

 Google's Larry Page on Why Moon Shots Matter | Wired Business | Wired.com

Illustration: Nicola Felasquez Felaco

Larry Page lives by the gospel of 10x. Most companies would be happy to improve a product by 10

percent. Not the CEO and cofounder of Google. The way Page sees it, a 10 percent improvement means that you're basically doing the same thing as everybody else. You probably won't fail spectacularly, but you are guaranteed not to succeed wildly.

That's why Page expects his employees to create products and services that are 10 times better than the competition. That means he isn't satisfied with discovering a couple of hidden efficiencies or tweaking code to achieve modest gains. Thousand-percent improvement requires rethinking problems entirely, exploring the edges of what's technically possible, and having a lot more fun in the process.

This regimen of cheeky aspiration has made Google an extraordinary success story, changing the lives of its users while [fattening the wallets](#) of its investors. But it has also accomplished something far beyond Google itself: In an industry rife with bandwagon-hopping and strategic positioning, Page's approach is a beacon for those who want more from their CEOs than a bloated earnings statement. While Google has made some missteps in recent years, and while its power has deservedly [drawn the scrutiny of regulators](#) and critics, it remains a flagship for optimists who believe that innovation will provide us with not just delightful gadgetry but solutions to our problems and inspiration for our dreams. For those people—and maybe for the human enterprise itself—a car that drives itself (to name one of the company's recent tech triumphs) is a much more valuable dividend than one calculated in cents per share. There's no question which is more important to Larry Page.

Of course, it can be challenging working for a boss whose dominant trait is dissatisfaction with the pace of progress. Astro Teller, who oversees Google X, the company's blue-sky skunkworks division, illustrates Page's proclivities with a parable. Teller imagines wheeling a *Dr. Who* time machine into Page's office. He plugs it in and—it works! But instead of being bowled over, Page asks why it needs a plug. Wouldn't it be better if it didn't use power at all? "It's not because he's not excited about time machines or he's ungrateful that we built it," Teller says. "It's just core to who he is. There's always more to do, and his focus is on where the next 10X will come from."

Page thought big even when he was little—he has said he always wanted to be an inventor, not just to produce gadgetry but to change the world. As an undergrad at the University of Michigan, he found inspiration in a student leadership-training program called LeaderShape, which preached "a healthy disregard for the impossible." By the time he got to grad school at Stanford, it was a natural step for him to 10X his potential thesis idea—a tool to annotate web pages—into a search engine that transformed the web and the world. And once Google's riotously successful ad business provided a plump financial cushion, Page was free to push for innovations that bore only a passing relationship to his core business. Google would build an email service—with 100 times the storage of competitors. Google would provide translations—for the entire web, from any language to any other. Google would give readers instant access to a global library—by scanning nearly every book ever published and putting the contents in its indexes. More recently, Google launched its [own version of an ISP service](#)—laying its own fiber and providing broadband service to Kansas City customers at 100 times industry-standard speeds.

That moon-shot mentality is the basis of Google X, which the company established in early 2010 to identify and implement once-impossible sci-fi fantasies: Hail Mary projects like the self-driving car. Or Google Glass, [a wearable computing system](#). Or an artificial brain, in which a cluster of

computers running advanced algorithms learn from the world around them, much like humans do. (In one experiment, it took only three days for a digital colony of 1,000 machines, with a billion connections, to surpass previous benchmarks in identifying photos of faces and cats.)

Page was closely involved in establishing Google X, but since he has ascended to lead the company, he can't spend as much time there. Some Googlers wonder if Page, clearly at his happiest working on moon shots, is essentially taking one for the team by assuming the sometimes prosaic tasks of a CEO. (Talking to bureaucrats about antitrust issues, for example, is probably not his idea of a good time.) The evidence shows, however, that Page has attacked his role with full-hearted fervor, applying the same 10X mentality to the process of running the company. He reorganized the management team around an "L-Team" of top aides, and he relentlessly rallied employees around a sweeping effort to integrate all of Google's offerings into a seamlessly social whole. And in the boldest move in his tenure, he engineered the \$12.5 billion acquisition of Motorola Mobility, one of the world's biggest handset companies.

