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ON THE COVER: Photo illustration for Popular Mechanics by Zach Bush.

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TECHNOLOGY'S SECRET WEAPON IS

WOMEN

To succeed in Silicon Valley, you have to break things, think different, change the outlook. Disrupt.

Who can do that better than the people who aren't already there?

Tracy Chou
Software engineer,
Pinterest

Vanessa Hurst
Founder and CEO,
CodeMontage

Lara Hogan
Senior engineering
manager, Etsy

WHY WE NEED
WOMEN

Yes, in Silicon Valley there are glass ceilings and harassment and discouraging numbers. There are also ferociously talented women doing incredible things with technology. Some of the most prominent tell us what we need that they've got.

BY JACQUELINE DETWILER

Jen Pahlka
Founder and executive director, Code for America

Tiffani Bell
Cofounder and executive director, Detroit Water Project

Rebecca Woodcock
Cofounder, CakeHealth

Tali Rapaport
Vice president of product, Lyft

I n November 2015, Pinterest released an impressive new feature: a magnifying-glass icon (A) that calls forth a visual-search box that can focus on any element of a picture, summoning similar dresses, rugs, nature scenes, or chests of drawers from the entirety of the Pinterest empire without anyone typing a single word. It took four male engineers nine months to build it. And then those engineers brought a beta version to software engineer Tracy Chou, who opened the search box over a wedding dress. The algorithm returned sundresses, prom dresses—clothing that was aesthetically similar, but not remotely in the same conceptual category. "The team couldn't differentiate between the types of dresses, so they thought the product was at a reasonable stage to be shipped," Chou says. She requested that the engineers modify the feature to incorporate her own clothing knowledge, and Pinterest ended up with a visual search tool with vastly improved image-recognition capabilities.

A statistician would not consider Chou's contribution to Pinterest's success unusual. A 2014 review of studies performed by the National Center for Women & Information Technology showed, across all industries, that teams that included women

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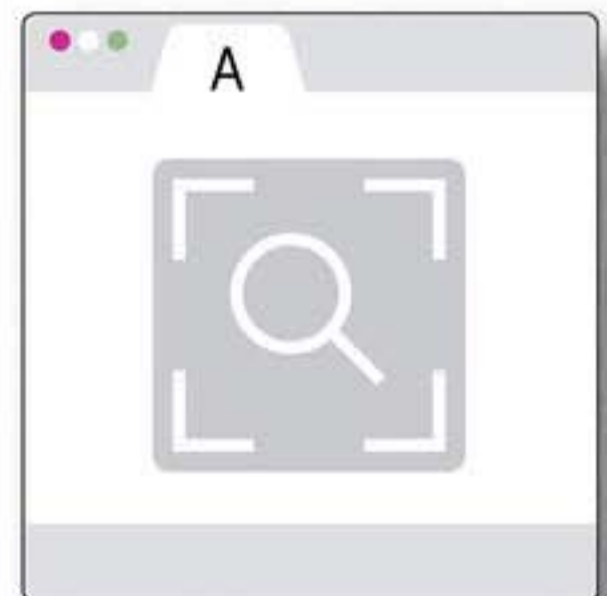
were more creative, experimental, and productive than all-male teams. A 2009 study that specifically focused on R&D departments found that teams with better gender diversity were better at both meeting deadlines and staying under budget. And a recent report from Credit Suisse that considered three thousand companies worldwide revealed that increased gender diversity in management led to better financial performance as well.

It's not that groups of men can't create brilliant companies, apps, and gadgets. (Google and Facebook are evidence enough of that.) It's that heterogeneity breeds creativity. According to a psychological shortcut called the availability heuristic, humans are most likely to look for solutions among examples easily recalled from past experience. Show a pack of wheat farmers a drawing of a cylinder with lines sticking out of it and they'll see a combine harvester. Present the same drawing to a room full of hairdressers and they might tell you it's a hairbrush. When the ranks of computer programmers reflect the overall proportions of American society, we all benefit from their breadth of experience in the form of smart, useful products.

