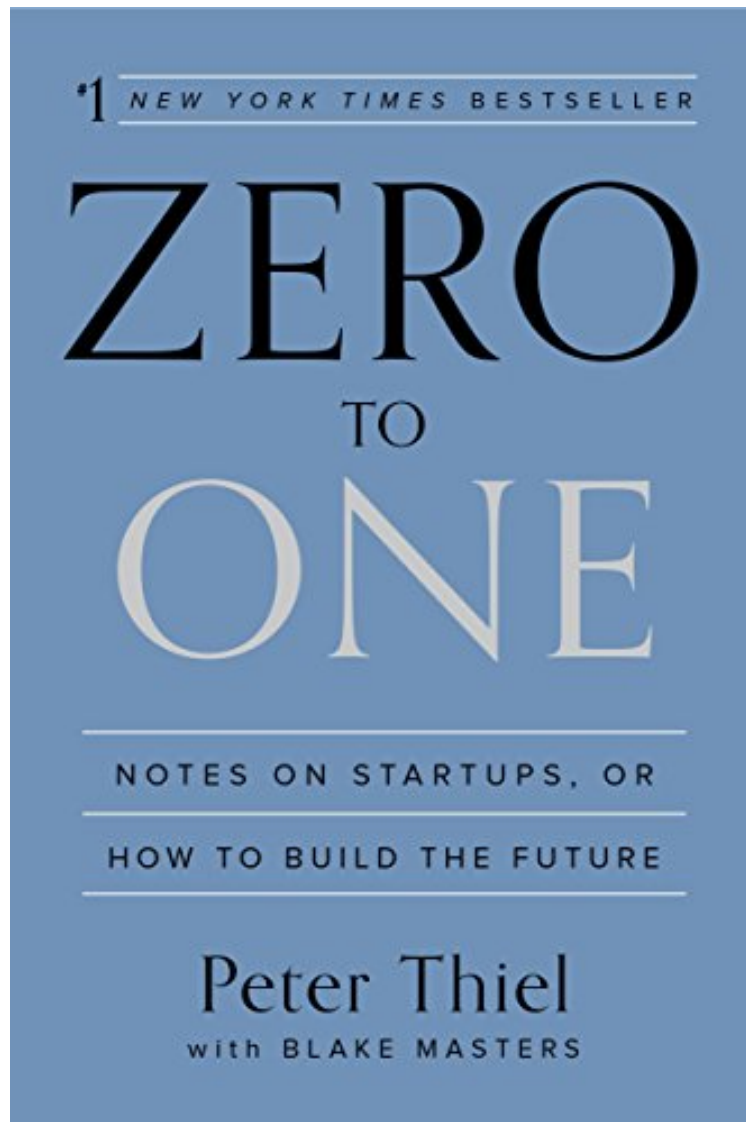


[FREE] Zero to One: Notes on Startups, or How to Build the Future

## Zero to One: Notes on Startups, or How to Build the Future

*Peter Thiel, Blake Masters*

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**Peter Thiel, Blake Masters : Zero to One: Notes on Startups, or How to Build the Future** before purchasing it in order to gauge whether or not it would be worth my time, and all praised Zero to One: Notes on Startups, or How to Build the Future:

335 of 359 people found the following review helpful. Practical, Smart, and Engaging By David Landau Zero to One is a refreshing intellectual deep dive into the motives behind entrepreneurship. It's full of unique, practical insights, and discusses success in terms of human nature and culture. Along with business strategy, Thiel outlines how successful innovation shapes society and shares an intriguing vision. Bottom line: This book was worth my time and refined several core beliefs. It made me ask hard questions which, as an entrepreneur, I believe are critical if you want

to be honest and prepared. I like the organized format which reads well linearly, but also allows you to read chapters in the order they interest you most, making key takeaways accessible to review and share. It's short enough to finish in a week, and deep enough to cover the entire lifecycle of a company. Here are the seven questions Thiel writes "Every business must answer:"

1. Can you create breakthrough technology instead of incremental improvements?
2. Is now the right time to start your particular business?
3. Are you starting with a big share of a small market?
4. Do you have the right team?
5. Do you have a way to not just create but deliver your product?
6. Will your market position be defensible 10 and 20 years into the future?
7. Have you identified a unique opportunity that others don't see?

