

Google as Inquiry

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...the most idealistic nations invent most machines. America simply teems with mechanical inventions, because nobody in America ever wants to *do* anything. They are idealists. Let a machine do the thing.

D. H. Lawrence, *Studies in Classic American Literature*, 1923

The terrifying and wonderful observation about Google is that people these days are using it as an information resource of first resort.

Brewster Kahle, chairman of the Internet Archive (www.archive.org)

1. Introduction

Since its public debut in 1998, Google (www.google.com) has asserted itself as the world's leading search engine for information published on the World Wide Web. BBC News reports that Google now handles more than 200 million search requests per day, and Sullivan (2002a) estimates that roughly 15 million hours per month are spent on Google's site. On February 17, 2004, Google announced that it had expanded its archives to provide access to more than 6 billion items, including 880 million images and 845 million Usenet messages (<http://www.google.com/press/pr.essrel/6billion.html>)—several billion more than its closest online competitor, Alltheweb (www.alltheweb.com). Google's monumental success has secured for the company and its founding principals, Larry Page and Sergey Brin, widespread media attention, largely celebratory in nature. Wired magazine's March 2004 feature report on "Googlemania" opens with the following remarks:

Today Google's a library, an almanac, a settler of bets. It's a parlor game, a dating service, a shopping mall. It's Microsoft's rival. It's a verb. At more than 200 million requests a day, it is, by far, the world's biggest search engine. And now on the eve of a very public stock offering¹, it's cast as savior, a harbinger of rebirth in the Valley.

¹ On April 29, 2004, Google Inc. declared its initial public offering (IPO). For sake of consistency (the majority of this report was researched and written before the IPO), I do not intend to give any special treatment to this event beyond material that directly relates to the discussion at hand.

One notes a seemingly willful suspension of disbelief in such hyped commentary. And this phenomenon appears to extend beyond issues pertaining to the company's commercial viability: "In Google we trust," reads the headline of one recent *New York Times* article (Hochman, 2004). The article describes a growing implicit faith that, as Esther Dyson² puts it, "with Google, everything is knowable now" (website). Somewhat striking is the fact that Google, an ostensibly general-purpose search engine—as the *Wired* piece notes, "a dating service, a shopping mall"—appears to be making similarly precipitous inroads in scholarly domains. A Formative Evaluation of the Distributed National Electronic Resource (EDNER, 2002) study revealed that forty-five percent of students used Google as their research starting point, while the second most highly used starting point was the university library catalogue, ranking slightly above other commercial online search engines at just ten percent of the sample. In a recent seminar presentation, I conducted an informal survey where virtually everyone reported using Google as his or her primary search engine. Moreover, nearly all participants also reported using Google for Web-based information retrieval on an exclusive basis.

There are a variety of factors that serve partially to explain Google's present dominance as a form of scholarly inquiry—a central theme in the present discussion—and it will be helpful to comment on several of these at the outset. Bar-Ilan (2004) mentions several items in her analysis of Google's 'most-favoured status,' including the engine's "clean interface, its size, its relatively frequently updated database, and the capability to view cached copies of the indexed URLs" (p. 257). Modern search engines like Google are part of a tradition of technologies for information access and retrieval on the Internet that have included *Archie* (1990), a tool for searching anonymous FTP sites, and *Veronica* (1992), a Gopherspace search tool (see *Hobbes' Internet Timeline* at <http://www.cc.utah.edu/history.html>). Both of these latter technologies, not to mention the Internet itself, were primarily intended to facilitate research and collaboration in academic contexts. Of arguable significance is the often-stated fact that Google was born in academia. In 1998, Brin and Page—both doctoral students in computer science at Stanford—published their initial work on Google's underlying technology in a paper entitled "The anatomy of a large scale hypertextual web search engine." The paper outlines an elegant and computationally efficient algorithm for sorting search results based on bibliometric principles, called PageRank, and discusses measures for minimizing cost and maximizing

² Publisher of "Release 1.0," a technology-industry newsletter.

performance by coupling low-end hardware with highly robust software featuring cutting-edge techniques for achieving redundancy and replication.

1.1 Research Objectives

This paper is intended to participate in a broader discussion of research frontiers in knowledge media design (KMD). Baecker (1997) defines KMD as the human-centred design of “documents, artifacts, technologies, and systems intended to enhance human creativity, learning, and knowledge building” (p. 3). According to this definition, it is apparent that Web-based search engines such as Google are most certainly forms of knowledge media. Moreover, it is suggested that these are unique because they are reflexive knowledge media—that is, they may be applied to study the nature and dynamics of an online information space in which they themselves participate.

Research into novel strategies for conducting inquiry on Google can take place on two fundamental levels. On a practical level, learning about the range of interrelated opportunities and requirements for cultivating Google’s potential as a scholarly, research-oriented knowledge medium is of interest. At a second, analytical level, the epistemological and social significance of Google as inquiry may be taken into account. Epistemological issues include shifting notions of objectivity in scholarship, and questions of public vs. private stewardship, control of, and access to information. Social issues include the personification of Google as a trusted source of knowledge and Google’s facilitation of information personalization.

2. Conceptualizing Google as Inquiry

A working model for analyzing Google-based inquiry will serve as a basis for discussion, which model involves three complementary configurations for conceiving of Google as inquiry. First, Google represents a *mode* of online inquiry, in so far as researchers use Google in its intended, prototypical capacity to discover online virtual resources. Second, Google is beginning to serve as a *platform* for online inquiry. In this context, Google enables innovative methodological solutions for investigating online phenomena. These investigations typically build upon Google’s infrastructure and involve some form of ‘Web-mining,’ a term coined by Etzioni (1996) that refers to automated schemes for extracting and analyzing indexed online data. Third, Google represents a central figure in an emerging *discourse* of search-engine based online inquiry. Such a discourse unites otherwise diffusive elements—for example, specialized language and terminology (revised definitions for concepts like validity and reliability), subject matter (Web-

based knowledge media), participants (knowledge media designers and researchers), and settings (interdisciplinary—perhaps even virtual—scholarly communities and institutions)—into a perceived meaningful whole, such as will be necessary for promoting future work in this domain.