"Software is language," says Vanessa Hurst, founder and CEO of CodeMontage, a company that helps developers code for the betterment of society. "Any assumptions you have about words and relationships are going to show up in your language. They show up in code and they show up in architecture." Size-restricted boxes for typing first, middle, and last names in online forms are a common example of this. Hispanic people often have more names than a preset layout is designed to handle—a problem that might disappear if there were more Hispanic programmers.

Just among the women interviewed for this article, there are dozens of examples of personal perspective leading to original ideas. Etsy senior engineering manager Lara Hogan cofounded the Etsy Device Lab[1], a room full of loaner phones and tablets (B), because she realized that users around the world might not all be using Etsy on the latest iPhone. The coders on staff, all early adopters, were so accustomed to buying


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[1] With another woman, Destiny Montague.

and using shiny new products in their personal lives that no one had thought to test user experience on older, crummier screens and operating systems.

Jen Pahlka, who worked on a Web conference called Web 2.0 that discussed government technology during the dark, post-dot-com-bust days of the Internet, went on to found a nonprofit, Code for America, that has been called the Peace Corps for geeks. She also cofounded the United States Digital Service[2], which helped repair the flubbed healthcare.gov rollout (C), and now hopes to use technology to tackle the mess that is the Department of Veterans Affairs, among other intractable government problems. From the beginning, the USDS has contained a plenitude of women. "We realized that if we were going to fix America's problems, we should look a little bit like America," Pahlka says.

This is to say nothing of ideas that could affect women's lives in more direct ways. Tiffani Bell, a woman working at the time as a fellow for Pahlka's Code for America cofounded her startup, Detroit Water Project[3] (D), because she read an article about utility companies shutting off poor families' access to clean water when they couldn't pay their bills, and was so upset she couldn't go to work. Rebecca Woodcock got the idea for Cake-Health, her app that consolidates and tracks healthcare spending, after helping a good friend who had developed epilepsy manage her medical plan's coverage. Tali Rapaport, a vice president of product at Lyft who is pregnant with twins, recently encouraged a friend at a wearable-tech company to make a maternity shirt that can sense contractions and tell a woman when to go to the hospital.