These are from the "seeing green" chapter on profitability, and form a basis for much of the content. Rather than offer scripts or formulas, Thiel discusses the logic of starting a company that will make a truly meaningful and unique impact on the world. Blake did a great job of adapting and presenting the contents, many of which were delivered when Thiel taught at Stanford. Most startups fail. Keeping in mind that companies growing 1000x often carry entire portfolios, Peter gives a good argument for successful moonshots and grand visions. He also highlights the dangers of trying to disrupt entrenched competitors and avoid extra resistance and burn rates on marketing. This was one of the many reasons Tesla was successful; it didn't initially aim to compete directly against the big 3. Rather, Tesla began by making powertrains, then started with high end luxury models to which no solid alternative existed. It also serves as an OEM for other manufacturers, which is a nontraditional strategy that has worked well. There are further arguments against competition where Thiel shares his inner thoughts for merging PayPal and Elon Musk's X.com. His strong argument for monopolies are both for novelty and to develop early market dominance should competitors arise later. This strategy goes beyond first mover advantage in several interesting ways. I found a Monopoly Index by Forbes that showed these types of companies outperforming the Dow and SP by 33%, which was a pleasant result of some due diligence. The title means "create true newness." If you go from 1 to n (n being an integer), generally, you create incremental value (like faster solar charging or curved screens). Even if you make a product that's a 3x improvement over a market leader, you aren't creating anything truly new, and well funded competitors are likely to catch up. Going from 0 to 1 means starting at ground zero and building a new foundation. This is similar to Blue Ocean Strategy, but discussed at a more fundamental level.

Pros:

- Blaker's succinct, direct writing style. Little fluff; you get to the point quickly.
- Good amount of evidence, examples, stories, and visualized data. No streams of consciousness and minimal filler, if any. This book is very credible.
- You see into Thiel's investment logic as he discusses the reasoning behind VC decisions in depth. This is helpful for anyone who wants to be better prepared for a successful raise; it's good to see deeply into both sides of the story.

Cons:

- Zero to One has a variable scope and can feel like multiple books in one. It looks at economics, globalization, artificial intelligence, and historical trends along with founder characteristics and the qualities of great salespeople. In some areas, I would have liked to see more connection between micro and macro. Others were strongly linked, but went into slightly less depth. The shifting balance isn't that big of a deal, especially if you find variety refreshing.
- Variable: Philosophy over formulaic. If you want to become a more savvy entrepreneur and learn how to make more effective decisions, read this book. If you're at the stage where you want a more prescriptive "how-to" guide, check out Lean Startup or Paul Graham's essays. If you like diving really deep into the mind of a founder across many life experiences, check out Tony Hsieh's Delivering Happiness. Zero to One definitely has high merit to join the ranks of many respected thought leaders. This book teaches you more how to think, less what to think. Given that, its usefulness will be compounded and, in many cases, timeless.

576 of 626 people found the following review helpful. A mix of brilliant, infuriating and self-indulgent.

By Athan

A better title for this book would have been "Six ideas Peter Thiel wants to put out there" but that admittedly sounds less catchy than "Zero to One". Two of the ideas are HUGE and the rest are filler. The first infuriated me and the second inspired me. The remaining four ideas were not exactly news to me because I once founded and ran a startup. There's also a couple rants, one against biotechnology and one against green tech, which to my ears sounded tribal. After the ideas and the rants comes some rather embarrassing stuff that probably should not have made it into print. For example "we never invest in entrepreneurs who turn up for the interview in a suit" or "four of the founders of PayPal had built bombs as children." Memo to Peter Thiel: you are successful despite your prejudice against people who don't share your sartorial taste, and your partners made it to adulthood despite having been poorly supervised as children.

Idea number one is that "Monopolies are Good". Not just for the monopolist (that would hardly have been a contribution) but also for everybody else. The general idea is that competition hurts profits and the lack of profits leads firms to an existential battle which does not allow them the scope to innovate. Monopolies are good because they have the power and scope to bring innovation to everybody. So Bill Gates brought the computer to every home. He was not beaten by a better provider of software, he was superseded by a shift in technology toward powerful mobile devices, tablets and the cloud, all of which, in turn, were motivated by other entrepreneurs' desire to obtain monopoly profits. So Steve Jobs dominated many of these arenas for long enough to enjoy monopoly profits and other people will some day take this all further. Even the government is in on the act, Peter Thiel claims, or else it would not be granting patents to inventors or freedom from competition from generic drugs to the pharmaceutical companies that first develop new medications.