2.1 Google as Mode of Inquiry

Google is now well established—and has the potential to become even more prevalent—as a mode of scholarly inquiry. This paper uses the term *mode* to suggest that Web-based search engines in general, and Google in particular, should be conceived of as more than mere tools. They afford (along Gibsonian lines) particular and unique information seeking behaviours, and facilitate a certain vision of an online information space, and I argue that it will be useful to take these phenomena into simultaneous account. The Web has been demonstrated to hold numerous invaluable virtual resources for researchers (e.g. Senior and Smith, 1999; Deibert, 1998; Larson, 1996), and some initial work has been undertaken to quantify the extent to which search engines are able to successfully elicit these resources. For example, Bar-Ilan (2000) used commercial search engines to retrieve online information that was related to the discipline of informetrics. She found that over 70% of the material contained only indirect information on the topic, but also that the manually compiled list of references obtained from the Web tended to outperform the commercial, bibliographic databases. Her study calls for further work in order to “substantiate the finding that valuable and thorough bibliographic data can be extracted from the Web” (p. 441). With respect to Google in particular, some have been thoroughly exhalative in their commentary. For instance, Harrison (2003) describes how “Google, the most intelligent search engine on the Internet, has revolutionized educational research” (website). Singling out one particularly positive experience, he concludes that “[t]o find equally relevant, timely and wide-ranging material using conventional library searching would not only take weeks, it would be impossible.” Others (e.g. O’Shea, 2003; Thelwall, 2003) have been more critical in their estimation of Google’s usefulness as a research tool. It would appear that one’s assessment of Google partially depends on the scholarly/topical domain in question. One interesting development is a proposed initiative (Ferguson, 2001) for licensing Google’s technology in order to develop a European academic research information site. Under the proposed scheme, specially tailored search results will be billed on a fee-per-use basis. Along similar lines, the Online Computer Library Center (OCLC) has recently agreed to partner with Google in a pilot program that will test the effectiveness of commercial search engines in “guiding users to library-owned materials, making libraries more visible to Web users and more accessible from the Web sites many people turn to first” (www.ebrary.com/atl/index.jsp?channel=dev&type=channel).

One of the greatest technical challenges facing Google, particularly germane to the present discussion, is the problem of ‘relevancy.’ In fact, Sullivan (2002b) has suggested that testing organizations should take on the responsibility of comparing search engines on some sort of quantitative “relevancy figure.” Traditionally, information search engine performance is measured along two dimensions: recall and precision. Recall is defined as the ratio between the number of relevant items retrieved and the total number of relevant items in the search space. Precision is defined as the ratio between the number of relevant items retrieved and the total number of items (relevant and non-relevant) retrieved. In practice, there is an inverse correlation between recall and precision, so that enhancing recall performance usually entails a reduction in precision, and vice-versa. This relationship is illustrated in Figure 1.

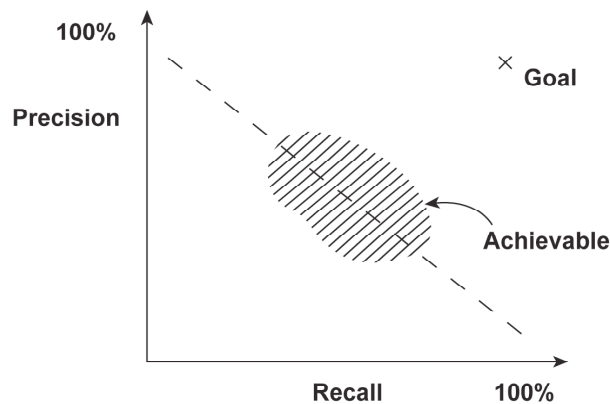


Figure 1: Traditional metrics for search engine performance

Google has tackled this challenge in a relatively unique way. Rather than pressing towards both perfect precision and recall—for example, by investing in elaborate schemes for analyzing webpage content in greater depth—the engine’s ranking technology, which uses link analysis to determine how important other sites on the Web deem a given item to be, enables Google to return quality results “early on.” While this solution functions in many circumstances (and is most effective when the information sought for is general and popular), it still cannot fully answer the problem of relevance. As is particularly the case in scholarly research, users not only need to know of, but also *about* the information they are retrieving—its contextual features, what sort of informational base it is representative of, etc. Unfortunately, Google’s search technology is relatively limited in this capacity. Google works best as a mode of online research when one already has an understanding of the contextual features of a certain research domain.

In general, enhancing relevance will require more emphasis on the user's context. This view has been articulated in the literature on information needs analysis/information seeking behaviour. For example, Dervin (1986) argues that a more productive paradigm for investigating information needs and uses "focuses on understanding information use in particular situations and is concerned with what leads up to and what follows intersections with systems...it examines the [information] system only as seen by the user" (p. 16).

2.2 Google as a Platform for Inquiry

In treating Google as a platform for inquiry, focus shifts from opportunities and requirements for using Google as a vehicle for discovering information *on* the Web to those concerned with discovering information *about* the Web. In this respect, Google may be conceptualized in a number of ways: for example, as a running simulation of the Web, as a virtual laboratory, or as a research instrument for investigating online phenomena.

In order to gain insight into the nature of the Web—for example, its structural dynamics or social phenomena that take place there—researchers are combining data-mining techniques, useful for discovering new knowledge in large data sets, with search engine technology. (Because of its sheer size and diffusive nature, traditional census and sampling protocols are problematic on the Internet.) Chen and Chau (2004) point out that Web mining research "is at the intersection of several established research areas, including information retrieval, machine learning, databases, data mining, and text mining" (291). They pattern their classification of Web mining research after Kosala and Blockeel's (2000) scheme: Web content mining, Web structure mining, and Web usage mining. The following research initiatives that use Google as a platform for inquiry have been categorized according to this scheme as well, although it should be noted that there is a somewhat significant of categorical overlap in practice.

2.2.1 Using Google to mine web content

Web content mining typically involves processes such as information extraction, text classification, and text clustering (Chen and Chau, 2004: p. 304). There has been some exploratory work involving Google technology in this regard. Pant (2003) developed a scheme for deriving link context from information contained in hierarchical html tag trees. In order to test his design, Pant employed Google's search technology to obtain a list of suitable sample URLs. In particular, he used the Google Web application-programming interface (API; see www.google.com/apis) to fetch in-links, filtering out those that appeared in selected indexed

directories. Along similar lines, Wolber *et al.* (2002) used Google to expose document context partially by listing *content relations*, online material that is relevant to “characteristic” terms, and also to fetch “inward” links (those pointing towards the target document). McNee (2002) used Google’s search results as a baseline for comparing multiple algorithms for recommending citations based on principles of collaborative filtering. The main point to remember here is that Google’s technology and indexed Web data can be used instrumentally to mine the web’s content.

The TouchGraph Google browser (www.touchgraph.com; screenshot shown below in Figure 2) uses the Google API to render topical neighborhoods on the Web as connected graphs whose nodes represent “similar results” for a given Google query. Users can “drill down” into the network by double clicking on any of the displayed nodes. Newsmap (www.marumushi.com/apps/newsmap/; screenshot shown below in Figure 3) is a treemap display of the Google news aggregator (news.google.com) that “divide[s] information into quickly recognizable bands which, when presented together, reveal underlying patterns in news reporting across cultures and within news segments in constant change around the globe” (website). Both of these applications use Google technology to aggregate and transform Web-based metadata into a form that, in a sense of speaking, can be visually mined for patterns, trends, or overarching features. It will be interesting to monitor whether these sorts of tools will mature and be adopted for scholarly research purposes. At the very least, they demonstrate how a wealth of knowledge may be culled from Google’s vast informational resources.