"I remember the moment when I realized that computer programmers existed," says Hurst. "I think a lot of us still don't. We'll say, 'It's so weird that Facebook operates this way.' But actually there are thousands of people at Facebook who decided for it to do what it does." It's a fundamental concept
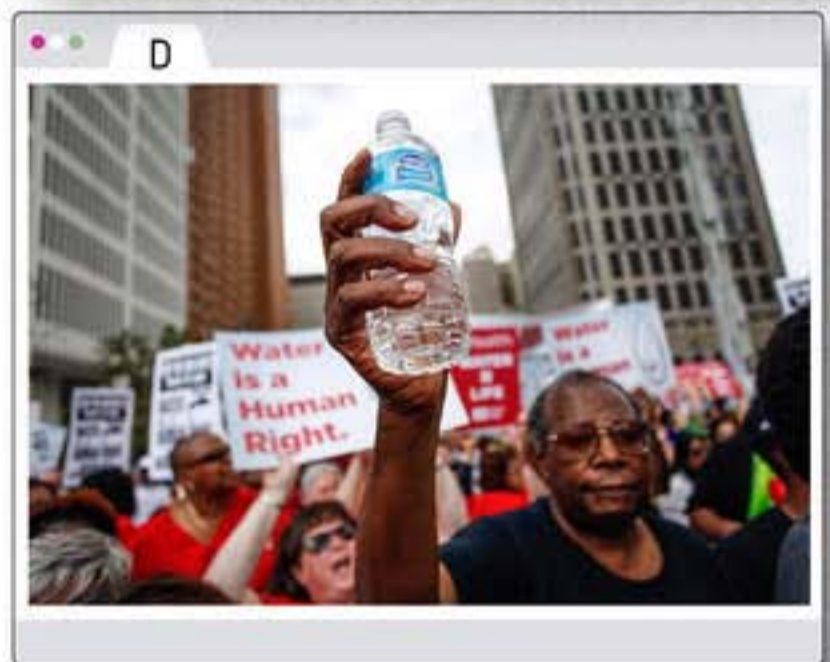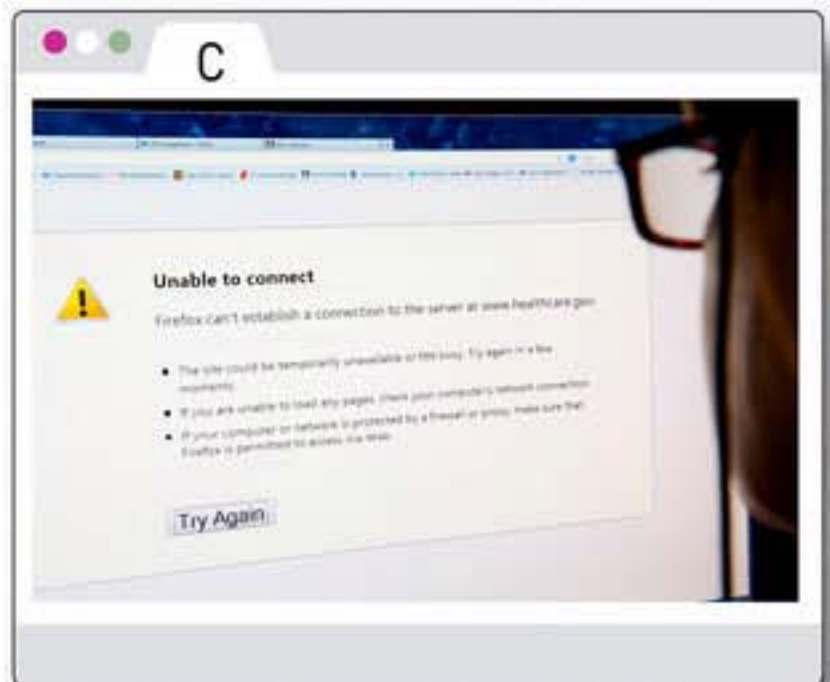
[2] With another woman, Haley Van Dyck. [3] With another woman, Kristy Tillman.

that's easy to forget. Behind every seamless user experience is a phalanx of set designers operating quietly, shaping the programs we use in their own image.

Consider health. We're only playing in the puddles of the world of possibilities available to health technology—recording our steps and inhaler use, punching in calories and heart rate. When Apple's first version of HealthKit was released in 2014, it offered dozens of ways to quantify the human body, but it couldn't track a woman's menstrual cycle, which women have been doing since the beginning of time (it's the easiest way to know whether they're about to create another human). The app has been fixed since, but it took the outcry of a disappointed public to make it happen. All of which is to say, if the group of people that assembles the technological infrastructure that cures disease and hacks the brain and makes all of us effectively immortal is all male, the human race can look forward to a pretty idyllic future.

But imagine the future we'd have if women helped.

The Future

ALEJANDRA IBARRA
18, freshman,
UC Berkeley

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In high school, I had no idea there was such a gender gap. Now I attend UC Berkeley. It opened my eyes. You walk into a computer-science class and 80 percent are men. Then out of the women, like 5 percent are people of color. People say, "How long have you been coding? I started when I was five years old. You shouldn't be here if you're brand-new."

SANDRA VIVIAN-CALDERON
18, freshman,
UC Davis

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I did Girls Who Code before my senior year. It's a seven-week immersion where you get to spend time at a software company. I went to Square. They taught you what you would learn in your first semester of college—a lot of languages. And we got to eat all the awesome food at Square.

MIRIAM CASTILLO
17, senior,
Castlemont High School

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Ms. Shorall told me about the computer-science class. It was something I'd never looked at or had a chance to learn, so I thought I should take a chance. Now I'm in my second year. It's one of the things I'm thinking about majoring in in college.

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