Erm, where do I start? My mom taught me that "necessity is the mother of invention." GM

did not develop the Volt till it was up against the wall, Archimedes discovered how to screw water upwards during the Roman siege of Syracuse, the Germans developed jet propulsion, the swept wing and the rocket we later sent to the moon when they had pretty much already lost WWII. Intel gave us the messed-up Pentium when it was as close to a monopoly as it will ever be, Steve Jobs gave us the Newton when he was feeling comfortable, Ford gave us the Edsel when profits were still huge, Coke gave us New Coke when its only true competition came from water; Peter Thiel has 99% of human history against him on this one. Now, I will be the last to contest that Pericles' Athens gave us the Parthenon when he were sitting on half of Greece's treasure, that the Medici sponsored some fantastic art when they were at their apogee or that Peter Thiel could make some fantastic contributions to philosophy in the years to come, but that's beside the point. Pericles and the Medici both came to an end I would not wish upon Peter Thiel, let's put it that way. Bottom line, he's hanging with far too many courtesans who are telling him what he wants to hear and too many fellow "job creators" and he needs to get out more. The really painful thing is that Economics deals with all these issues, and Peter Thiel should read some Economics. Many fields of endeavour, for starters, relate to limited markets. Example: the size of the market for flat bread in New York State. Meeting in the McDonalds car park with the heads of the other three major bakeries that make flat bread to fix the price of flat bread should be illegal, period. Buying out the other three makers of flat bread so you can regulate the price by yourself should also be illegal. Provision of mattresses across the North American continent springs to mind: A US king size mattress is twice the price of a UK king size mattress and it only has 3 inches extra on each side and I'll leave that one right there. I can see how an ocean and different sizes benefit the mattress industry in the US, but I really don't see how Americans will one day benefit from paying double for their mattresses. Dunno, maybe they will discover a different way to sleep. And then we have the cases where, as the author says, it's clear that you need to incentivize people to innovate (drugs spring to mind, where the US has a lead) and that's where patents come in. Again, though, it's crystal clear that there is a limit to how long these monopolies should last. And it was crystal clear to everybody with a modicum of common sense that both Intel and Microsoft were not helping the world along when they used dirty tricks to hurt AMD and Netscape. All that said, monopolies are fantastic for you if you can set them up, and the four pieces of advice on how to set up a monopoly sound pretty sensible: 1. Proprietary Technology 2. Network Effects 3. Economies of Scale and 4. Brand. Duly noted, and well worth remembering. Most important piece of advice: start with a small monopoly you know you can get (example: launch Facebook among your Harvard classmates, launch Paypal among the 20,000 eBay power users) and take things from there. The number two idea is that you need a Plan. Things do not just work out if you put together optimism, good people, hard work, capital and buy a lottery ticket. The author takes us on a (rather gratuitous) trip from Plato and Aristotle to Nozick and Rawls via Epicurus, Lucretius, Hegel and Marx to discuss when optimism is and isn't warranted and the bottom line is that you're only allowed to be an optimist if you have "definite optimism" based on a specific Design (my capital D) for a business. Peter Thiel takes a massive swipe at the Malcolm Gladwells of the world who overemphasize chance, serendipity and fate with facile arguments about the similarity in Steve Jobs' and Bill Gates' birthdates. Bottom line, fortune smiles on those who have a design. After the fact they might look lucky, but only then. Thiel considers Steve Jobs to have been a designer, first and foremost. In his words "The greatest thing Jobs designed was his business. Apple imagined and executed definite multi-year plans to create new products and distribute them effectively." I LOVED this. Loved it, loved it, loved it. Please somebody email this thought to Mariana Mazzucato and her tribe of nihilists. The third idea is that our world is best described by the extremes rather than what happens in the middle. It's the Nassim Nicholas Taleb idea, and he duly appears on the back cover to endorse the book. The relevant insight here is that when you invest in startups, like the author does, the performance of your entire fund is a function of your one best investment; the rest of your investments, even if they kinda do OK, are neither here nor there, deserve none of your time and get none of it if you're doing your job right. The lesson if you are involved in a startup is "what are the chances that this venture will be the one?" This is not a novel idea. For the best book on the subject I'd swerve around NNT's work and turn to Benoit Mandelbrot's masterpiece, "The (Mis)behaviour of Markets." The fourth idea is no more original, but Thiel puts it well: "there are many more secrets left to find, but they will yield only to relentless searchers." A company that's based on having solved a hard problem, either a "secret of nature" or a "secret about people" is going to have a much better chance of succeeding than one that adds a twist to an already existing business model. That said, the author is quick to mention that some entrepreneurs (for example Richard Branson) do very well from doing exactly that. It's just that this is not his type of company. The fifth idea is you need to pick your partners i.e. your investors, your fellow managers and your (ideally 3) directors very carefully in order to make sure you all want the same thing out of the company (and it had better not be immediate rewards). As a former entrepreneur, I can vouch for the fact that this is a "good problem to have." For my series 1 I saw 42 potential investors and chose the 2 who were prepared to give me money, I hired as managers and engineers best guys I could find and I had no say regarding the idiot my investors put on my board. But if you can afford to follow Peter Thiel's advice, it's not controversial. And neither is "idea 5.5" that the people who work at a startup will belong to a cult, not to an army of consultants. Outside of a bubble environment that's precisely who will join anyway. You won't get any consultant types banging on your door, unless they are putting together their CV to get into B-school. The sixth idea is that marketing is extremely important. If you build it they won't come. You