In one of the rare interviews he has granted as CEO, Page recently discussed thinking big and other Googley issues with *Wired* at the company's Mountain View, California, headquarters. Later that same day, Page, who turns 40 in March, announced a new philanthropic venture. After observing epidemiological behavior via Google Search's flu-tracking service, he decided to pay for free flu shots for kids in the entire Bay Area. How 10X of him.

Wired: Google is known for encouraging its employees to tackle ambitious challenges and make big bets. Why is that so important?

Larry Page: I worry that something has gone seriously wrong with the way we run companies. If you read the media coverage of our company, or of the technology industry in general, it's always about the competition. The stories are written as if they are covering a sporting event. But it's hard to find actual examples of really amazing things that happened solely due to competition. How exciting is it to come to work if the best you can do is trounce some other company that does roughly the same thing? That's why most companies decay slowly over time. They tend to do approximately what they did before, with a few minor changes. It's natural for people to want to work on things that they know aren't going to fail. But incremental improvement is guaranteed to be obsolete over time. Especially in technology, where you know there's going to be non-incremental change.

So a big part of my job is to get people focused on things that are not just incremental. Take Gmail. When we released that, we were a search company—it was a leap for us to put out an email product, let alone one that gave users 100 times as much storage as they could get anywhere else. That is not something that would have happened naturally if we had been focusing on incremental improvements.

Larry Page changed the world by co-inventing a search engine that could give us all instant access to the world's information. And he was just getting started. Here's a short tour of his long list of accomplishments. —*Victoria Tang*

1995

After attending a Montessori school, which encourages creative thinking, graduates from the University of Michigan with a degree in engineering.

1996

Starts the doctorate program in computer science at Stanford. After what he later describes as “a vivid dream,” begins working with Sergey Brin on a search engine initially dubbed BackRub.

1998

Launches the search engine—now called Google—commercially from a friend’s house. Maxes out three credit cards to buy the initial hardware.

2001

Receives a patent for PageRank, which orders each search result based on “an objective measure of its citation importance that corresponds well with people’s subjective idea of importance.”

2004

Bucks Wall Street tradition by running the Google IPO as a modified Dutch auction, which makes it easier for everyday investors to snare a share.

2005

Appointed to the board of trustees of the X Prize Foundation, which offers rewards to inventors who can accomplish seemingly unreachable goals.

2006

Invests in Tesla Motors, a company that taps into Page’s long-standing interest in electric cars. Back in his college days, he helped design a solar-powered car that raced in the 1993 World Solar Challenge.

2007

Seeds a team to experiment with self-driving cars, capitalizing on technology like laser range finders and radar sensors to improve safety and efficiency.

2011

After serving as Google’s president of products for a decade, replaces Eric Schmidt as CEO.

2012

Demonstrates the Google Glass wearable computer from the secretive Google X lab. In a move toward hands-free devices, the futuristic headgear projects information onto a lens above the user's right eye.

2012

Launches the Solve for X event, where 46 entrepreneurs, innovators, and scientists gather to discuss "technology moon shots," a concept repeatedly touted at Google.

2012

Establishes Global Impact Awards for nonprofits that use technology to "tackle some of the world's toughest human challenges," including projects like real-time clean water sensors and DNA barcoding.

Click the arrows to move through the timeline.

Wired: But you have to gradually improve your existing products too, right?

Page: Of course. But periodically, every n years, you should work on something new that you think is really amazing. The trick is coming up with those products. I could probably give you a list of 10 major things that are wrong with email. I try to maintain lists like that in my head.

Wired: Now you have a separate division called Google X, dedicated to moon-shot projects like [self-driving cars](#). Why did you decide you needed to set up an entire department for this?

Page: I think we need to be doing breakthrough, non-incremental things across our whole business. But right now Google X does things that can be done more independently.

