Protestant Christianity, which is the most significant religious community here. The page for God.com is free of clutter, and it must have many highly popular referrals. It's thus well suited to Google's standards for inclusion and high scoring with PageRank. But one would hope that in Cairo or Venice a different result would end up second behind Wikipedia's entry for "God."

The first page of my search results shows a limited range of sites, considering the wide array of possible references to "God" in the world. It includes a video of John Lennon singing his song "God" (a search for "Mother" also links to a video of the Lennon song of that name, however—above a link to Mother brand polishes and waxes). There are links to a number of atheistic sites, as well as a link to the Twitter feed of someone who calls himself "God." There are no links to Islamic, Hindu, or Jewish sites, or even to Catholic sources. Here in Virginia, we are led to believe that the answers about God come from Wikipedia, evangelical Christianity, atheist sites, and John Lennon.

HUMANS IN THE MACHINE

Despite the pragmatic devotion to the technological virtues of speed, precision, comprehensiveness, and honesty in computer-generated results, and despite our pragmatic faith in truth arrived at by process and consensus, the local apparently matters more than the global in Web search. In addition, because of some awkward results, Google has on occasion intervened to impose human judgment from within the system, rather than rely on the slow-changing collective judgment of the users. Google's general response to complaints about the content of particular sites, even if the sites are offensive, untrue, or dangerous, is to refer the complainer to the author or Internet service provider of the offending site. However, the attention generated by the results for some searches has pushed Google to intervene.[34]

Google intervened, for instance, in April 2004, when the home page of an anti-Semitic site called Jew Watch displaced the Wikipedia entry for "Jew" as the top result for that search on Google.[35] It also took action

when results for the search "Holocaust" or "Jew" generated high first-page results for sites denying that the slaughter of more than six million Jews during World War II ever happened. In the United States, Google has no legal obligation to remove hateful, bigoted material. In places such as Germany and France, however, it does. When the Anti-Defamation League in the United States complained about the results for "Jew", Google responded at first by posting an explanation of how its search engine works and a pledge to honor the alleged neutrality of its algorithms. An updated version of that notice is still appended to the search-result page for "Jew":

> A site's ranking in Google's search results relies heavily on computer algorithms using thousands of factors to calculate a page's relevance to a given query. Sometimes subtleties of language cause anomalies to appear that cannot be predicted. A search for "Jew" brings up one such unexpected result. If you use Google to search for "Judaism," "Jewish" or "Jewish people," the results are informative and relevant. . . . The beliefs and preferences of those who work at Google, as well as the opinions of the general public, do not determine or impact our search results. Individual citizens and public interest groups do periodically urge us to remove particular links or otherwise adjust search results. Although Google reserves the right to address such requests individually, Google views the comprehensiveness of our search results as an extremely important priority. Accordingly, we do not remove a page from our search results simply because its content is unpopular or because we receive complaints concerning it.[36]

Once Google explained itself to the Anti-Defamation League, the organization posted a notice that it accepted Google's apology and assured its members that Google was not responsible for the results because they were purely "computer-generated," as if that absolved humans of responsibility. The Anti-Defamation League even praised Google for announcing that the company would find a way to mark offensive material in the future. (I see no evidence that it has done so, even five years later.)[37] This is odd, because the American Anti-Defamation League ignores the fact that Google.de, the German version of Google Web Search, generates no anti-Semitic results in a search for "Juden". And searching for "Jew"

on Google.de generates a series of English results without listing Jew Watch. The results, in other words, are clearly within Google's control. Google just chooses not to intervene so directly for searches done in the United States.

In the wake of the public controversy, those who sought to scrub the anti-Semitic sites from Google rankings posted pages on the Web linking to Wikipedia and to other, more legitimate and accurate sources of information about Judaism and the Jewish people. They hoped to flood the PageRank system with their preferred links, thus moving Jew Watch lower. The small number of supporters of the anti-Semitic site Jew Watch did the same. One would think that this process would enable the forces of light to triumph over the forces of darkness. However, because Google's computers are sensitive to the strategies known professionally as search-engine optimization and colloquially as "Google bombing," the anti-Semitic site retained its high ranking, although it lost the top place.[38] Over time, the top two results for "Jew" in the United States on Google .com have frozen such that Wikipedia remains at the top (as of August 2010, from Charlottesville, Virginia) and Jew Watch remains second. The current first-page results include more recent sources, revealing Google's desire to present the current as relevant. Near the bottom of my search results for "Jew" was a video of the parody artist Sacha Baron Cohen performing "Throw the Jew down the Well" as his character Borat.