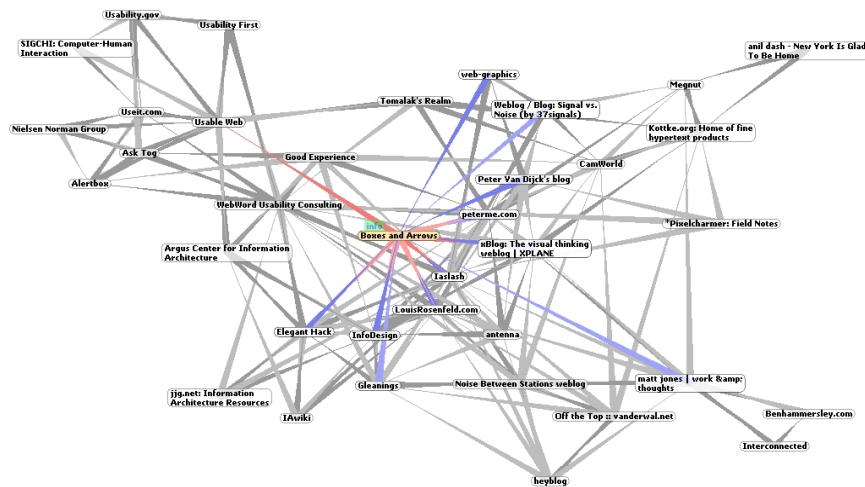


Figure 2: Screenshot of the TouchGraph Google browser



Figure 3: Screenshot from Newsmap

2.2.2 Using Google to mine web structure

Web structure mining has become an important way to infer information about the Web. Chakrabarti *et al.* (1999) provide a comprehensive summary of some of the techniques involved in mining link structure on the Web. Full text search engines such as Google use various forms of structural analysis to rank their indexes. (See Arasu *et al.*, 2001, for a technical discussion of this process; also Brin and Page, 1998, for an explanation of how PageRank works.) Because Google's indexes are structurally derived, various schemes for visualizing the Web vis-à-vis these resources are accessible to researchers. For example, Calishain and Dornfest (2003: p. 183) propose a simple 'hack,' using the Google Web API, that automatically tracks result counts respondent to a given query within a specified date range. This procedure allows one to investigate online dynamics such as how quickly the Web changes with respect to particular topical domains.

2.2.3 Using Google to mine web usage

Web usage mining typically involves analysis of data that is registered in server logs (Chen and Chau, 2004: p. 313). However, an emerging form of Web usage mining that is more amenable to the present discussion involves using indexed data, such as that which is available via the Google API, to characterize usage patterns for online knowledge media.

Researchers are beginning to take advantage of Google's facilities in this regard and, interestingly, Google itself is establishing some precedent. Google's recent purchase of Pyra Labs Inc., creators of Blogger.com, serves as an interesting example. Referring to the integration of Pyra Labs' blogging service with Google technology, David Krane, Google's director of corporate communications looked forward to "many synergies and future opportunities" (Gillmor, 2003). Krane didn't elaborate on the sorts of synergistic prospects he had in mind, but commentators like Doctorow on boingboing.net argue that these are likely to be mainly research-oriented opportunities. Citing recent examples of online research tools like Blogdex (<http://blogdex.net/>) and Technorati (<http://www.technorati.com/>)—which online resources "provide a very rich field [of metadata] for researchers"—Doctorow speculates that Google will use its indexing and search technology to innovate and test new blogging features rapidly: "Gbloogle will be able to sneak features in for a day or two, extract the data...decide whether its worth keeping the feature, and engineer something Google-grade to put on the back-end" ([website](http://www.boingboing.com)). If this analysis is correct, then Google may have similar objectives in mind with respect to its new online community and e-mail services—Orkut (www.orkut.com), and Gmail (see <https://gmail.google.com>), respectively.

Another form of web usage mining being exploited by Google itself involves tracking users' search queries and related statistics in order to discover patterns and trends in overall information seeking behaviour. Google's Zeitgeist site (www.google.com/press/zeitgeist.html) publicly exemplifies this kind of approach. The site has been used to report on broader social trends. For example, Wiggins (2004) used the Zeitgeist to examine patterns of search activity on Google in the days and weeks after the terrorist attacks on September 11, 2001. He suggests that there is a trend towards the 'portalization' of Google. Highlighting the large proportion of users who treated Google's search functionality as a vehicle for connecting to trusted news sites (CNN, MSNBC) as opposed to directly accessing the topical data itself, Wiggins develops the idea that general patterns of search behaviour at Google and event-related revisions to Google's home page effectively—and perhaps to an extent, permanently—transformed the search engine into something that more closely resembles a web portal³.

³ Traditionally, Google is conceived of as a strictly search-oriented service, while other sites such as Yahoo (www.yahoo.com) have positioned themselves as portals where users can browse human-prepared directories of official online resource.

3. Epistemological and Social Issues

In undertaking research for this project, I have consulted with several “experts” from relevant fields of scholarly inquiry. Elaine Toms, a Professor at the University of Toronto in Information Science, has done extensive research into usability issues and general usage patterns of web-based search engines. Her commentary (2004 correspondence with me) on the present matter is interesting, if perhaps somewhat surprising:

In this context, I am not sure what you mean by Google as inquiry. It’s a search engine -- an application of a myriad of information retrieval techniques created by a commercial organization, now forcing Microsoft's hand. So I am hard pressed to think about treating it in a philosophical way. What it does has been around for 40 years; it just adds a few more algorithms to the pot and with access to a lot more data. Nothing magical or particularly novel.

I would contend that Toms’ “nothing new under the sun” approach is overly reductive—certainly, for example, Google’s success is the product of more than a few new algorithms, and the Web is normally taken as something with greater import than might otherwise be attributed to mere data. Toms’ commentary does, however, serve to demonstrate the extent to which Google’s technology and the kinds of behaviours it affords have become normative, even in the midst of recent media hype. And, as social scientists like Wellman (2001, 2000) have noted, it is precisely when “technological changes get pervasive, familiar and boring that their impact on society is usually most felt” (2001, p. 2). O’Shea (2003) frames Google’s societal impact in the following way: “I doubt there is any better demonstration of the rapid change of our society than the incorporation of the Internet search engine Google into the consciousness of society” (p. 894). So, clearly, there is a diverse range of held opinions concerning Google’s epistemological and social significance. The following investigation is predicated on the assumption that Google *is* a significant phenomenon in these two contexts, which perspective I expect will be in line with the general consensus among the KMD community.