You know, we always have these debates: We have all this money, we have all these people, why aren't we doing more stuff? You may say that Apple only does a very, very small number of things, and that's working pretty well for them. But I find that unsatisfying. I feel like there are all these opportunities in the world to use technology to make people's lives better. At Google we're attacking maybe 0.1 percent of that space. And all the tech companies combined are only at like 1 percent. That means there's 99 percent virgin territory. Investors always worry, "Oh, you guys are going to spend too much money on these crazy things." But those are now the things they're most excited about—YouTube, Chrome, Android. If you're not doing some things that are crazy, then you're doing the wrong things.

"There are all these opportunities to make people's lives better. Tech companies are attacking 1 percent of them. That leaves 99 percent virgin territory."

Wired: On the other hand, as the canard goes, the pioneers take the most arrows. Look at the experience of Xerox PARC, where fantastic innovations didn't seem to [help the corporation itself](#).

Page: PARC had a tremendous research organization and they invented many of the tools of

modern computing. But they weren't focused on commercialization. You need both. Take one company I admire, Tesla. They've not only made a really innovative car, but they're probably spending 99 percent of their effort figuring out how to actually get it out to people. When I was growing up, I wanted to be an inventor. Then I realized that there's a lot of sad stories about inventors like Nikola Tesla, amazing people who didn't have much impact, because they never turned their inventions into businesses.

Wired: Why don't we see more people with that kind of ambition?

Page: It's not easy coming up with moon shots. And we're not teaching people how to identify those difficult projects. Where would I go to school to learn what kind of technological programs I should work on? You'd probably need a pretty broad technical education and some knowledge about organization and entrepreneurship. There's no degree for that. Our system trains people in specialized ways, but not to pick the right projects to make a broad technological impact.

Wired: I know that you and Google cofounder Sergey Brin have been thinking about some of these challenges for a long time. In an interview I did with you both back in 2002, you virtually wrote me out the specs to Google Glass.

Page: Why didn't we do it then? We'd have had a lot more time to get it done! It's like autonomous cars. I wanted to do them when I was at Stanford. That was over 14 years ago. The only thing that changed was we got the guts to actually do it.

Wired: Google X's moon shots aside, what's taking your time at Google?

Page: A great deal of my effort is spent making sure that we have a great user experience across our core products. Whether you're in Chrome or Search or Gmail, it's just Google, with one consistent look and feel. It's not a good user experience if there are 50 different ways to share something. That requires integration.

Wired: As Google now grapples with its image as a powerful, maybe scary company, does it get harder to implement big changes?

Page: It's harder, but there are also more benefits. A billion people use our products.

Wired: But have you done a good enough job explaining your intentions? Take Book Search. Providing a way to search through the world's books seemed to you to be an unalloyed good. But you ran into a backlash and chronic litigation.

Page: It's certainly not pleasant. But show me a company that failed because of litigation. I just don't see it. Companies fail because they do the wrong things or they aren't ambitious, not because of litigation or competition.

Wired: Steve Jobs felt competitive enough to claim that he was willing to "go to thermonuclear war" on Android.

Page: How well is that working?

Wired: Do you think that Android's huge lead in market share is decisive?

Page: Android has been very successful, and we're very excited about it.

Wired: Did you envision that kind of success when you bought Andy Rubin's small company in 2005?

Page: We have a good ability to see what's possible and not be impeded by the status quo. At the time we bought Android, it was pretty obvious that the existing mobile operating systems were terrible. You couldn't write software for them. Compare that to what we have now. So I don't think that betting on Android was that big a stretch. You just had to have the conviction to make a long-term investment and to believe that things could be a lot better.

Wired: One area where people say that Google is indeed motivated by competition is the social realm, where in the past two years you have been working hard in a field dominated by a single rival, Facebook. That's not the case?

Page: It's not the way I think about it. We had real issues with how our users shared information, how they expressed their identity, and so on. And, yeah, they're a company that's strong in that space. But they're also doing a really bad job on their products. For us to succeed, is it necessary for some other company to fail? No. We're actually doing something different. I think it's outrageous to say that there's only space for one company in these areas. When we started with search, everyone said, "You guys are gonna fail, there's already five search companies." We said, "We are a search company, but we're doing something different." That's how I see all these areas.