So human intervention in Google search results occurs when Google wants it to—or when it is compelled by law to intervene. Most often, if Google wants a different set of results to appear in a particular context, it adjusts its algorithm to create a general change in the system, rather than bluntly editing the index or the results. However, three years after the controversy over search results for "Jew", Google quietly changed its "Explanation of Our Search Results" page. Where it used to read "A site's ranking in Google's search results is automatically determined by computer algorithms using thousands of factors to calculate a page's relevance to a given query," it became in May 2007 "A site's ranking in Google's search results relies heavily on computer algorithms using thousands of factors to calculate a page's relevance to a given query." So Google dropped the word *automatically,* the very term that got it off the hook with the Anti-Defamation League.

By 2007, Google had folded human intervention into page ranking in a number of subtle ways. It now employs a team of human "quality raters" to evaluate search results and report the results back to those who tweak the algorithm.[39] And by 2009, Google's registered users (those who use other Google services such as Gmail, Google Books, and Blogger) were empowered to add or delete sites from particular search results, thus giving the search quality team very specific guidance about pages.[40] This process allows registered users to exercise disproportionate influence over the search results that others see. These are "super citizens" of the Web. Their opinions matter more to Google than those of unregistered users.

Google also takes action in cases of egregious abuses of Web etiquette. If a search term consistently generates inappropriate results, such as pornography sites for search terms unrelated to sexual matters, Google will intervene immediately and punish the pornographic site for rigging its page rank. It will do the same if it suspects that a site has faked the number of incoming links. So the human element in Google's search business is present and perhaps growing. It's important to look critically at the people who are making these decisions and the cultural backgrounds from which they have emerged. They are, as might be expected, by and large technicians and technocrats.

A "SOVIET OF TECHNICIANS" AT BURNING MAN

Google is built to support a technocratic way of working. Its founders, Larry Page and Sergey Brin, and most of its early employees are computer scientists by training. It has always been the sort of place where those devoted to solving some of the biggest challenges in logic, mathematics, and linguistics can find a supportive yet challenging environment.[41] It's the paradigm of the sort of practice that has emerged quickly over the past twenty years and that now dominates the scientific agenda in many fields: entrepreneurial science—the intersection of academic "pure" science and industrial technoscience.[42]

This technocratic mode of organization is anything but new. In *The Engineers and the Price System,* a book published in 1921 that fell into

immediate obscurity, the iconoclastic economist Thorstein Veblen identified a new class of what we now call knowledge workers. In the late years of the American Industrial Revolution, Veblen saw that the increase in efficiency of the production and distribution of goods was creating tremendous wealth for the class that owned the means of production yet who were unable to do the mathematics necessary to understand the systems that enriched them. This situation would not stand for long, Veblen surmised. Unlike Karl Marx's unreliable proletariat, waiting to be sparked into revolutionary action by the sudden realization of historical exploitation, the engineering class might actually capture some of the wealth it created. In fact, engineers could work together to disrupt American industry and bring it down within a matter of weeks. No one else could do that, especially not laborers, who could always be replaced. Because there would always be a shortage of engineers, they had real social and economic power if they chose to use it. If the engineering class succeeded well enough, it could reengineer society, politics, and government as well as the firms themselves. In that event, Veblen argued, we might be ruled by a benevolent (or at least competent) "soviet of technicians."[43]

Google's position as both the dominant firm within its market and a model of how firms should behave in the world realizes Veblen's dream. And the ethos of the company meshes perfectly with one of the paradigmatic modern American values: merit conceived as technical competence. America, Walter Kirn writes, is run by "Aptocrats." These are people who excel at regimented procedures, such as standardized tests and other numerically quantifiable forms of achievement. They conform to highly structured expectations of excellence and clearly see every rung they must ascend on the ladder of success. "As defined by the institutions responsible for spotting and training America's brightest youth, this 'aptitude' is a curious quality," Kirn writes. "It doesn't reflect the knowledge in your head, let alone the wisdom in your soul, but some quotient of promise and raw mental agility thought to be crucial to academic success and, by extension, success in general. All of this makes for a self-fulfilling prophecy. The more aptitude that a young person displays, the more likely it is that she or he will have a chance to win

the golden tickets—fine diplomas, elite appointments and so on—that permit you to lead the Aptocratic establishment and set the terms by which it operates."[44] Aptocracy, on which Kirn elaborates in his funny memoir, *Lost in the Meritocracy: The Undereducation of an Overachiever,* rewards a large measure of gumption in addition to its strata of otherwise "fair" technologies of assessment (test scores, diplomas, and certifications).