3.1 *Google and Informational Objectivity*

It has already been suggested that Google and other Web-based search engines are reflexive knowledge media because they facilitate investigation into an online information space in which they themselves participate. Because of this unique property, the extent to which Google may be conceived of as an *objective* form of inquiry—insofar as objectivity itself is based on traditional, largely empirical, notions of scholarship—is problematized. Perhaps this will eventuate in an

altogether positive development for scholarship at large: scholars like Popkewitz (1984) have called for the reinscription of concepts like validity and reliability within larger, more stratified contexts, such as those, for example, that contain a social dimension.

In his discussion of the proliferation of computer-supported community networks (CSCNs), Wellman (2001) notes that the Web is somewhat unique because it “affords both personalization and centralization” (p. 4). What I find interesting in this, with respect to the present discussion, is that Google technology seems to embody both of these trends: personalization, because users can force, so to speak, information to conform to their own individual requirements (*vis-à-vis* iterative approaches to query formulation); and centralization, because Google—a powerful force in the web—appears to be tacitly enforcing informational conformity at large. So, for example, individuals using Google’s returned results as their ‘home base’ are able to briefly (and somewhat superficially) sample content from a number of Websites without necessarily becoming engaged in any of these. In this respect, Google appears to be facilitating the fragmentation of online identity, what Wellman has called “role-to-role” communities, by allowing people to casually form and dissolve *ad-hoc* CSCNs. We also see reciprocal phenomena that further challenge notions of informational objectivity online. For example, Wikipedia (en.wikipedia.org)—an open-source encyclopedia project where anyone can create and modify entries—is rated highly in PageRank therefore featured prominently in Google’s returned results. It is reasonable to suppose, however, that those who are creating content on Wikipedia use Google to undertake their research. Thus, there is a sort of amplified feedback wherein Google projects an image of itself onto the Web. It is hard to predict how these developments will affect Web users’ relationship to information.

3.2 The Personification of Google

It is argued that, in order to understand its rapid adoption as a research-oriented knowledge medium, Google should be (at least) partially conceived of as a social phenomenon. In this context, a variety of questions may be considered according to a range of sociological perspectives. Several of the most pressing questions, in my view, have to do with users’—in particular, those in the academic community—great faith in Google as a vehicle for information retrieval and scholarly inquiry in general. How has this notion that “In Google We Trust” come about, what sorts of social factors have contributed to Google’s success, and how stable will this phenomenon be overall? In responding to these and other like manner questions, I submit that it is helpful to conceive of Google itself as a person.

As an analytical mode, the personification of Google finds theoretical precedent in a range of perspectives. Researchers are recognizing that information retrieval itself is an inherently social activity. In their discussion of issues surrounding online information retrieval and the *invisible Web*⁴, Kautz *et al.* note that “the search for information often must come down to the search for a person [or an institution] who holds the information privately” (p. 28). Wellman (2001), in his discussion of the rise of ‘networked individualism,’ points out that in many instances in contemporary society, “[t]he person has become the portal” (9). Though Wellman doesn’t explicitly detail what specifically the person has become the portal to, it would seem that, in Google’s case, the answer is likely to exclude very little. In a recent *New York Times* Article (Hochman, 2004), television producer Ben Silverman (*Who Wants to be a Millionaire*) mused that “[a] few years ago, you would have talked to a trusted friend about arthritis or where to send your kids to college or where to go on vacation. Now we turn to Google” (website). If individuals tend to seek out personal sources when they are searching for information (particularly in unfamiliar domains), then it follows that they might be inclined to attribute personal qualities to knowledge media such as Google. Reeves and Nass (1996) present a well-researched thesis that “*all* people automatically and unconsciously respond socially and naturally to media” (p. 7). They argue that users’ reception and perception of media in this context depend on a range of social factors. For instance, is the medium polite? Does it maintain an appropriate level of interpersonal distance? What kind of personality does it manifest? In the present context, according to Reeves and Nass’ view, the central question becomes, *who is Google?* Speculation along these lines is also bolstered by recent studies undertaken at Penn State University. In an interview with the BBC, Professor Sundar comments that “[w]e increasingly view computers as sources of information, not just mediums of information. We attribute social characteristics and treat them as autonomous.” Citing Sundar, the article warns that “[t]he tendency to treat computers as human could lead to people favouring or even blindly accepting computer-generated information, to the point of depending on it over superior alternatives” (website). It is perhaps for this reason in part that Tebbutt (2004) encourages librarians and information professionals to mount a marketing exercise that would make information seekers—in particular, students—aware of the shortcomings of Google. It is a point worth keeping in mind that, to the extent that Google itself demonstrates a sort of social competence, it is likely to become established as a personal source of information and knowledge.

⁴ The premise behind the invisible web is that conventional indexing technology masks a vast range of information that is theoretically part of the Web, but is purposely kept offline.

At the same time, it is important to recognize that Google is more than simply a form of knowledge media: it is also an extremely robust (and lucrative) brand. In his discussion on brand identity, Aaker (1996) elaborates on the perspective of ‘brand as person.’ A brand personality, notes Aaker, “can help to create a self-expressive benefit that becomes a vehicle for the customer to express his or her own personality, ...can be the basis of a relationship between the customer and the brand, ...[and] may help communicate a product attribute and thus contribute to a functional benefit” (pp. 83-4). It is interesting to note that the fundamental benefits mentioned in this passage—self-expressive, emotional, and functional (Aaker calls them ‘value propositions’)—correspond to Aristotle’s three forms of rhetorical appeal: *ethos*, *pathos*, and *logos*. It would be interesting to analyze Google as inquiry in terms of each of these three concepts, but for purposes of brevity, I will consider just one—Google’s *ethos*—in the following section.

3.2.1 Google’s *ethos*: good vs. evil

Aristotle decomposed the concept of *ethos* into three main parts, which can here serve as an analytical framework. Briefly, these are *phronesis*, *arete*, and *eunoia*, or practical wisdom/common sense, virtue, and good will. In terms of the first of these, practical wisdom or common sense, Google clearly has a lot going for it. First and foremost, Google has made momentous breakthroughs with respect to the technology behind its primary competency: returning useful results. Every time the service ‘works’—that is, whenever returned results are responsive to the user’s needs—the personal credibility of the Google is enhanced (if only subconsciously) in the mind of the user. Thus, Harrison (2003; discussed in Section 2.1) was apparently inspired to compose a glowingly approbative piece on Google in the wake of a particularly productive search. Conversely, one’s impression of Google’s *ethos* is diminished whenever relevant results are not forthcoming for a given search. For example, it has been suggested (Livingston, 2004; O’Shea, 2003) that recent modifications to Google’s ranking schemes (undertaken in part to counter emerging strategies for artificially boosting a site’s PageRank) have resulted in overall degradation of the system’s performance in terms of quality of results. Google’s favourable image in the media generally issues from the fact that its underlying software is held to be technologically superior and the company itself is considered to be commercially competent. On Google’s technology, the company has decided to exhibit much of its ongoing developmental work and innovations at labs.google.com, where users can play with beta versions of the software and give feedback based on their experience.