need to sell it. True. But not all startups have the funding to sell it, so it's not a total disaster if it somehow does sell itself. But point taken. The closing chapter is a vomit-inducing hagiography of founders. The question is posed: are founders different because they founded a firm or did they found a firm because they are different. Answer: nobody cares. For the record, I think a successful entrepreneur is a guy who does not know how to give up. That's what they all have in common. But once they have their first billion and don't need to run their ideas by anyone else to get them funded they very often go do something stupid (dunno, like go mine asteroids) with exactly the same fervour they previously applied to the sensible endeavour that made them rich. The more grounded ones keep their further investments close to home and direct their creativity toward giving lectures and writing books. Peter Thiel, fortunately for himself, falls in the second category. 796 of 877 people found the following review helpful. Ok, not amazing. By J Elkin I had high hopes, but this book was just ok. I don't understand the overwhelming number of 5 star reviews, other than people being swayed by the fact Thiel has crushed it on a few of his investments and is a well known name. I was really hoping for some brilliant insights here. Instead, the book is basically a series of rambling, disjointed essays that spell out Thiel's philosophies on the world, none of which are particularly earth shattering. One chapter is talking about the characteristics of a good startup founder, the next is visions for the future of humanity. Nothing is really backed up with any data-driven evidence, though he does bring in real-world examples to support many of his theories, which is nice. The rambling/meandering nature of the book's sections in and of itself is forgivable - an entrepreneur/investor, not a writer, after all - what bothered me more was that the majority of his points seemed to be conventional wisdom and not provide anything really new to the world. That said, there were a few nuggets I got out of this book that were interesting, and some of the PayPal anecdotes were entertaining. But for the most part it's a bunch of non sequiturs that flows like Thiel's stream of consciousness. Overall there seemed to be a few main points that can be summed up quickly: -Common belief that monopolies are bad is wrong. Monopolies are actually good, because they create innovation. Competitive markets are bad because they destroy profits. -Betting on a big and growing market isn't enough (cleantech), you need to have some "secret sauce" of some kind in order to be a great company (tesla). -Entrepreneurs should think big, not incrementally. -Not everything worth doing has already been done. These are mostly valid points, and he provided interesting examples to back them up. But some things were stupidly obvious. Some highlights (slightly paraphrased): "we need founders"; "if Moore's law continues apace, tomorrow's computers will be even more powerful"; (this was an actual sentence) "The ability to sell is important"; "Just having an awesome office doesn't mean your company will be great, there has to be substance"; "giving people equity is smart because it aligns their incentives with that of the company"; "And some are statements seem like just pulling things out of thin air"; "Companies must strive for 10x improvements because merely incremental improvements often end up meaning no improvement at all for the end user...only when your product is 10x better can you offer the customer transparent superiority"; "Huh? This seems rather arbitrary. There's no middle ground between incremental improvement and 10x? What about 5x? 7x? no? 10x? If you say so mr. Thiel. He is also somewhat contradictory throughout the book, and uses hindsight bias to back points he wants to make to prove his theories. For instance: He is against the "lean startup" approach of putting an mvp (minimum viable product) out there and iterating until you have a great product - yet touts Facebook as one of his "Great Companies". Of course, Facebook started as "hot or not" for the Harvard campus, and didn't hit its stride until a few iterations later. Zuckerberg didn't start with the goal of it being the world's social network. Additionally, Facebook wasn't so much a greenfield innovation starting from nothing as it was an improvement to Friendster, Myspace, etc, with a better interface. He rails against "incremental innovation" throughout the book, yet touts Apple as another "Great Company" when you could easily make the case that ipads, macbooks, iphones, (as pretty as they are) are incremental improvements on technology we already had - cell phones, cd players and laptops. He cites Google as a good example of a "company that went from 0 to 1" when it was clearly just an incrementally better search algorithm than whatever yahoo, altavista, etc. had. Google pretty directly just improved on something that already existed, but did it better. So some of his core theses seem to fall flat when you look at some of the same examples he provides from different angles. Don't get me wrong - this isn't a terrible read. It's reasonably interesting and will make you think about things. But I went into reading this book under the impression Thiel was an extremely smart individual, maybe even brilliant, based on how much I've heard about him. My impression of him was lowered after reading this book. I just expected more after hearing so much about how smart Thiel is, and was surprised that some of his theories seem half-baked. Of course, he's made a lot more money than I have.