Google may be the perfect realization of Aptocracy. Google hires the best of the best from America's top university technological programs. Even those who work in marketing and sales must demonstrate aptitude via tests and gamelike interview questions.[45] This focus on standardized, predictable tasks as the measure of achievement is ostensibly fair. Success in America no longer depends so heavily on social status, ethnicity, or gender. Those things still matter, and once in a while a stunningly incompetent exception circumvents the Aptocracy and rises to power, as George W. Bush did. But the Aptocracy has transformed America largely for the better over the past forty years. It has also created the environment in which Google could gestate, grow, thrive, and dominate.[46]

Google shapes its products as well as its staff along Aptocratic ideological lines. In Web Search, a link ends up high on the first page of search results if it has qualified in a mathematically demonstrable way. It must satisfy a number of tests of viability and quality. If it appears to have too many attributes that statistically correlate with untrustworthy pages—if, for example, it contains spam links or obvious attempts to game Google's ranking system—the algorithm will downgrade the page or omit it from the index. A page must have been reviewed and elected by other sites through the affirmative technology of the hyperlink to achieve a high ranking. As with the Aptocracy, members of the Internet elite have more power to determine the standards of excellence in the next iteration of Web search results. The system is always learning, just as the Aptocracy is always adjusting to new inputs and influences among high achievers.

This reliance on technologies to measure aptitude is part of what Neil Postman identified in 1992 as technopoly, or rule by and for technology.

Postman was highly critical of what he saw as America's blind dependence on tools and its failure to apply critical thinking and deliberation. If it's new and shiny, Postman lamented, people will adopt it. Soon, the tools seem to set the priorities. They seem to demand more attention and further refinement. And thus real life, or what Postman called "culture," is evacuated of all meaning. It's all about the tools.[47]

Postman committed the fallacy of assuming that technologies are autonomous, that they have inordinate influence over our behaviors, values, and expectations. He did not appreciate the extent to which people influence and rework technologies.[48] Google understands this better than Postman did. It's built to learn. It's designed to absorb influences, for better or worse. That's why the chief product the company delivers to users, the search-results page with links and advertisements, is contingent on the identity, history, and location of the user. The chief product Google sells, users' attention, is also contingent. It changes all the time because people's needs change and because people are fickle. Google is designed to absorb and respond to culture as much as it influences culture.

However, it's a mistake to think of Google's social influence and social role as purely a function of science and engineering. Google's social milieu, the petri dish from which it sprang, is more than technological or scientific. As the media historian Fred Turner demonstrates in *From Counterculture to Cyberculture,* the ideology of Silicon Valley is rooted in the practices and idealistic visions of 1960s counterculture. It's a peculiar story: cultural anarchism melded with technologies developed for and by the U.S. military, unleashed in the service of both commerce and creativity, yet also accused of undermining both.[49]

Google, in particular, incorporates a twenty-first-century form of countercultural hedonism in its corporate structure and everyday work environment: the ethos of Burning Man. Burning Man is an annual festival held at the end of August in the Black Rock Desert in northern Nevada. Thousands of people gather to camp and celebrate with music, drugs, art, and digital technology. Turner highlights the fact that many important players in the technological industries of Northern California regularly participate in Burning Man. For two weeks a year, Silicon

Valley's elite can immerse themselves in a grand network of human beings connecting for the sake of creating. "If the workers of the industrial factory found themselves laboring in an iron cage, the workers of many of today's post-industrial information firms often find themselves inhabiting a velvet goldmine: a workplace in which the pursuit of self-fulfillment, reputation, and community identity, of interpersonal relationships and intellectual pleasure, help to drive the production of new media goods," Turner writes.[50] Google's founders, Larry Page and Sergey Brin, have been regular Burning Man attendees since the 1990s. At the festival, Page and Brin would have encountered a radically decentralized social structure, one that facilitates creativity, collaboration, and experimentation with little or no "command and control." Burning Man, Turner concludes, is a distillation of the "cultural infrastructure" that nurtures Google, a spiritual manifestation of what Yochai Benkler calls "commons-based peer production."[51]