Google has been vocal in the past about its efforts to maintain a virtuous track record. The company's ethical statement "Don't be evil," while perhaps somewhat supercilious, is taken seriously by its principals. A "Letter from the founders," included in their S-1 filing, elaborates on this policy: "Don't be evil. We believe strongly that in the long term, we will be better served—as shareholders and in all other ways—by a company that does good things for the world even if we forgo some short term gains. This is an important aspect of our culture and is broadly shared within the company" (<http://battellemedia.com/archives/000627.php>; Appendix A includes a streamlined version of this letter in its entirety.) So, for example, Google has taken a fairly remarkable stand in its policy against negative advertising. In particular, McHugh (2003) reports that Google has resisted revenue schemes based on banner advertisements or paid-for-placement content disguised among other search results. The company also refuses to display ads that are "overly negative." Certainly, these sorts of policies have persuaded many that Google's corporate character is a virtuous one. There are those, however who have challenged this sentiment outright. The folk at Google Watch (www.google-watch.org) express concerns that centre on the fact that "there's a struggle going on for the soul of the web, and the focal point of this struggle is Google itself" (<http://www.google-watch.org/bigbro.html>). Complaints leveled in this context include the notion that PageRank is anti-democratic—it doubly rewards the 'powerful' (largely corporate) websites by featuring these prominently in its search results and allowing these to bestow power on others by virtue of the fact that outward links from these sites will be heavily weighted. Google-watch has also criticized Google's track record with respect to freedom of expression. In March, 2002, lawyers representing the Church of Scientology demanded that Google remove links in its index to a Norwegian anti-Scientology protest site called Operation Clambake. (Their challenge was brought under the pretext of violations with respect to the recently formed Digital Millennium Copyright Act.) To many observers' surprise, Google quickly acquiesced (McHugh, 2003). There has also been some talk (see, for example, <http://www.google-watch.org/china.html>)—largely speculative in nature—that Google is colluding with the Chinese government by supporting the government's censorship regime in its version of the site for that country.

Finally, concerning Google's good will, the situation is somewhat similarly clouded. Working in Google's favour are several recent initiatives, such as the company's decision to open up its

technology through the API (prior to which, Google had been the only search engine that disallowed automatic crawling of its search results), and commitment to index less commercially lucrative public information (such as governmental and educational web sites). Working against Google in this respect are concerns about privacy. Google used to be the only Web-based search engine that tracked information about its users in, what some have called, the “immortal cookie.” (The cookie, a data file stored locally on its users’ computers identifies them to Google every time they use the service, does not expire until the year 2037, the latest possible date by law.) Google has not been forthright about why they are collecting so much user-data, and it is mainly for this reason that Google Watch nominated Google for the 2003 Big Brother Award (privacy international.org/bigbrother).

4. Conclusion

In this paper, I have considered how Google may be applied to the task of conducting online research, along with several perspectives for performing inquiry into Google itself. In terms of Google as a research-oriented knowledge medium, two practical approaches were discussed. These are: (1) Google as a *mode* of online inquiry, as an instrument for retrieving information *from* the Web; and (2) Google as a *platform* for online inquiry, as a tool for discovering information *about* the Web. Conducting inquiry on Google itself is somewhat challenging, in part because it is a relatively closed system from a technological standpoint, but mainly because issues surrounding its usage and general impact are complex and dynamic. Issues having to do with Google’s epistemological and social significance were developed along several lines. It was suggested that, from an epistemological perspective, Google is challenging traditional notions of objectivity in scholarship, and that it may be appropriate to treat Google as a factor in the formation of computer supported social networks. Finally, conceiving of Google as a person was suggested as a potentially valuable approach with respect to some of the issues surrounding Google’s social significance. Under this view, principles and practices in the field of rhetoric were recommended as an analytical framework.

References

- Aaker, D. A. (1996). *Building Strong Brands*. New York: The Free Press.
- Baecker, R. M. (1997). The Web of Knowledge Media Design, Transcript of speech given at the University of Toronto, unpublished. (Retrieved on March 24, 2004 from http://www.dgp.toronto.edu/people/RMB/kmdi_talk.pdf)
- Bar-Ilan, Judit (2004). The Use of Web Search Engines in Information Science Research. *Annual Review of Information Science and Technology*. 38, Chapter 5.
- BBC News online (2004). People feel loyalty to computers. April 25. (Retrieved online on April 25 at news.bbc.co.uk/2/hi/technology/3625911.stm.)
- BBC News online (2003). Google celebrates fifth birthday. September 7. (Retrieved online on April 21, 2004 from <http://news.bbc.co.uk/2/hi/technology/3084442.stm>.)
- Brin, S. and Page, L. (1998). The anatomy of a large scale hypertextual web search engine. *Computer Networks and ISDN Systems*. 30 (1-7), 107-17, available at <http://citeseer.nj.nec.com/brin98anatomy.html>.
- Caidi, N. (2004). Expert interview, March 24.
- Calishain, T. and Dornfest, R. (2003). *Google Hacks*. Sebastopol, CA: O'Reilly & Associates, Inc.
- Chakrabarti, S., Dom, B., Kumar, S. R., Raghavan, P., Rajagopalan, S., Tomkins, A., Gibson, D. and Klienberg, J. (1999). Mining the Web's link structure. *IEEE Computer*. 32 (8), 60-67.
- Chen, H. and Chau, M. (2004). Web Mining: Machine Learning for Web Applications. *Annual Review of Information Science and Technology*. 38, Chapter 6, 289-329.
- Deibert, R. J. (1998). Virtual resources: International relations research resources on the Web. *International Organization*. 52 (1), 211.
- Dervin B., and Nilan, M. (1986). Information needs and uses. *Annual Review of Information Science and Technology*. 2, 3-33.
- Etzioni, O. (1996). The World Wide Web: Quagmire or gold mine. *Communications of the ACM*. 39 (11), 65-68.
- Ferguson, N. (2001). European Academic Research Engine? Notes from TERENA European Portals meeting, 22/02/2001. (Retrieved online on April 22, 2004 at <http://www.ilrt.bris.ac.uk/people/ecnf/Terena/euro-search-engine.html>.)
- Gillmor, D. (2003). Blogging Goes Big-Time. *Ejournal*. (Retrieved online on April 22, 2004 at <http://weblog.siliconvalley.com/column/dangillmor/archives/000802.shtml>.)

