

My Moonshot Heroes
How Ordinary People are Changing the World in Unbelievable Ways
By
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Quite coincidentally, just three days ago Israel launched its first lander to the moon aboard the SpaceX Falcon 9 rocket. If Israel's moonshot is successful, which we'll find out when it lands in April, it will join an elite, though growing number of countries that have done so, the U.S., Russia, and, only a month ago, China, and will be the first to do so using a privately funded lander. "Moonshot" has been the title of several books about, what else, going to the moon. It's also a term sometimes used in baseball to describe a high-flying homerun hit. But in recent years *moonshot* has come to refer to any attempt to accomplish something so extraordinary that most people would probably consider it impossible. When the original moonshot, sending an astronaut safely to the moon and back, was proposed by President Kennedy in 1961 the technology for doing so didn't even exist and nobody had any idea how to make it happen. As moonshot champion and cheerleader, Peter Diamandis, a founder of the XPRIZE Foundation, often says, "The day before something is truly a breakthrough, it's a crazy idea." Conversely, in his recent book, *Moonshots: Creating a World of Abundance*, Naveen Jain, a successful American entrepreneur and philanthropist who grew up impoverished in India, says, "The minute you believe something is impossible, it becomes impossible for you."¹

This new use of the term began with a relatively unknown research and development wing of Google called, X, as is the Roman numeral for 10. The idea of X, whether it's Google X, XPRIZE, or SpaceX, is to not limit ourselves to incremental, 10-percent-better-than-now thinking, but 10X, ten-times-better-than-now! "We start with a large problem in the world that, if solved, could improve the lives of millions or even billions of people," Google X says. "Then we propose a radical solution that sounds impossible today, almost like science fiction."² When Google X was just getting started, founder and CEO, Larry Page was talking with Astro Teller, the lab's head, a brilliant engineer who happens to be the grandson of Edward Teller, father of the Atomic Bomb. Page said he didn't like the terms, "research center" or "innovation incubator" because they're too boring. Teller thought for a moment, then asked, "So, are we taking moonshots?"

"That's it," answered Page, "That's exactly what we're doing!"³ And that's how Astro Teller got his official title, Captain of Moonshots, and why Google X is nicknamed, "The moonshot factory." Some of the moonshots the factory has churned out so far include using balloons to

¹ Jain, Naveen. *Moonshots: Creating a World of Abundance* (p. 51). John August Media, LLC. Kindle Edition.

² Ibid., p. 16.

³ Diamandis, Peter H., & Kotler, Steven, *Bold: How to Go Big, Create Wealth, and Impact the World*, Simon & Schuster, New York, NY, 2015, p. 81.

send satellites into the stratosphere, in order to affordably provide adequate Internet service to the 3.5 billion people around the world who don't have it yet. X was able to use this technology to reestablish internet service in Peru and Porto Rico after Hurricane Maria knocked it out in 2017. WAMO, the self driving car company, is also a product of X, and is about to disrupt the auto industry by reducing car ownership, parking lots, and the number of cars on the road. X is also working on autonomous flying delivery drones, which they expect will be as transformative as the pony express, ships, trains, and planes have been, making it possible for shut-ins and people stuck at home to quickly get things, like dinner for the sick kids, or bringing life-saving supplies to Emergency workers in remote areas, or bringing something you unintentionally forgot at home to your office, all while reducing traffic congestion in big cities and CO₂ emissions in the atmosphere. X has also invented contact lenses capable of monitoring our health, starting with diabetes detection; and kites that generate wind power without the need for colossal windmills and windfarms; and salt-based batteries for storing extra solar and wind energy so it's no longer wasted; and carbon neutral fuel made out of seawater; and many other crazy ideas.

During the 2018 Abundance 360 Conference, Teller told participants the greatest obstacle to moonshots is fear of failure. To overcome this, he says, "If you want your group to take moonshots, you have to start by making it socially uncomfortable for people to suggest 10 percent thinking... you want people to think that their jobs are tied to the weirdness and the bravery and the creativity."⁴ In other words, moonshots require 10X, not 10 percent, thinking. Moonshot thinking means dreaming the impossible dream, always in the service of humanity, always "one giant leap for mankind," and having the courage to go for it no matter how crazy it might seem.