As the sociologist Dalton Conley has described, many of the most highly rewarded workers—those on the creative side of the technology industries—are either trapped in something like a velvet goldmine or struggling to get into one. They are decontextualized from their localities, overconnected to their mobile, cosmopolitan communities, and constantly striving to improve the speed and quality of those connections. They live in a place Conley calls "Elsewhere."[52] To use Turner's words, "the pursuit of self-fulfillment, reputation, and community identity, of interpersonal relationships and intellectual pleasure" helps drive the consumption of new media goods. The cycle of innovation and consumption is amplified by the deep cultural struggle to innovate and consume better, faster, and more than yesterday. That cycle is almost spiritual. It's not a cold, soulless process, nor a crass and cheap one. What drives people through the cycle is the real satisfaction of connecting with others over time and distance, valuable collaboration, and the potential for stunning creativity. Participating in the production, consumption, and use of the elements of digital culture creates a significant amount of joy and satisfaction. Moreover, the circulation of capital created by this process has generated tremendous wealth and opportunity, even if it has directly contributed to maldistributions of wealth.

And that's worth a lot, even if it also generates an insatiable demand for more.

THE PRACTICAL IDEALISTS

As I strolled through the Google campus in Mountain View, California, in the summer of 2008, I reflected on the monumental changes that this one company had brought into our lives. The "Googleplex" looks like a model business park. It's all glass, steel, and concrete. It's clean and well maintained. But it does not exude opulence or arrogance, as one might expect. Its buildings form a courtyard that is always filled with casually dressed people. Its workers drive a motley collection of Toyotas and Hondas, not the Mercedes-Benzes or BMWs one might expect in a parking lot of a company so wealthy. The campus is a collection of confusingly shaped and numbered stark glass buildings, unadorned and largely unassuming—just like the front page of Google itself.

With the exception of the full-scale replica of a *Tyrannosaurus rex* skeleton that dominates the ample courtyard, there is nothing to mark the place as eccentric. It's a nice place to work. Pleasant, smart people work there. Wandering amid shirtless volleyball players taking a break from long days and nights of coding, and lines of hungry young businesspeople waiting for a high-quality lunch buffet and enjoying ample on-site laundry and massage services, I kept wondering if these workers pondered how important they are to the daily lives of so many millions of people around the world. The decisions they make structure the patterns of discovery and communication in an increasing number of ways.

I wondered if those who do the thinking and building for Google thought, as I do, that Google is fast becoming the chief lens through which we see the world. In my exploration of Google over the past four years, I have at times considered it akin to the T-Rex that looms in its Mountain View courtyard, a fierce beast bent on devouring its neighbors in a single gulp. At other times, I have seen Google as a savior, a

bold and powerful institution assuming an important role in our lives after thirty years of suffering because our public institutions retreat and atrophy, shrinking from challenges in favor of the timid management of resources. But I never saw Google as just another player. Clearly it has never settled for also-ran status in any project or market in which it has engaged. Wherever Google shows up, whatever Google touches, it changes.

Not surprisingly, those who work for Google tend not to share my concerns. Nor, impressively, do they share in the widespread veneration of the company. In fact, every Google employee I met offered a much more modest, utilitarian vision of the company's effects on the world than either its critics or its champions express. Google employees for the most part consider themselves to be engineers doing a job, solving a problem or two, generating or perfecting algorithms that make computers manipulate data. Some of the big thinkers at the company, such as Vint Cerf (often called the "father of the Internet"), see the process of mastering information search as a noble cause but still downplay Google's influence.[53]

Other major public voices of the company, such as Marissa Mayer, frequently describe the jobs Google is doing in matter-of-fact terms. Explaining in her 2008 speech why the iconic blank search screen, containing only an empty search box, a logo, and a copyright notice, emerged from a company so blessed with brilliant engineers and devoted to monumental tasks, she said, "It's sort of more about expedient solutions and much less about grand or broad design."[54]

Seen from the inside, then, Google is a place to get things done. The focus is on the pragmatic (in the broad sense) solving of some rather challenging problems. Googlers see their role and method as incremental, steady, benign, and optimistic. The vast resources at their disposal—cash, server farms, bandwidth, computer processing power, and a collection of brilliant minds—allow them to address big, long-term challenges such as artificial intelligence, real-language (as opposed to awkward keyword or text) search, and computer-generated language translation. If you get enough cool things done, they think, you can rock the world.