- Harrison, C. (2003). Using Google as your research assistant: or- How to do three weeks' work in 0.18 seconds. *Escalate*. (Retrieved online on April 22, 2004 from <http://www.escalate.ac.uk/about/index.php>.)
- Hochman, D. (2004). In Google we trust. *New York Times*, Monday, April 5. (Accessed online on April 21, 2004 at query.nytimes.com/gst/abstract.html?res=F60A17F63F5C0C7B8CDDAD0894DC404482.)
- Kautz, H., Selman, M., and Mehul, S. (1997). The Hidden Web. *AI Magazine*. 18 (2), 27-36.
- Kosala, R. and Blockeel, H. (2000). Web Mining Research: A Survey. *ACM SIGKDD Explorations*. 2 (1), 1-15.
- Larson, R. (1996). Bibliometrics of the World Wide Web: An exploratory analysis of the intellectual structure of cyberspace. (Retrieved online at <http://sherlock.berkeley.edu/asis96/asis96.html> on March 24, 2004).
- Livingston, B. (2004). Google Grumbles. *eWeek*. (Retrieved online on April 28, 2004 from www.eweek.com/article2/0,4149,1530367,00.asp.)
- Manchester Metropolitan University (2002). How Students Search: Information Seeking and Electronic Resource Use. *EDNER*, 8. (Retrieved online at on April 21, 2004 from http://www.eevl.ac.uk/informationneeds_research.htm.)
- McHugh, J. (2003). Google vs. Evil. *Wired News Online*. (Retrieved online on April 25, 2004 at www.wired.com/wired/archive/11.01/google_pr.html.)
- No author given (2004). The Complete Guide to Googlemania. *Wired Magazine*, March edition.
- O'Shea, D. C. (2003). The Bloom is Off the Google. *Optical Engineering*, 42 (4), 894.
- Popkewitz, T. S. (1984). *Paradigm and ideology in educational research*. Philadelphia: The Falmer Press, Taylor & Francis Inc.
- Reeves, B. and Nass, C. (1996). *The Media Equation*. New York: CSLI Publications.
- Senior, C. and Smith, M. (1999). The internet...A possible research tool? *Psychologist*. 12 (9), 442-4.
- Sullivan, D. (2002a). Google Tops In Search Hours Ratings. *Search Engine Watch*. (Retrieved online on April 21, 2004 from <http://searchenginewatch.com/sereport/article.php/2164801>.)
- Sullivan, D. (2002b). In Search of The Relevancy Figure. *Search Engine Watch*. (Retrieved online on April 21, 2004 from <http://searchenginewatch.com/sereport/article.php/2165151>.)
- Tebbutt, D. (2004). Beware the march of the Googlistas! *Information World Review*. 199, p. 13.
- Thelwall, M. (2003). Can Google's PageRank be used to find the most important academic Web pages? *Journal of Documentation*, 59 (2), 205-217.

- Toms, E. (2004). Expert consultancy, via e-mailed correspondence, March 16, 2004.
- Wellman, B. (2001). Physical Place and CyberPlace: The Rise of Personal Networking. *International Journal of Urban and Regional Research*, 25.
- Wellman, B. (2001). Changing Connectivity: A Future History of Y2.03K. *Sociological Research Online*, 4 (4), Available online at <http://www.socresonline.org.uk/4/4/wellman.html>.
- Wolber, D., Kepe, M. and Ranitovic, I. (2002). Exposing Document Context in the Personal Web. *Communications of the ACM, IUI*, January 13-16, pp. 151-159.
- Wiggins, Richard W. "The Effects of September 11 on the Leading Search Engine". *First Monday*. October, 2001, http://firstmonday.org/issues/issue6_10/wiggins/ (January 23, 2004).

Appendix A: Letter From Google Founders Included in S-1 Filing
Streamlined version taken from
<http://battellemedia.com/archives/000627.php>

LETTER FROM THE FOUNDERS
“AN OWNER’S MANUAL” FOR GOOGLE’S SHAREHOLDERS¹

INTRODUCTION

Google is not a conventional company. We do not intend to become one. Throughout Google’s evolution as a privately held company, we have managed Google differently. We have also emphasized an atmosphere of creativity and challenge, which has helped us provide unbiased, accurate and free access to information for those who rely on us around the world.

Now the time has come for the company to move to public ownership. This change will bring important benefits for our employees, for our present and future shareholders, for our customers, and most of all for Google users. But the standard structure of public ownership may jeopardize 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 designed a corporate structure that will protect Google’s ability to innovate and retain its most distinctive characteristics. We are confident that, in the long run, this will bring Google and its shareholders, old and new, the greatest economic returns. We want to clearly explain our plans and the reasoning and values behind them. We are delighted you are considering an investment in Google and are reading this letter.

Sergey and I intend to write you a letter like this one every year in our annual report. We’ll take turns writing the letter so you’ll hear directly from each of us. We ask that you read this letter in conjunction with the rest of this prospectus.

SERVING END USERS

Sergey and I founded Google because we believed we could provide a great service to the world—instantly delivering relevant information on any topic. Serving our end users is at the heart of what we do and remains our number one priority.

Our goal is to develop services that improve the lives of as many people as possible—to do things that matter. We make our services as widely available as we can by supporting over 97 languages and by providing most services for free. Advertising is our principal source of revenue, and the ads we provide are relevant and useful rather than intrusive and annoying. We strive to provide users with great commercial information.

We are proud of the products we have built, and we hope that those we create in the future will have an even greater positive impact on the world.

LONG TERM FOCUS

As a private company, we have concentrated on the long term, and this has served us well. As a public company, we will do the same. In our opinion, outside pressures too often tempt companies to sacrifice long-term opportunities to meet quarterly market expectations. Sometimes this pressure has caused companies to manipulate financial results in order to “make their quarter.” In Warren Buffett’s words, “We won’t ‘smooth’ quarterly or annual results: If earnings figures are lumpy when they reach headquarters, they will be lumpy when they reach you.”

If opportunities arise that might cause us to sacrifice short term results but are in the best long term interest of our shareholders, we will take those opportunities. We will have the fortitude to do this. We would request that our shareholders take the long term view.

Many companies are under pressure to keep their earnings in line with analysts’ forecasts. Therefore, they often accept smaller, but predictable, earnings rather than larger and more

unpredictable returns. Sergey and I feel this is harmful, and we intend to steer in the opposite direction.

¹ Much of this was inspired by Warren Buffett's essays in his annual reports and his "An Owner's Manual" to Berkshire Hathaway shareholders.

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Google has had adequate cash to fund our business and has generated additional cash through operations. This gives us the flexibility to weather costs, benefit from opportunities and optimize our long term earnings. For example, in our ads system we make many improvements that affect revenue in both directions. These are in areas like end user relevance and satisfaction, advertiser satisfaction, partner needs and targeting technology. We release improvements immediately rather than delaying them, even though delay might give "smoother" financial results. You have our commitment to execute quickly to achieve long term value rather than making the quarters more predictable.

We will make decisions on the business fundamentals, not accounting considerations, and always with the long term welfare of our company and shareholders in mind.