Let's say, for example, we decide to build a machine that can pull water out of thin air. Not crazy enough for you? Then let's make it no less than 2000 liters of water a day, costing less than 2 cents per liter, using 100 percent renewable energy. Or, hey, wouldn't it be great if those tricorders like they have on *Star Trek*, that can quickly scan and diagnose illnesses, were real? And you could have one and use it without needing to go to a doctor or using health insurance? Let's make one! Or how about an affordable, four-passenger car, complete with heat, air-conditioning, stereo, and plenty of room for luggage, that can go from 0 to 60 in 15 seconds, and gets 100 miles per gallon—on almost anything? Speaking of solving the impacts of Global Warming, because that's what having fuel efficient cars is all about, what if we created a way to check the pH, or acidity, of our oceans as accurately, affordably, and easily as we check the levels in a fish tank? Or a machine that flawlessly and quickly skims spilled oil out of our oceans?

Crazy as these ideas sound, none of them are just ideas anymore. They have all become realities, thanks to the XPRIZE Foundation. XPRIZE was founded by Peter Diamandis in 1995

⁴ 2018 A360 Archive / Categories / Module 6: Moonshots

and exists for the purpose of incentivizing solutions to the world's grandest challenges. "The solutions to the world's problems won't come from one person or one country or one industry," the Foundation's website says, "We will only reach these solutions if everyone can make their voices heard."⁵ It reminds me of a joke; A mechanic walks into a tattoo parlor. The tattooist says, "Hey, I just heard about a contest that awards a million bucks to anyone who can invent a way to quickly clean oil out of the ocean. You're good with machines, maybe you can help me make something." The mechanic thinks about it for a minute, then says, "Since oil involves a lot of drilling, maybe you should ask my dentist." I admit, it's not very funny, but that's because it's not really a joke.

Nearly a month after BP's Deepwater Horizon explosion in 2010, spilling nearly 5 million barrels of oil, a slick covering as many as 4000 square miles, into the Gulf of Mexico, James Cameron, director of *Titanic*, contacted Peter Diamandis at XPRIZE and suggested offering a "rapid response 'flash prize'"⁶ to anyone who could figure out how to cap the oil that continued gushing 87 days. But after studying the problem, "The idea of a prize to cap the gusher was off the table," Diamandis says, "BP would never give us or anyone access to their data."⁷ So they decided to focus on cleanup. They found a philanthropist, Wendy Schmidt, president of the Schmidt Family Foundation, to underwrite a 1.4-million-dollar prize to anyone who could quickly develop a means of recovering the spilled oil by no less than 2500 gallons per minute, more than twice the rate of existing technologies at the time. Seven of the ten finalists were able to meet the challenge, but the winning team came up with a method that cleaned up almost 4700 gallons per minute, and, today, has been improved enough to clean up 6000 gallons per minute.

That's an amazing outcome! A genuine moonshot! But the most memorable story about the endeavor concerns a team of finalists formed by a tattoo artist, a mechanic, and his dentist. They really did hear about the prize, joked about the dentist among them having the most experience with drilling, used a home jacuzzi for their experiments, and came up with a technology for sucking oil out of the ocean that beat all previous records on its first day out. Diamandis recalls, tattoo artist Fred Giovannitti saying, "We get asked all the time, 'How long have you been in the oil industry?' and I ask back, 'Counting today?'"⁸ That's the beauty of moonshots. All of us are capable of thinking up crazy ideas and making them come true, no matter our experience or expertise. And thanks to the quick, crazy thinking in this case, disastrous as it was, the Deepwater Horizon incident didn't become another Exxon Valdez, which is quite a statement considering the Horizon spewed 200 million gallons, compared to 11 million spilled by the Valdez.

⁵ <https://www.xprize.org/>

⁶ Diamandis & Kotler, *ibid.*, p. 250.

⁷ *Ibid.*

⁸ *Ibid.*, p. 253.