They're probably right. But if that's going to happen, it would be a good idea for us to think harder about our faith in the benevolence of those who will be doing the rocking, and especially about the basis for our own ready acquiescence in the Googlization of everything. After all, even if the ends of that process are something that may transform our lives in ways that we desire, there may be better means by which we can reach those ends.

TECHNO-FUNDAMENTALISM AND THE PUBLIC GOOD

Google makes much out of its commitment to benevolence. Google officials invoke its famous informal motto, "Don't be evil," to explain that the company is worthy of the "trust bias" of users when it enters sticky situations. It is devoted to "corporate responsibility," even if the judgment of what constitutes responsible behavior is not so easy to discern. On a page on its website titled "Corporate Information: Our Philosophy," Google explains the "ten things Google has found to be true." Number 6 on this list is "You can make money without doing evil." The text explains how Google makes money from positioning relevant and unobtrusive advertisements alongside search results. In addition, the page explains, the rank of a particular page in search results is never for sale.

The text says nothing about how Google has contributed to censorship in China or other oppressive countries, how much energy the company uses to run its elaborate system of server farms, or how it punishes certain companies with sudden and inexplicable downgrades in PageRank and others with higher minimum rates for advertising at auction. It says nothing about how Google treats its temporary contract workers or how much it charges employees to use on-site childcare.[55] It takes no account of the access Google provides to sexual content, weapon-making instructions, debilitating computer viruses, financial scams, or hate speech on the Web. It mentions none of the default settings for the retention of private information and preferences. It says nothing about the distractions, dependencies, and concentrations of power that Google and the Web have unleashed on the world.[56]

It says none of these things because the burden of dealing with the myriad potential harms to which Google and the Web contribute is just too great to shoulder. It's unreasonable to expect a company to confront such potential harms transparently and of its own volition. No company could exist if it did not do—or at least allow—some harm and impose some costs on other entities. Doing harm is not necessarily being evil, however. Google never promised to be comfortable and benign: it just promised not to be evil, whatever that means. If we want a large, successful, powerful, brilliant Web-search company to provide us with so many important services so cheaply, we should not expect it to do no harm or avoid all ethically thorny situations.

Google is no better and no worse—and no less complicated and conflicted—than the rest of our institutions. "Don't be evil" is sometimes no more than a motto—a pose for public-relations purposes—but it is often something more. Those who work for Google support a wide range of interpretations and applications of the motto. When I asked them about it, a few of them cynically rolled their eyes, acknowledging that Google is subject to the same pressures and temptations as any other media or advertising company in a rickety global economy. Others took the creed seriously, citing it as one of the chief motivations for devoting so many hours of their lives to the projects and experiments that the company encourages. Many of Google's workers correctly see that the company's size and influence are the result of a million good, modest decisions by engineers who preceded them, by the founders of Google, and by the millions of people who use Google every day. Most of Google's management has explained away the phrase as a useful standard, a measure that they may invoke as a test of a business decision, but not an answer to any particular dilemma. They argue that the phrase was meant to be a reminder that a firm founded by and for idealistic engineers should not become just another company—or worse, another Microsoft.

Despite its embrace of benevolence, in other words, Google may sin, just as any of us may sin. However, its sins are our sins, too. One of the main reasons we have faith in Google is because we think that we can do anything we want if we have the right tools. That is the sin of pride. We have a blind faith in technology: techno-fundamentalism.

SUPERBIA

In an Oxford-style debate in New York City in October 2008, to be broadcast on the National Public Radio program *Intelligence Squared,* I joined an illustrious team that included Randall Picker of the University of Chicago Law School faculty and Harry Lewis, a professor of computer science at Harvard.[57] We argued to support the motion "Resolved: Google violates its 'Don't be evil' motto." The opposition was just as formidable. It included the author and blogger Jeff Jarvis, the libertarian legal advocate Jim Harper, and one of the smartest people involved in the promotion and governance of the Internet, Esther Dyson.