Although we may discuss long term trends in our business, we do not plan to give earnings guidance in the traditional sense. We are not able to predict our business within a narrow range for each quarter. We recognize that our duty is to advance our shareholders' interests, and we believe that artificially creating short term target numbers serves our shareholders poorly. We would prefer not to be asked to make such predictions, and if asked we will respectfully decline. A management team distracted by a series of short term targets is as pointless as a dieter stepping on a scale every half hour.

RISK VS REWARD IN THE LONG RUN

Our business environment changes rapidly and needs long term investment. We will not hesitate to place major bets on promising new opportunities.

We will not shy away from high-risk, high-reward projects because of short term earnings pressure. Some of our past bets have gone extraordinarily well, and others have not. Because we recognize the pursuit of such projects as the key to our long term success, we will continue to seek them out. For example, we would fund projects that have a 10% chance of earning a billion dollars over the long term. Do not be surprised if we place smaller bets in areas that seem very speculative or even strange. As the ratio of reward to risk increases, we will accept projects further outside our normal areas, especially when the initial investment is small.

We encourage our employees, in addition to their regular projects, to spend 20% of their time working on what they think will most benefit Google. This empowers them to be more creative and innovative. Many of our significant advances have happened in this manner. For example, AdSense for content and Google News were both prototyped in "20% time." Most risky projects fizzle, often teaching us something. Others succeed and become attractive businesses.

We may have quarter-to-quarter volatility as we realize losses on some new projects and gains on others. If we accept this, we can all maximize value in the long term. Even though we are excited about risky projects, we expect to devote the vast majority of our resources to our main businesses, especially since most people naturally gravitate toward incremental improvements.

EXECUTIVE ROLES

We run Google as a triumvirate. Sergey and I have worked closely together for the last eight years, five at Google. Eric, our CEO, joined Google three years ago. The three of us run the company collaboratively with Sergey and me as Presidents. The structure is unconventional, but we have worked successfully in this way.

To facilitate timely decisions, Eric, Sergey and I meet daily to update each other on the business and to focus our collaborative thinking on the most important and immediate issues. Decisions are often made by one of us, with the others being briefed later. This works because we have tremendous trust and respect for each other and we generally think alike. Because of our intense long term working relationship, we can often predict differences of opinion among the three of us. We know that when we disagree, the correct decision is far from obvious. For important decisions, we discuss the issue with the larger team. Eric, Sergey and I run the company without any significant internal conflict, but with healthy debate. As different topics come up, we often delegate decision-making responsibility to one of us.

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We hired Eric as a more experienced complement to Sergey and me to help us run the business. Eric was CTO 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. This partnership among the three of us has worked very well and we expect it to continue. The shared judgments and extra energy available from all three of us has significantly benefited Google.

Eric has the legal responsibilities of the CEO and focuses on management of our vice presidents and the sales organization. Sergey focuses on engineering and business deals. I focus on engineering and product management. All three of us devote considerable time to overall management of the company and other fluctuating needs. We are extremely fortunate to have talented management that has grown the company to where it is today—they operate the company and deserve the credit.

CORPORATE STRUCTURE

We are creating a corporate structure that is designed for stability over long time horizons. By investing in Google, you are placing an unusual long-term bet on the team, especially Sergey and me, and on our innovative approach.

We want Google to become an important and significant institution. That takes time, stability and independence. We bridge the media and technology industries, both of which have experienced considerable consolidation and attempted hostile takeovers.

In the transition to public ownership, we have set up a corporate structure that will make it harder for outside parties to take over or influence Google. This structure will also make it easier for our management team to follow the long term, innovative approach emphasized earlier. This structure, called a dual class voting structure, is described elsewhere in this prospectus.

The main effect of this structure is likely to leave our team, especially Sergey and me, with significant control over the company's decisions and fate, as Google shares change hands. New investors will fully share in Google's long term growth but will have less influence over its strategic decisions than they would at most public companies.

While this structure is unusual for technology companies, it is common in the media business and has had a profound importance there. The New York Times Company, the Washington Post Company and Dow Jones, the publisher of The Wall Street Journal, all have similar dual class ownership structures. Media observers frequently point out that dual class ownership has allowed these companies to concentrate on their core, long-term interest in serious news coverage, despite fluctuations in quarterly results. The Berkshire Hathaway company has applied the same structure, with similar beneficial effects. From the point of view of long-term success in advancing a company's core values, the structure has clearly been an advantage.

Academic studies have shown that from a purely economic point of view, dual class structures

have not harmed the share price of companies. The shares of each of our classes have identical economic rights and differ only as to voting rights.

Google has prospered as a private company. As a public company, we believe a dual class voting structure will enable us to retain many of the positive aspects of being private. We understand some investors do not favor dual class structures. We have considered this point of view carefully, and we have not made our decision lightly. We are convinced that everyone associated with Google—including new investors—will benefit from this structure.

To help us govern, we have recently expanded our Board of Directors to include three additional members. John Hennessy is the President of Stanford and has a Doctoral degree in computer science. Art Levinson is CEO of Genentech and has a Ph.D. in biochemistry. Paul Otellini is President and COO of Intel. We could not be more excited about the caliber and experience of these directors.

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We have a world class management team impassioned by Google's mission and responsible for Google's success. We believe the stability afforded by the dual-class structure will enable us to retain our unique culture and continue to attract and retain talented people who are Google's life blood. Our colleagues will be able to trust that they themselves and their labors of hard work, love and creativity will be well cared for by a company focused on stability and the long term.

As an investor, you are placing a potentially risky long term bet on the team, especially Sergey and me. The two of us, Eric and the rest of the management team recognize that our individual and collective interests are deeply aligned with those of the new investors who choose to support Google. Sergey and I are committed to Google for the long term. The broader Google team has also demonstrated an extraordinary commitment to our long term success. With continued hard work and good fortune, this commitment will last and flourish.

When Sergey and I founded Google, we hoped, but did not expect, it would reach its current size and influence. 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.

BECOMING A PUBLIC COMPANY

Google should go public soon.

We assumed when founding Google that if things went well, we would likely go public some day. But we were always open to staying private, and a number of developments reduced the pressure to change. We soon were generating cash, removing one important reason why many companies go public. Requirements for public companies became more significant in the wake of recent corporate scandals and the resulting passage of the Sarbanes-Oxley Act. We made business progress we were happy with. Our investors were patient and willing to stay with Google. We have been able to meet our business needs with our current level of cash.

A number of factors weighed on the other side of the debate. Our growth has reduced some of the advantages of private ownership. By law, certain private companies must report as if they were public companies. The deadline imposed by this requirement accelerated our decision. As a smaller private company, Google kept business information closely held, and we believe this helped us against competitors. But, as we grow larger, information becomes more widely known.