#1 NEW YORK TIMES BESTSELLER If you want to build a better future, you must believe in secrets. The great secret of our time is that there are still uncharted frontiers to explore and new inventions to create. In *Zero to One*, legendary entrepreneur and investor Peter Thiel shows how we can find singular ways to create those new things. Thiel begins with the contrarian premise that we live in an age of technological stagnation, even if we're too distracted by shiny mobile devices to notice. Information technology has improved rapidly, but there is no reason why

progress should be limited to computers or Silicon Valley. Progress can be achieved in any industry or area of business. It comes from the most important skill that every leader must master: learning to think for yourself. Doing what someone else already knows how to do takes the world from 1 to n, adding more of something familiar. But when you do something new, you go from 0 to 1. The next Bill Gates will not build an operating system. The next Larry Page or Sergey Brin won't make a search engine. Tomorrow's champions will not win by competing ruthlessly in today's marketplace. They will escape competition altogether, because their businesses will be unique. Zero to One presents at once an optimistic view of the future of progress in America and a new way of thinking about innovation: it starts by learning to ask the questions that lead you to find value in unexpected places.

“Crisply written, rational and practical, Zero to One should be read not just by aspiring entrepreneurs but by anyone seeking a thoughtful alternative to the current pervasive gloom about the prospects for the world.” — The Economist “An extended polemic against stagnation, convention, and uninspired thinking. What Thiel is after is the revitalization of imagination and invention writ large.” — The New Republic “Might be the best business book I've read... Barely 200 pages long and well lit by clear prose and pithy aphorisms, Thiel has written a perfectly tweetable treatise and a relentlessly thought-provoking handbook.” — Derek Thompson, The Atlantic “This book delivers completely new and refreshing ideas on how to create value in the world.” — Mark Zuckerberg, CEO of Facebook “Peter Thiel has built multiple breakthrough companies, and Zero to One shows how.” — Elon Musk, CEO of SpaceX and Tesla “Zero to One is the first book any working or aspiring entrepreneur must read — period.” — Marc Andreessen, co-creator of the world's first web browser, co-founder of Netscape, and venture capitalist at Andreessen Horowitz “Zero to One is an important handbook to relentless improvement for big companies and beginning entrepreneurs alike. Read it, accept Peter's challenge, and build a business beyond expectations.” — Jeff Immelt, Chairman and CEO, GE “When a risk taker writes a book, read it. In the case of Peter Thiel, read it twice. Or, to be safe, three times.” — Nassim Nicholas Taleb, author of Fooled by Randomness and The Black Swan “Thiel has drawn upon his wide-ranging and idiosyncratic readings in philosophy, history, economics, anthropology, and culture to become perhaps America's leading public intellectual today.” — Fortune “Peter Thiel, in addition to being an accomplished entrepreneur and investor, is also one of the leading public intellectuals of our time. Read this book to get your first glimpse of how and why that is true.” — Tyler Cowen, New York Times best-selling author of Average is Over and Professor of Economics at George Mason University “The first and last business book anyone needs to read; a one in a world of zeroes.” — Neal Stephenson, New York Times best-selling author of Snow Crash, the Baroque Cycle, and Cryptonomicon “Forceful and pungent in its treatment of conventional orthodoxies — a solid starting point for readers thinking about building a business.” — Kirkus “From the Hardcover edition. About the Author Peter Thiel is a technology entrepreneur and investor best known for co-founding PayPal. Since then he has co-founded the data analytics firm Palantir Technologies, made the first outside investment in Facebook, provided early funding for companies like SpaceX and LinkedIn and established and funds the Thiel Foundation, which nurtures tomorrow's tech visionaries. Blake Masters is co-founder of Judicata, a technology startup that builds tools for legal research and analysis. Like Peter, Blake received undergraduate and law degrees from Stanford. Excerpt. copy; Reprinted by permission. All rights reserved. Preface Every moment in business happens only once. The next Bill Gates will not build an operating system. The next Larry Page or Sergey Brin won't make a search engine. And the next Mark Zuckerberg won't create a social network. If you are copying these guys, you aren't learning from them. Of course, it's easier to copy a model than to make something new. Doing what we already know how to do takes the world from 1 to n, adding more of something familiar. But every time we create something new, we go from 0 to 1. The act of creation is singular, as is the moment of creation, and the result is something fresh and strange. Unless they invest in the difficult task of creating new things, American companies will fail in the future no matter how big their profits remain today. What happens when we've gained everything to be had from fine-tuning the old lines of business that we've inherited? Unlikely as it sounds, the answer threatens to be far worse than the crisis of 2008. Today's “best practices” lead to dead ends; the best paths are new and untried. In a world of gigantic administrative bureaucracies both public and private, searching for a new path might seem like hoping for a miracle. Actually, if American business is going to succeed, we are going to need hundreds, or even thousands, of miracles. This would be depressing but for one crucial fact: humans are distinguished from other species by our ability to work miracles. We call these miracles technology. Technology is miraculous because it allows us to do more with less, ratcheting up our fundamental capabilities to a higher level. Other animals are instinctively driven to build things like dams or honeycombs, but we are the only ones that can invent new things and better ways of making them. Humans don't decide what to build by making choices from some cosmic catalog of options given in advance; instead, by creating new technologies, we rewrite the plan of the world. These are the kind of elementary truths we teach to second graders, but they are easy to forget in a world where so much of what we do is repeat what has been done before. Zero to One is about how to build companies that create new things. It