I opened my statement by noting that we had failed to define "evil." I told the crowd that I would invoke an authority, something of an expert on evil and sin: Dante Alighieri, who provides in *The Divine Comedy* a list of the seven deadly sins. They are *luxuria* (extravagance or lust); *gula* (gluttony); *avaritia* (greed); *acedia* (sloth); *ira* (wrath); *invidia* (envy); and *superbia* (pride or hubris). I claimed I could demonstrate that Google had committed every one of them.

I was joking about all the other sins, but I was serious about *superbia.* The particular kind of hubris that energizes Google is the notion that you can always invent something to solve the problem that the last invention created. That's techno-fundamentalism. It's an extreme form of the pragmatic orientation that, as we've seen, lies behind the acceptance of Google as the world's primary search engine. Techno-fundamentalism assumes not only the means and will to triumph over adversity through gadgets and schemes but also the sense that invention is the best of all possible methods of confronting problems.

At the beginning of the twenty-first century, we pay a heavy price for techno-fundamentalism. We build new and wider highways under the mistaken belief that they will ease congestion. We rush to ingest pharmaceuticals that are no more effective than a placebo at alleviating our ills.[58] We make investment and policy decisions based on principles such as the so-called Moore's law, which predicts that computer processing power will double every eighteen months, as if such progress had its own momentum, independent of specific decisions

by firms and engineers.[59] Perhaps most dangerously, we neglect real problems with the structures and devices we depend on to preserve our lives, as we did for decades with the levees that failed to protect the poorest residents of New Orleans after Hurricane Katrina.[60] And now it seems techno-fundamentalism stands as the operative ideology in defense and security policy. We need not depend on messy diplomacy or credible military threats to curb the activities of hostile states. We have Star Wars.[61]

The faith that technology can redeem all of our sins and fix all of our problems is the ultimate hubris. There are many examples in human history in which techno-fundamentalism has led to great suffering. For Dante, pride is actually the gravest of the seven deadly sins, because it was the sin that Lucifer committed. Lucifer, we should remember, was originally a good guy. He fell because he thought he could be equal to God, and instead he became Satan. The "Don't be evil" motto is itself evil, because it embodies pride, the belief that the company is capable of avoiding ordinary failings.

The theologian Reinhold Niebuhr wrote about the claims of benevolence in world affairs by American political leaders that "the pretensions of virtue are as offensive to God as the pretensions of power." Niebuhr was concerned that such pretensions blind leaders "to the ambiguity of all human virtues and competencies."[62]

THE BLINDNESS OF HUBRIS

Pretensions to virtue create other forms of blindness as well. Blind faith in the information to which Google provides access, for example, often allows us merely to confirm our prejudices and illusions. The actor and model Jenny McCarthy has spent the past several years trying to convince new parents that they should avoid vaccinating their babies against life-threatening diseases. She embarked on her campaign after her child was diagnosed with autism. Despite the absence of any evidence tying vaccines to the development of autism in children, McCarthy decided that the medical and public-health experts were wrong about the

conclusions they reached using real data and the scientific method.[63] She believed she could find out "the truth" about the imagined vaccination-autism connection by enrolling in what she described as "the University of Google."[64]

The University of Google lacks accreditation, to be sure. It's too simple to say it's only as good as its sources. Google is designed to favor sites with the most "votes" from others who use the Web, rather than those endorsed by knowledgeable experts. This is usually not a problem. In fact, no one has come up with a better way to navigate the mess of tangled documents and claims that make up the Web. However, it's sometimes harmful when people, even those who should know better, trust a simple Google search as the first step toward the truth.[65]

Poor searches by faithful Google users are only part of the problem with the Googlization of knowledge. The ways that Google structures, judges, and delivers knowledge to us exacerbate our worst tendencies to jump to erroneous conclusions and act on them in ways that cause harm. On September 8, 2008, a reporter for an obscure news company called Income Securities Advisors typed "bankruptcy 2008" into a search box on Google.com. Google News instantly pointed the reporter to an article from a newspaper called the *South Florida Sun-Sentinel* announcing that UAL, the parent company of United Airlines, had filed for bankruptcy protection. The reporter, who worked for a company that feeds stories to the powerful Bloomberg news service, posted a simple alert with no story or background attached: "United Airlines files for Ch. 11 to cut costs." This alert, apparently informing readers that the airline was seeking legal protection from its debtors, went out to thousands of influential readers of Bloomberg's financial news network.[66]

The problem was that the *Sun-Sentinel* archive did not display a publication date for the story, thus allowing Google News to list it among recent or current stories. Google's computers then placed a new date on the link to the article: September 6, 2008—the day Google's Web-crawling software found and indexed the article. But the UAL bankruptcy filing it referred to occurred in 2002. The company emerged successfully from protection and reorganization in 2006. Sadly, the reporter, apparently unfamiliar with the earlier travails of UAL and incautious

about what might get tossed up from the sea of Web content, did not attempt to verify the report.