As a public company, we will of course provide you with all information required by law, and we will also do our best to explain our actions. But we will not unnecessarily disclose all of our strengths, strategies and intentions. We have transferred significant ownership of Google to employees in return for their efforts in building the business. And, we benefited greatly by selling \$26 million of stock to our early investors before we were profitable. Thus, employee and investor liquidity were significant factors.

We have demonstrated a proven business model and have designed a corporate structure that will make it easier to become a public company. A large, diverse, enthusiastic shareholder base will strengthen the company and benefit from our continued success. A larger cash balance will provide Google with flexibility and protection against adversity. All in all, going public now is the right decision.

IPO PRICING AND ALLOCATION

Informed investors willing to pay the IPO price should be able to buy as many shares as they want, within reason, in the IPO, as on the stock market.

It is important to us to have a fair process for our IPO that is inclusive of both small and large investors. It is also crucial that we achieve a good outcome for Google and its current shareholders. This has led us to pursue

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An auction-based IPO for our entire offering. Our goal is to have a share price that reflects a fair market valuation of Google and that moves rationally based on changes in our business and the stock market. (The auction process is discussed in more detail elsewhere in this prospectus.)

Many companies have suffered from unreasonable speculation, small initial share float, and boom-bust cycles that hurt them and their investors in the long run. We believe that an auction-based IPO will minimize these problems.

An auction is an unusual process for an IPO in the United States. Our experience with auction-based advertising systems has been surprisingly helpful in the auction design process for the IPO. As in the stock market, if people try to buy more stock than is available, the price will go up. And of course, the price will go down if there aren't enough buyers. This is a simplification, but it captures the basic issues. Our goal is to have an efficient market price—a rational price set by informed buyers and sellers—for our shares at the IPO and afterward. Our goal is to achieve a relatively stable price in the days following the IPO and that buyers and sellers receive a fair price at the IPO.

We are working to create a sufficient supply of shares to meet investor demand at IPO time and after. We are encouraging current shareholders to consider selling some of their shares as part of the offering. These shares will supplement the shares the company sells to provide more supply for investors and hopefully provide a more stable fair price. Sergey and I, among others, are currently planning to sell a fraction of our shares in the IPO. The more shares current shareholders sell, the more likely it is that they believe the price is not unfairly low. The supply of shares available will likely have an effect on the clearing price of the auction. Since the number of shares being sold is likely to be larger at a high price and smaller at a lower price, investors will likely want to consider the scope of current shareholder participation in the IPO. We may communicate from time to time that we would be sellers rather than buyers.

We would like you to invest for the long term, and to do so only at or below what you determine to be a fair price. We encourage investors not to invest in Google at IPO or for some time after, if they believe the price is not sustainable over the long term.

We intend to take steps to help ensure shareholders are well informed. We encourage you to read

this prospectus. We think that short term speculation without paying attention to price is likely to lose you money, especially with our auction structure.

GOOGLERS

Our employees, who have named themselves Googlers, are everything. Google is organized around the ability to attract and leverage the talent of exceptional technologists and business people. We have been lucky to recruit many creative, principled and hard working stars. We hope to recruit many more in the future. We will reward and treat them well.

We provide many unusual benefits for our employees, including meals free of charge, doctors and washing machines. We are careful to consider the long term advantages to the company of these benefits. Expect us to add benefits rather than pare them down over time. We believe it is easy to be penny wise and pound foolish with respect to benefits that can save employees considerable time and improve their health and productivity.

The significant employee ownership of Google has made us what we are today. Because of our employee talent, Google is doing exciting work in nearly every area of computer science. We are in a very competitive industry where the quality of our product is paramount. Talented people are attracted to Google because we empower them to change the world; Google has large computational resources and distribution that enables individuals to make a difference. Our main benefit is a workplace with important projects, where employees can contribute and grow. We are focused on providing an environment where talented, hard working people are rewarded for their contributions to Google and for making the world a better place.

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DON'T BE EVIL

Don't be evil. We believe strongly that in the long term, we will be better served—as shareholders and in all other ways—by a company that does good things for the world even if we forgo some short term gains. This is an important aspect of our culture and is broadly shared within the company.

Google users trust our systems to help them with important decisions: medical, financial and many others. Our search results are the best we know how to produce. They are unbiased and objective, and we do not accept payment for them or for inclusion or more frequent updating. We also display advertising, which we work hard to make relevant, and we label it clearly. This is similar to a newspaper, where the advertisements are clear and the articles are not influenced by the advertisers' payments. We believe it is important for everyone to have access to the best information and research, not only to the information people pay for you to see.

MAKING THE WORLD A BETTER PLACE

We aspire to make Google an institution that makes the world a better place. With our products, Google connects people and information all around the world for free. We are adding other powerful services such as Gmail that provides an efficient one gigabyte Gmail account for free. By releasing services for free, we hope to help bridge the digital divide. AdWords connects users and advertisers efficiently, helping both. AdSense helps fund a huge variety of online web sites and enables authors who could not otherwise publish. Last year we created Google Grants—a growing program in which hundreds of non-profits addressing issues, including the environment, poverty and human rights, receive free advertising. And now, we are in the process of establishing the Google Foundation. We intend to contribute significant resources to the foundation, including employee time and approximately 1% of Google's equity and profits in some form. We hope someday this institution may eclipse Google itself in terms of overall world impact by ambitiously applying innovation and significant resources to the largest of the world's problems.

SUMMARY AND CONCLUSION

Google is not a conventional company. Eric, Sergey and I intend to operate Google differently,

applying the values it has developed as a private company to its future as a public company. Our mission and business description are available in the rest of the prospectus; we encourage you to carefully read this information. We will optimize for the long term rather than trying to produce smooth earnings for each quarter. We will support selected high-risk, high-reward projects and manage our portfolio of projects. We will run the company collaboratively with Eric, our CEO, as a team of three. We are conscious of our duty as fiduciaries for our shareholders, and we will fulfill those responsibilities. We will continue to attract creative, committed new employees, and we will welcome support from new shareholders. We will live up to our “don’t be evil” principle by keeping user trust and not accepting payment for search results. We have a dual-class structure that is biased toward stability and independence and that requires investors to bet on the team, especially Sergey and me.

In this letter we have explained our thinking on why Google is better off going public. We have talked about our IPO auction method and our desire for stability and access for all investors. We have discussed our goal to have investors who determine a rational price and invest for the long term only if they can buy at that price. Finally, we have discussed our desire to create an ideal working environment that will ultimately drive the success of Google by retaining and attracting talented Googlers.

We have tried hard to anticipate your questions. It will be difficult for us to respond to them given legal constraints during our offering process. We look forward to a long and hopefully prosperous relationship with you, our new investors. We wrote this letter to help you understand our company.

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We have a strong commitment to our users worldwide, their communities, the web sites in our network, our advertisers, our investors, and of course our employees. Sergey and I, and the team will do our best to make Google a long term success and the world a better place.

Larry Page
Sergey Brin