draws on everything I've learned directly as a co-founder of PayPal and Palantir and then an investor in hundreds of startups, including Facebook and SpaceX. But while I have noticed many patterns, and I relate them here, this book offers no formula for success. The paradox of teaching entrepreneurship is that such a formula necessarily cannot exist; because every innovation is new and unique, no authority can prescribe in concrete terms how to be innovative. Indeed, the single most powerful pattern I have noticed is that successful people find value in unexpected places, and they do this by thinking about business from first principles instead of formulas. This book stems from a course about startups that I taught at Stanford in 2012. College students can become extremely skilled at a few specialties, but many never learn what to do with those skills in the wider world. My primary goal in teaching the class was to help my students see beyond the tracks laid down by academic specialties to the broader future that is theirs to create. One of those students, Blake Masters, took detailed class notes, which circulated far beyond the campus, and in *Zero to One* I have worked with him to revise the notes for a wider audience. There's no reason why the future should happen only at Stanford, or in college, or in Silicon Valley.

### Chapter 1: The Challenge of the Future

Whenever I interview someone for a job, I like to ask this question: "What important truth do very few people agree with you on?" This question sounds easy because it's straightforward. Actually, it's very hard to answer. It's intellectually difficult because the knowledge that everyone is taught in school is by definition agreed upon. And it's psychologically difficult because anyone trying to answer must say something she knows to be unpopular. Brilliant thinking is rare, but courage is in even shorter supply than genius. Most commonly, I hear answers like the following: "Our educational system is broken and urgently needs to be fixed." "America is exceptional." "There is no God." Those are bad answers. The first and the second statements might be true, but many people already agree with them. The third statement simply takes one side in a familiar debate. A good answer takes the following form: "Most people believe in x, but the truth is the opposite of x." I'll give my own answer later in this chapter.

What does this contrarian question have to do with the future? In the most minimal sense, the future is simply the set of all moments yet to come. But what makes the future distinctive and important isn't that it hasn't happened yet, but rather that it will be a time when the world looks different from today. In this sense, if nothing about our society changes for the next 100 years, then the future is over 100 years away. If things change radically in the next decade, then the future is nearly at hand. No one can predict the future exactly, but we know two things: it's going to be different, and it must be rooted in today's world. Most answers to the contrarian question are different ways of seeing the present; good answers are as close as we can come to looking into the future.