XPRIZE currently has eight global competitions offering millions of dollars to teams that “successfully advance deep sea technologies for autonomous, fast, high-resolution ocean exploration;” or that “develop open-source, scalable software that will enable children in developing countries to teach themselves basic reading, writing and arithmetic within 15 months;” or that, “develop mobile applications for existing smart devices that result in the greatest increase in literacy skills among adult learners in just 12 months;” or that, “develop breakthrough technologies that will convert CO₂ emissions from power plants and industrial facilities into valuable products like building materials, alternative fuels and other items that we use every day;” or that, “develop and demonstrate how humans can collaborate with powerful AI technologies to tackle the world’s [biggest] challenges;” or for the, “development of an Avatar System that will transport a human’s sense, actions, and presence to a remote location in real time, leading to a more connected world;” or, guess what, “private companies landing on the moon.” Yes, the Israeli lunar lander that launched this week was an XPRIZE winner, one of five private companies that now have contracts to land on the moon within the next two years.⁹

But, again, you don’t have to win an XPRIZE to make a moonshot. One of my favorite moonshot heroes is my friend Allan MacRae from New Zealand. During the 1980s Allan was New Zealand’s Youth Justice Coordinator. At the time, he explains, “Thousands of children, especially members of minority groups, were being removed from their homes and placed in foster care or institutions. The juvenile justice system was overburdened and ineffective. New Zealand’s incarceration rate for young people was one of the highest in the world, but its crime rate also remained high.”¹⁰ And it was his job to fix all this. Impossible as this sounds, Allan MacRae is an unusually undaunted person who has the gift of seeing every problem as a possibility and every obstacle as an opportunity. After a period of listening to communities throughout the country, especially to Maori minority communities, he developed what’s called the Family Group Conference, allowing young offenders the opportunity to make restitution for their crimes through the development of a plan agreed upon by themselves, their families and other sources of support, the police, and, most importantly, the victims of their crimes. It proved to be so successful and transformative that before the end of the decade, in 1989, the New Zealand Legislature passed the Children, Young Persons and Their Families Act, adopting this new way of dealing with juvenile justice throughout the entire nation. Prior to this, Allan told me, the Juvenile Court in Christchurch alone, the South Island’s largest city, held court all day, five days a week, with the average offender standing before a judge for less than five minutes. Within three years of adopting the Restorative Justice model, it held court for only half a day on Fridays with plenty of time to consider each case; and every juvenile detention center in the country was closed down. How’s that for a moonshot!

⁹ <https://www.xprize.org/>

¹⁰ MacRae, Allan, & Zehr, Howard, *The Little Book of Family Group Conferences: New Zealand Style*, Good Books, Intercourse, PA, 2004, Kindle Version, Chapter 2 (14%).

In case you haven't guessed it, Peter H. Diamandis is also one of my moonshot heroes. Like Allan MacRae, he sees problems as possibilities, often saying, "The world's biggest problems are the world's biggest business opportunities."¹¹ His goal in life, what he calls his MTP, his Massively Transformative Purpose, is to support and encourage a new breed of entrepreneur to focus on solving the world's grand challenges, and the money will follow. In other words, it's not about the money. Making money is just a byproduct of helping people. "If you want to make a billion dollars," he says, "help a billion people." This is why he founded XPRIZE, and cofounded SpaceX, and Singularity University, which I've attended, and the Abundance Digital Community, of which I'm a member, to encourage the world to think big, to think crazy, to discover our own MTP and take moonshots to make them happen, all in order to create a world of abundance for everyone, every last person. I won't say more about Diamandis now because I've already talked a lot about what XPRIZE is accomplishing, but I consider him one of my great heroes and inspirations.

After recently reading, *Space Barons* by Christian Davenport, I also consider Elon Musk one of my moonshot heroes. As a cofounder and the CEO of SpaceX, he's the person, more than anyone, who sparred most with the establishment to secure the right of private companies to get involved in space exploration, including suing NASA and the Military for signing no-bid contracts which illegally undermined competition. Suing them eventually made it possible for SpaceX, along with Jeff Bezos' Blue Origin, Richard Branson's Virgin Galactic (two other moonshot heroes), and other companies to reinvigorate our now accelerating advancement into space.