Wired: What's your evaluation of Google+?

Page: I'm very happy with how it has gone. We're working on a lot of really cool stuff. A lot of it has been copied by our competitors, so I think we're doing a good job.

Wired: Android has always prided itself on being a more open platform, compared to Apple's walled-garden approach. That came into stark relief when Apple pulled Google Maps from iOS6 and launched its own maps app. Did the uproar over that decision vindicate your commitment to openness?

Page: I don't want to comment on partner relationships. But we've been working on Maps for a long time, and it's nice to see people realize that we've put a lot of effort and investment into it. That's clearly more appreciated now.

Look, you may have the greatest maps in the world, but if nobody uses them, it doesn't matter. Our philosophy has always been to get our products out to as many people as possible. Unfortunately that's not always easy in this day and age. The web has been great; we were able to get products out to everyone, quickly and with high quality. Now we're going backward with a lot of the platforms that are out there. Companies are trying to wall everything off, and I think that impedes the rate of innovation.

Wired: Google has been challenged on the patent front, an issue you addressed by buying Motorola's portfolio.

Page: We bought the company as well.

Wired: Exactly. But since then the company has released only products that were previously in the pipeline. We don't know what your plans are. Should we expect Google to be as disruptive and innovative with Motorola as it has been in other areas?

Page: As we said when we acquired Motorola, we're running it independently, and Dennis Woodside is in charge. But that's very much what we want to do with Motorola and what Dennis wants to do. There's a lot of room for innovation in hardware. The phones we use now have glass that everyone worries will break if they drop the device. Five or 10 years from now, that will be different. There's going to be a lot of change.

Wired: As we speak, anyone who goes to Google's homepage sees a link to information in opposition to an International Telecommunication Union proposal that may constrain the open Internet. Last year you did something similar around the controversial SOPA bill. We didn't use to see that kind of lobbying on Google.com. Why do it now?

Page: Consider our own history. When we started Google, it wasn't really obvious that what we were doing wouldn't get regulated away. Remember, at the time, people were arguing that making a copy of a file in a computer's memory was a violation of copyright. We put the whole web on our servers, so if that were true, bye-bye search engines. The Internet's been pretty great for society, and I think that 10 or 20 years from now, we'll look back and say we were a millimeter away from regulating it out of existence.

Wired: My guess is that talking to regulators is probably not your favorite thing to do.

Page: I like talking to everyone. That's just the way I'm wired. But I do think the Internet's under much greater attack than it has been in the past. Governments are now afraid of the Internet because of the Middle East stuff, and so they're a little more willing to listen to what I see as a lot of commercial interests that just want to make money by restricting people's freedoms. But they've also seen a tremendous user reaction, like the backlash against SOPA. I think that governments fight users' freedoms at their own peril.

Wired: How do you maintain the Google culture—including the mandate to think big—within such a huge company?

Page: We're a medium-size company in terms of employee count. We have tens of thousands of employees. There are organizations out there that have millions of employees. That's a factor of a hundred, basically. So imagine what we could do if we had a hundred times as many employees.

Wired: You hold a weekly TGIF meeting, where any employee can ask you or other top executives a question, either in person or electronically. How can you keep that kind of intimacy as you grow? Anything is scalable. We do need to be more cognizant of time zones, because we've got a lot of people in different places. Short of building a giant space mirror that causes the whole Earth to light up at the same time, there's not much we can do about that. So we're moving that TGIF meeting to Thursday, so that people in Asia can get it during their work week. That process still works pretty well at our size, and I'm sure it will work fine up to a million people as well.

Wired: Wait, that's the second time you've mentioned Google as potentially a million-person company.

Page: Doesn't Walmart have more than a million employees? OK, maybe it's not important for us to have a million employees, but I like to think that we could build companies that are really scalable to that size. We could add people and still be really innovative. That would be great for us. We're one of the bigger companies of the world, and I'd like to see us do more stuff—not just do what somebody else has done, but something new.

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