### Zero to One: The Future of Progress

When we think about the future, we hope for a future of progress. That progress can take one of two forms. Horizontal or extensive progress means copying things that work--going from 1 to n. Horizontal progress is easy to imagine because we already know what it looks like. Vertical or intensive progress means doing new things--going from 0 to 1. Vertical progress is harder to imagine because it requires doing something nobody else has ever done. If you take one typewriter and build 100, you have made horizontal progress. If you have a typewriter and build a word processor, you have made vertical progress.

At the macro level, the single word for horizontal progress is globalization--taking things that work somewhere and making them work everywhere. China is the paradigmatic example of globalization; its 20-year plan is to become like the United States is today. The Chinese have been straightforwardly copying everything that has worked in the developed world: 19th-century railroads, 20th-century air conditioning, and even entire cities. They might skip a few steps along the way--going straight to wireless without installing landlines, for instance--but they're copying all the same. The single word for vertical, 0 to 1 progress is technology. The rapid progress of information technology in recent decades has made Silicon Valley the capital of "technology" in general. But there is no reason why technology should be limited to computers. Properly understood, any new and better way of doing things is technology. Because globalization and technology are different modes of progress, it's possible to have both, either, or neither at the same time. For example, 1815 to 1914 was a period of both rapid technological development and rapid globalization. Between the First World War and Kissinger's trip to reopen relations with China in 1971, there was rapid technological development but not much globalization. Since 1971, we have seen rapid globalization along with limited technological development, mostly confined to IT. This age of globalization has made it easy to imagine that the decades ahead will bring more convergence and more sameness. Even our everyday language suggests we believe in a kind of technological end of history: the division of the world into the so-called developed and developing nations implies that the "developed" world has already achieved the achievable, and that poorer nations just need to catch up. But I don't think that's true. My own answer to the contrarian question is that most people think the future of the world will be defined by globalization, but the truth is that technology matters more. Without technological change, if China doubles its energy production over the next two decades, it will also double its air pollution. If every one of India's hundreds of millions of households were to live the way Americans already do--using only today's tools--the result would be environmentally catastrophic. Spreading old ways to create wealth around the world will result in devastation, not riches. In a world of scarce resources, globalization without new technology is unsustainable. New technology has never been an automatic feature of history. Our ancestors lived in static, zero-sum societies where success meant seizing things from others. They created new sources of wealth only rarely, and in the long run they could never create enough to save the average person from an extremely hard life. Then, after 10,000 years of fitful

advance from primitive agriculture to medieval windmills and 16th-century astrolabes, the modern world suddenly experienced relentless technological progress from the advent of the steam engine in the 1760s all the way up to about 1970. As a result, we have inherited a richer society than any previous generation would have been able to imagine. Any generation excepting our parents' and grandparents', that is: in the late 1960s, they expected this progress to continue. They looked forward to a four-day workweek, energy too cheap to meter, and vacations on the moon. But it didn't happen. The smartphones that distract us from our surroundings also distract us from the fact that our surroundings are strangely old: only computers and communications have improved dramatically since midcentury. That doesn't mean our parents were wrong to imagine a better future--they were only wrong to expect it as something automatic. Today our challenge is to both imagine and create the new technologies that can make the 21st century more peaceful and prosperous than the 20th. Startup Thinking New technology tends to come from new ventures--startups. From the Founding Fathers in politics to the Royal Society in science to Fairchild Semiconductor's "traitorous eight" in business, small groups of people bound together by a sense of mission have changed the world for the better. The easiest explanation for this is negative: it's hard to develop new things in big organizations, and it's even harder to do it by yourself. Bureaucratic hierarchies move slowly, and entrenched interests shy away from risk. In the most dysfunctional organizations, signaling that work is being done becomes a better strategy for career advancement than actually doing work (if this describes your company, you should quit now). At the other extreme, a lone genius might create a classic work of art or literature, but he could never invent an entire industry. Startups operate on the principle that you need to work with other people to get stuff done, but you also need to stay small enough so that you actually can. Positively defined, a startup is the largest group of people you can convince of a plan to build a different future. A new company's most important strength is new thinking: even more important than nimbleness, small size affords space to think. This book is about the questions you must ask and answer to succeed in the business of doing new things: what follows is not a manual or a record of knowledge but an exercise in thinking. Because that is what a startup has to do: question received ideas and rethink business from scratch.