > Tarot shops in New Delhi
Atlanta, GA > Mario chick wit da braids

As the day progresses, the workday questions move west. Three o'clock slides across the continent, and students make their way to the Net. The searches suddenly shift into the land of midterms, research papers, and innumerable misspellings of Britney Spears.

Cambridge, Mass. > King and Queen of Spain
Houston, Texas > The Odyssey Homer sparknotes
Sunnyvale, Calif. > Diet of merchants during the Enlightenment
Berkeley, Calif. > Church in Weimer Bach cantatas
Honolulu, Hawaii > Magna Carta
AOL > Nicole Kidman + boots

Meanwhile, the other half of the globe is blanketed in darkness, entertaining the fever dreams, health fears, and recriminations that come with night. Over their keyboards, lonely souls submit questions into the ether, praying that answers lie somewhere in the vast network - and, if not resolution, then at least succor.

Melbourne, Australia > Urine cervical specimen chlamydia
Belgium > Couple voyeur
Tokyo, Japan > Battlefield 1942
Finland > Cuckold wife

Darkness crawls across the Atlantic and makes landfall in the Western Hemisphere. On the screen, the West Coast of the United States is ablaze with dots, while only insomniacs and night owls are still typing away in Europe. The noonday sun is now over Indonesia.

This may be the strangest time of all. The predawn monsters of European imagination meet the late-night desires of North America - then all are nearly buried by a deluge of business questions, most in kanji, pouring out of Asia. Amid this flood there are also anxious queries, perhaps from emergency room doctors short of reference books and journals.

Suva, Fiji > Gestational diabetes - diagnosing
Bhopal, India > Fecal sac
Iran > Hymen anatomy
Bangalore, India > Graze wound
Senegal > Positions pour amor

Japanese schoolchildren are sitting down to their homework. And the darkest hours are just ahead in Mountain View. Since morning, nearly 160,000 questions, representing more than

235 million queries, have scrolled up the screen. Boredom and exhaustion turn the words into one long smear of human life. Even the kinky ones, amusing a few hours before, are now stale and depressing.

Yet 22 hours into this endeavor, I find it hard to turn away. I have the haunting sense that at any second, something valuable and vital will appear at the bottom of the display, only to disappear at the top five seconds later. I force myself to stay alert for the questions that burn through the humdrum, that force you to try and picture the person who just typed it.

These are the cries for help.

Glendale, Calif. > How to get rid of pain after getting wisdom teeth pulled
Yuba City, Calif. > Insulin dosing
Netherlands > Strep throat in toddler vomiting
? > Rickets definicion
Diamond Bar, Calif. > Shoplifting Walmart
? > Symptoms of conception

It is nearly midnight when the last and most disturbing of these cries appears. It arrives buried between searches about seafood restaurants in San Diego, thongs, mafia cheats, and bisection bandwidth topology.

Santa Clara, Calif. > What to tell a suicidal friend

This query hasn't come from Kuala Lumpur or Genoa or Montevideo, but just outside Google's front door. A drama is unfolding only a few miles away, and there is no way to help; I don't even know the person's name. I can only sit and watch the words crawl up the screen and disappear. This is a contract between man and machine, and I can only observe, not intervene.

Stricken, I glance over at Rae, who has returned from night league volleyball, his spiky blond hair still wet. He, too, has seen the query and is typing away furiously. Finally he stops and looks up at me. "They're going to be OK. They got referred to the right places."

"You can do that?"

"Yeah, well, I can see how the system responds. And if it doesn't give the right information, I'll find better sites and attach them for future queries."

"But you can't help the people who ask the original question."

"No."

"Just the ones that follow?" Rae nods.

"You've just got to do the right thing. The hard part is figuring out what the right thing is."He thinks a moment, then gestures at the screen. "I know people trust in this thing. They believe it will have the answer. And I don't want it to fail them." As Rae talks, 50 more queries scroll up the screen.

San Jose, Calif. > Capital of Peru
Sao Paolo, Brazil > Jogos eroticos
AOL > Anybody?