When the NASDAQ market opened on the morning of September 8, 2008, UAL stock was trading at $12.17 per share. Once the alert zoomed around Bloomberg at approximately 11:00 A.M. Eastern Standard Time, panicked sellers unloaded 15 million shares of UAL and drove the price per share down to $3.00.

By 11:16 A.M., Bloomberg had issued an alert denying that UAL had filed for bankruptcy. As word spread that the bankruptcy alert was false, the stock recovered. But it still finished the day at $10.92 per share, down $1.38 from its opening price. This simple glitch cost UAL shareholders—including most of its employees—11.2 percent of the company's market value. In addition, the panic drove down shares of two other airlines, Continental Airlines and AMR (the parent of American Airlines) as well. The airlines had done nothing wrong. They had released no bad news. Yet they were all worth less at the end of the day than at the beginning because Google's Web crawlers found a mislabeled story in an open newspaper archive.[67]

This anecdote offers valuable lessons about our dependence on cheap, shallow, instant information and the chief delivery system for such information—Google. Certainly, had those responsible for posting the *Sun-Sentinel* article used proper metadata—the elements in a file that tell us its context, such as a date of origin—Google's computers would not have placed the story in front of the Income Securities Advisors reporter. And had the reporter been better informed and a more critical and less credulous reader, no one would ever have heard about the mistake. If anyone in this story understood that aggregators of information like Google News are only as good as their sources, no one would have overreacted. If either Bloomberg or Google News had been set up to enhance understanding, rather than simply to pass on what, under its brand, instantly becomes credible as trustworthy information, someone could have put the brakes on the error. And finally, if traders and investors around the world read more than headlines and tickers before making huge decisions that could cost innocent people money and jobs, the errors that preceded the sell-off might not have mattered at all.[68]

But that is not the world in which we live. We are flooded with data, much of it poorly labeled and promiscuously copied. We seek maximum speed and dexterity rather than deliberation and wisdom. Many of our systems, not least electronic journalism, are biased toward the new and the now. The habits and values of markets infect all areas of our lives at all times of day. And even after living intimately with networked computers for almost two decades, we lack understanding of what such complex information systems can and cannot do, or even how they work. We trust them with far too much that is dear to us and fail to confront or even to acknowledge their limits and problems.

Despite all the loud accusations of fault that flew between Google and those responsible for the journalistic errors, it's clear that Google itself did nothing wrong.[69] It's hard to expect that Google's programmers would consider the possibility of the basic metadata error that the *Sun-Sentinel* made. Nor should we expect them to have predicted the collective stupidity of the rest of the humans involved in the chain reaction.[70]

So the chief lesson here is not that Google is the cause of the problem: the lesson is that we are flawed. One of our flaws—which we recognize—is that we often lack the knowledge that we need to live our lives both happily and responsibly. We believe that Google offers a powerful way to overcome that flaw. But our faith in Google leaves us vulnerable to other flaws: the tendency to believe what we want to believe, like Jenny McCarthy, and belief itself, the credulity that makes us functioning social beings and that sometimes can betray us, as in the case of the false UAL bankruptcy report. When we choose to rely blindly on a pervasive, powerful gatekeeper that we do not understand, we are destined to make monumental mistakes.

THE TEMPTATION

Faith in Google is dangerous not because of anything specific that Google does. It's dangerous because of how we allow it to affect our expectations and information about the world. Using Google habitually raises our expectations about matters both deep and shallow. In the

space between expectations and reality lie happiness and anxiety. When expectations about significant issues—justice, peace, health, and knowledge—exceed reality by significant margins, the difference can motivate us to achieve marvelous things both collectively and individually. But when that tension is constant and loud about trivial things—the speed of information delivery, access to services, and acquisition of the latest and coolest goods—we indulge in decisions and actions that merely satiate us rather than enrich us.[71]