Musk is also planning our species' first mission to Mars within the next six years, because he believes humanity must inevitably spread to other planets if we're going to survive. This is but one example of his drive to solve our biggest challenges, including Global Warming, which is why he built an electric car in 2008, the start of Tesla, which has since become the top car company in the world. To compete with his success, every other car company is now planning to go 100 percent electric, signaling a looming end to the internal combustion engine. Tesla is also going to build as many as twelve battery gigafactories around the world, and already has one open and three under construction. 100 such factories will give us enough battery power to supply the energy needs of our entire planet. All this, in addition to SpaceX now being the go-to company for delivering cargo to the International Space Station, makes Musk a moonshot hero.

But the moonshot hero I want to end with, one the most inspirational of them all, is hardly a household name, Martine Rothblatt. If you have heard of her, it's probably because she's a cofounder of Sirius XM Radio, which she created because she wanted to connect the world with satellite communications. In a recent interview with Peter Diamandis, she told the Abundance Digital community, "People said it's impossible. It cost hundreds of millions of

¹¹ Diamandis & Kotler, *ibid.*, p. xii.

dollars. It's illegal. There are laws prohibiting countries broadcasting satellite information into other countries." But she didn't let any of this stop her from pursuing her crazy moonshot, and now says, "It gives me immense joy now to know there are hundreds of millions of people who listen to our satellite communications signals. I've been hugged by women in remote villages who said if it wasn't for the Sirius radio station, that they would go mad, they would have no access to information." She's also met kids in remote corners of India who were able to educate themselves and go to college because of Sirius' tele-education services.

You'd think creating a worldwide communications network would be enough of a moonshot for one person, but when Rothblatt's 10-year-old daughter was diagnosed with a rare, untreatable, and fatal lung disease, Primary Pulmonary Hypertension, she decided she'd find a treatment herself. She stepped down from Sirius XM, got a stack of biology books and articles, and began educating herself, an attorney, about a subject she knew little about. And, amazingly, she did discover a drug that could successfully treat her daughter's rare condition, got it into clinical trials, approved by the FDA, and her daughter, who'd been given 2 to 5 years to live, is now in her early twenties. There are now 40,000 people in the U.S. alone living with this condition that only a short time ago would have been dead by now.

But treating her daughter's condition still wasn't enough. Rothblatt wants to cure her by giving her a new set of lungs and has, thus, founded United Therapeutics. The medical company has developed technology that brings dead organs back to life and has already saved 1500 people with them. It also genetically edits pig organs to prevent them from being rejected by human bodies, effectively humanizing them; and uses the collagen of a pig's organ as scaffolding for growing organs out of human stem cells; and uses tobacco leaves that have been genetically modified to express human collagen, then use it to 3D print organs using no animal products whatsoever. How's that for restorative justice, printing healthy lungs out of tobacco leaves! Most of these techniques are expected to be approved and become the standard in transplant treatment within the next 2 to 5 years.

And if that's still not enough, Martine Rothblatt is also concerned that 5 percent of the world's carbon pollution comes from airplanes. So she's invented electric aircraft, is already in the *Guinness Book of World Records* for the longest electric helicopter flight, 25 nautical miles, and plans to have a cross country electric airplane flight next year. She expects the technology to be approved by the FAA and in widespread use by 2024.

Martine Rothblatt, Elon Musk, Alan MacRae, Astro Teller, Peter Diamandis, a tattoo artist, mechanic, and a dentist, all prove what we can accomplish when we want to solve our greatest problems and grandest challenges, when we want to help others, no matter how crazy our ideas. And this is truer for those of us alive today than it's ever been, maybe it's only true of us, because we now have free access to whatever knowledge we need to figure things out, and to the affordable technologies necessary for carrying out our ideas. And if

enough people like your crazy idea, you even have access to crowdfunding, which is expected to rise to 300-billion-dollars by 2025 and has already funded hundreds of thousands of projects. The biggest problems we face are no longer out of our control. We don't have to depend on others to solve them, not on politicians, experts, or billionaires. Poverty, racism, sexism, war, crime, illness, we can solve them all. We don't have to settle for just pointing a finger at those we want to blame or look up to those we hope can save us. We can solve these perennial problems for good, along with millions of others around the world also undertaking moonshots to do so. Today we truly are limited only by our own imaginations. So think big. Think crazy. Think 100 times better than now. Be a moonshot hero. Help a billion people. Change the world.