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A few years back, my friend's dad asked me to show him my mom's house on the map. I knew we didn't have Street View in Zimbabwe yet, but I looked anyway, and of course, we couldn't find it. When you look at most mapping platforms, you will find that parts of the African continent are largely missing. And I've wondered: Is it the people? Is it the technology? Or is it the terrain? For nearly a billion people on the continent, it's an accepted reality that certain technologies are just not built for us.

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When Cyclone Idai flattened parts of Mozambique, Zimbabwe and Malawi in 2019, killing 1,300 people and displacing hundreds of thousands of others, it left more than just destruction. It left a new awareness of the consequences of omission in the way we build technology. As rescue workers arrived in the region in search of survivors, we learned that thousands of displaced people were in unmapped areas, making it difficult to reach them with much-needed food and medical supplies. There was no accurate accounting of what had been lost. For those in unmapped areas, a natural disaster often means no one will come to find you.

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Thankfully, as the tools used to build some of the maps we use today become more easily accessible, we can be part of the solution. Anyone with a computer or a cell phone can play a role in improving the representation of communities that are missing accurate maps.

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In two weeks, I photographed 2,000 miles of Zimbabwe, and with every single mile I captured, I got closer to an answer and a better sense of what it means to not be on the map. As I started to prepare for my mapping journey, I learned that while many of the maps we use today are built on proprietary technology, the pieces that make up that canvas often have open-source origins. I could combine those pieces with off-the-shelf products to build maps that are accessible on both commercial and open-source platforms.

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I started with a very rudimentary setup: a 360-degree action camera stuck outside the window of my brother's car. After capturing a few dozen miles of city streets, I borrowed a proper camera from the Street View camera loan program, allowing me to capture high-resolution imagery, complete with location, speed and other vital layers of data. I adapted that camera to sit on a backpack I could carry, and with the help of a few more contraptions, we were able to mount it

to the dash of a helicopter, the bow of a speedboat and the hood of an all-terrain vehicle. My journey started at Victoria Falls, one of the seven natural wonders of the world, and then I headed east to the 11th-century city of Great Zimbabwe, before retracing my footprints home, finally putting my hometown on the map. And yet, much of the region remains all but invisible on some of the most widely used mapping platforms.

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Beyond navigation, maps are a proxy for what we care about. They tell us about the quality of the air we breathe, the potential for renewable energy solutions and the safety of our streets. These lines retrace the journeys we've taken. In a sense, maps are a form of storytelling. When you look at the state of mapping on the African continent today, you'll find a patchwork of coverage, often driven by humanitarian need in the wake of natural disasters, rather than by deliberate and sustained efforts to build out digital infrastructure and improve overall service delivery. What the continent is lacking are maps that tell the story of how people live, work and spend time, illuminating environmental and social issues.

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With more than 600 million cell phones in the hands of people between Cape Town and Cairo and centers of innovation in the cities in between, this is achievable. Every single one of those devices, in the hands of a contributor to an open-source mapping platform, becomes a powerful source of imagery that forms a vital layer of data on maps.

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With virtual maps, mapping is no longer just about cartography. It's become a way to preserve places that are undergoing constant and sometimes dramatic change. High-resolution imagery turns maps into a living canvas on which we can instantly experience the rhythm and visual iconography of a city, often from thousands of miles away. City planners are able to measure traffic density or pick out problem intersections, and in the case of Northern Ontario, where I mapped ice roads in partnership with the local government, you can now explore 500 miles of winter roads along the western edge of the James Bay. Every winter, after 10 days of minus 20-degree temperatures, engineers begin the work to build the road of the season. These roads only exist for 90 days, connecting communities across hundreds of miles of frozen tundra. Being on the winter roads of Northern Ontario after mapping parts of Namibia, one of the warmest places on the planet, exposed me to the many ways in which communities are using maps to understand the pace and impact of changes in the environment.

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So after mapping 3,000 miles in Zimbabwe, Namibia and Northern Ontario and publishing nearly half a million images to Street View, reaching more than 26 million people on Maps, I know it's not the technology, it's not the people, and it's clearly not the terrain. Every other day, I hear from scientists who are using maps to understand how our built environment influences health outcomes, teachers using virtual reality in the classroom and humanitarian workers using maps to protect the vulnerable. A dad wrote to me to say he'd finally been able to show his girls the house in which he grew up and the hospital in which he was born, in Harare. Think about the last time you gave directions to a stranger. When we contribute to connected maps, we're giving directions to millions. And that stranger may be the occasional tourist, a researcher, a first responder, a rescue worker working in unfamiliar terrain.

06:46

As we begin to think about how to bridge the digital divide, we should go beyond the traditional narrative of data extraction and consumption and think more critically about the role you and I play in the creation of the technologies and tools we use every day. The goal is not to map every inch of the planet, but to spare a moment to think about where those tools are most needed, the consequences of our mission and the role you and I can play in filling those gaps and building a more connected world together.

07:20

Thank you.