

THE GOOGLE STORY

Inside the Hottest Business, Media and Technology Success of Our Time

DAVID VISE and MARK MALSEED

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The Web site for this book is at www.thegooglestory.com.

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1. The Genesis of a Great Idea

“Not since Gutenberg invented the modern printing press more than 500 years ago, making books and scientific tomes affordable and widely available to the masses, has any new invention empowered individuals, and transformed access to information, as profoundly as Google. With its colorful, childlike logo set against a background of pure white, Google’s magical ability to produce speedy, relevant responses to queries hundreds of millions times daily has changed the way people find information and stay abreast of the news. Woven into the fabric of daily life, Google has seemingly overnight become indispensable. Millions of people use it daily in more than 100 languages and have come to regard Google and the Internet as one. The quest for immediate information on anything and everything is satisfied by ‘googling’ it on a computer or cell phone. Men, women and children have come to rely so heavily on Google that they cannot imagine how they ever lived without it.”

– David Vise and Mark Malseed

Strange as it may sound considering the fact Google is today worth more than Disney and General Motors combined, Sergey Brin and Larry Page, the two young co-founders of Google never actually set out to change the world. When the company was founded in 1998, it didn’t even have a business plan or a definitive business strategy. Instead, all Brin and Page had was an intense desire to do something innovative and to create a workplace where the best and brightest people could do some fun stuff.

Sergey Brin was born in Moscow, Russia on August 21, 1973. At age six, his parents emigrated from Russia to America to escape anti-Semitism and in search of greater freedom and opportunities. Sergey’s parents are both highly educated. His mother is now an accomplished scientist at NASA’s Goddard Space Flight Center while his father teaches math at the University of Maryland. As a result, a good education is highly valued in the Brin household. Sergey received an undergraduate degree from the University of Maryland at age 19 with honors in math and computer science. He was then awarded a National Science Foundation graduate fellowship and enrolled in the doctoral program at Stanford University.

Larry Page was born in Michigan on March 26, 1973. His father Carl had received one of the first computer science degrees ever awarded by the University of Michigan, so Larry grew up using computers all his life. His mother had a master’s degree in computer science and worked as a database consultant. Both his parents taught at Michigan State University although they divorced when Larry was eight years old. Larry graduated from the University of Michigan in 1995 majoring in computer engineering and was also accepted into Stanford University’s doctoral program.

Larry Page and Sergey Brin actually met for the first time in 1995 when Sergey was running a new student orientation program at Stanford. They hit it off right away, mainly on the basis both of them liked to argue about anything and everything. Page and Brin considered each other to be obnoxious but an intellectually worthy adversary. Soon, they were sparring verbally about every subject imaginable. Sergey was louder and more extroverted while Larry tended to be quieter and more introspective, but their intellectual dueling laid the foundation for what would ultimately become a lasting friendship.

Since both Page and Brin were the sons of professors, they had always just naturally assumed they too would stay in academia for the balance of their careers. Brin’s advisor, Professor Motwani, suggested a good subject for a doctoral thesis would be to look at finding new ways to extract meaningful information from large mountains of data. In the mid-1990s, it was very difficult to find information on the Internet, which resembled a virtual Wild West in many ways – unregulated, unorganized and unruly. This was the era of the first generation search engines like WebCrawler, Lycos, Magellan, Infoseek, Excite and HotBot. In response to this need, two other Stanford doctoral candidates, Jerry Yang and David Filo, had started assembling an alphabetized directory assembled by human editors, which would eventually become Yahoo! Motwani suggested to Brin there might be a smarter and better way to get the job done.

“At the same time, Page began hunting around the Web using a new search engine called AltaVista. While it returned somewhat better and faster results than the other search engines, Page noticed something else entirely. In addition to a list of Web sites, AltaVista’s search results included seemingly obscure information about something called ‘links’. Links contributed to the Web’s dynamism; computer users seeing a highlighted word or phrase could click on that link if they wanted to learn more, and they would instantly be taken to another Web page. Instead of focusing on AltaVista’s main search results, Page began pondering what could be gleaned from analyzing the links.”

– David Vise and Mark Malseed

Page decided he would dig into those links and analyze how they could be used further. To test his theories, Page audaciously decided he would download the entire World Wide Web onto his desktop. He thought this could be done fairly easily and quickly. Page dispatched an automated piece of software called a “spider” to systematically visit every Web site and download its contents. As might be expected, this attempt fell well short of the mark and Page was never actually able to download the entire Internet, but this project did look promising. Both Brin and his advisor, Professor Motwani, thought Page’s approach of looking at the links held the promise of improving Web research.

Page came up with a theory. In just the same way as academic articles always quoted citations, he suggested not all links were of equal value. Page suggested incoming links from important pages should have greater weight than links from obscure and rarely visited Web sites. He came up with a ranking system which said the sites with the most links pointing to them were more important than the sites with few links pointing to them. He brashly and playfully decided to call his link-rating system “PageRank” as a play of words on his own name.

“Larry talked about the idea initially as a random surfing, the idea of a random walk on the Web. The motivation for the algorithm (a set of mathematical equations) was really thinking about the surfer. Start on a page, click on a link, and see where you would land most of the time. That got refined into PageRank.”

– Terry Winograd, Stanford professor, advisor to Larry Page

Brin and Page decided in early 1997 they would team up to write a Ph.D. thesis around the idea of applying PageRank to the Internet. They even came up with a primitive search engine they called “BackRub” which analyzed the incoming links to a Web page. Without realizing it, they had actually managed to develop the first ranking system for the Internet which would later come to solve one of the core problems involved when searching for information on the Web.

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