

## **ZERO TO ONE BY PETER THIEL | BOOK SUMMARY**

Zero to One by Peter Thiel is a must read for startup entrepreneurs everywhere. The book looks at how companies can engineer radical changes and in doing so, move the human race forward. Author Peter Thiel was the co-founder of PayPal, the first outside investor in Facebook and is now the co-founder and chairman of Palantir Technologies.

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.

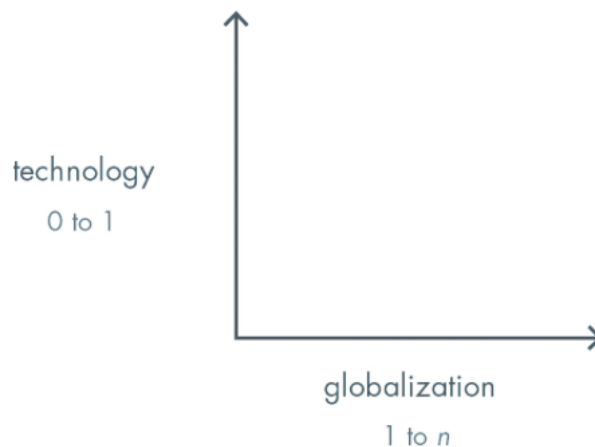
Of course, it's easier to copy a model than to make something new. Doing what we already know how to do takes the world from 1 to n, adding more of something familiar. But every time we create something new, we go from 0 to 1. The act of creation is singular, as is the moment of creation, and the result is something fresh and strange.

Zero to One is about how to build companies that create new things.

### **THE CHALLENGE OF THE FUTURE**

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. The single word for vertical, 0 to 1 progress is technology.



New technology tends to come from new ventures—startups. 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 create 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.

### **PARTY LIKE IT'S 1999**

When I was running PayPal in late 1999, I was scared out of my wits—not because I didn't believe in our company, but because it seemed like everyone else in the Valley was ready to believe anything at all. Everywhere I looked, people were starting and flipping companies with alarming casualness. At least PayPal had a suitably grand mission—the kind that post-bubble skeptics would later describe as grandiose: we wanted to create a new internet currency to replace the U.S. dollar. We knew that the boom was going to end. Since we didn't expect investors' faith in our mission to survive the coming crash, we moved fast to raise funds while we could. We raised \$100 million and just as we closed the deal, the bubble popped.

The entrepreneurs who stuck with Silicon Valley after the pop learned four big lessons from the dot-com crash that still guide business thinking today:

1. Make incremental advances. Grand visions inflated the bubble, so they should not be indulged.
2. Stay lean and flexible. All companies must be “lean,” which is code for “unplanned.” You should not know what your business will do; planning is arrogant and inflexible. Instead you should try things out, “iterate,” and treat entrepreneurship as agnostic experimentation.
3. Improve on the competition. Don’t try to create a new market prematurely. The only way to know you have a real business is to start with an already existing customer, so you should build your company by improving on recognizable products already offered by successful competitors.
4. Focus on product, not sales. If your product requires advertising or salespeople to sell it, it’s not good enough: technology is primarily about product development, not distribution.

These lessons have become dogma in the startup world; those who would ignore them are presumed to invite the justified doom visited upon technology in the great crash of 2000. And yet the opposite principles are probably more correct:

1. It is better to risk boldness than triviality.
2. A bad plan is better than no plan.
3. Competitive markets destroy profits.
4. Sales matters just as much as product.

It’s true that there was a bubble in technology. The late ’90s was a time of hubris: people believed in going from 0 to 1. Too few startups were actually getting there, and many never went beyond talking about it.

We still need new technology, and we may even need some 1999-style hubris and exuberance to get it. To build the next generation of companies, we must abandon the dogmas created after the crash. That doesn’t mean the opposite ideas are automatically true: you can’t escape the madness of crowds by dogmatically rejecting them. Instead ask yourself: how much of what you know about business is shaped by mistaken reactions to past mistakes? The most contrarian thing of all is not to oppose the crowd but to think for yourself.

**ALL HAPPY COMPANIES ARE DIFFERENT**

Monopolists lie to protect themselves. They know that bragging about their great monopoly invites being audited, scrutinized, and attacked. Since they very much want their monopoly profits to continue unmolested, they tend to do whatever they can to conceal their monopoly—usually by exaggerating the power of their (nonexistent) competition.

Non-monopolists tell the opposite lie: “we’re in a league of our own.”

Entrepreneurs are always biased to understate the scale of competition, but that is the biggest mistake a startup can make. The fatal temptation is to describe your market extremely narrowly so that you dominate it by definition.

Monopolies drive progress because the promise of years or even decades of monopoly profits provides a powerful incentive to innovate. Then monopolies can keep innovating because profits enable them to make the long-term plans and to finance the ambitious research projects that firms locked in competition can’t dream of.

Tolstoy opens *Anna Karenina* by observing: “All happy families are alike; each unhappy family is unhappy in its own way.” Business is the opposite. All happy companies are different: each one earns a monopoly by solving a unique problem. All failed companies are the same: they failed to escape competition.

### **THE IDEOLOGY OF COMPETITION**

Creative monopoly means new products that benefit everybody and sustainable profits for the creator. Competition means no profits for anybody, no meaningful differentiation, and a struggle for survival. So why do people believe that competition is healthy? The answer is that competition is not just an economic concept or a simple inconvenience that individuals and companies must deal with in the marketplace. More than anything else, competition is an ideology—the ideology—that pervades our society and distorts our thinking. We preach competition, internalize its necessity, and enact its commandments; and as a result, we trap ourselves within it—even though the more we compete, the less we gain.

Let’s look at what competition does in the real world by examining Microsoft and Google. One built an operating system, the other built a search engine. What’s the fight about? Lots, apparently. As a startup, each clan had been content to leave the other alone and prosper independently. But as they grew, they began to focus on each other. Google obsessed over Microsoft and vice versa. The result? Windows vs. Chrome OS, Bing vs. Google Search, Explorer vs. Chrome, Office vs. Docs, and Surface vs. Nexus.

Just as war cost the Montagues and Capulets their children, it cost Microsoft and Google their dominance: Apple came along and overtook them all. In January 2013, Apple's market capitalization was \$500 billion, while Google and Microsoft combined were worth \$467 billion. Just three years before, Microsoft and Google were each more valuable than Apple. War is costly business.

### **LAST MOVER ADVANTAGE**

In March 2001, PayPal had yet to make a profit but our revenues were growing 100% year-over-year. When I projected our future cash flows, I found that 75% of the company's present value would come from profits generated in 2011 and beyond—hard to believe for a company that had been in business for only 27 months. But even that turned out to be an underestimation. Today, PayPal continues to grow at about 15% annually, and the discount rate is lower than a decade ago. It now appears that most of the company's value will come from 2020 and beyond.

The overwhelming importance of future profits is counterintuitive even in Silicon Valley. For a company to be valuable it must grow and endure, but many entrepreneurs focus only on short-term growth.

If you focus on near-term growth above all else, you miss the most important question you should be asking: will this business still be around a decade from now? Numbers alone won't tell you the answer; instead you must think critically about the qualitative characteristics of your business.

What does a company with large cash flows far into the future look like? Every monopoly is unique, but they usually share some combination of the following characteristics:

- **Proprietary technology** – Proprietary technology is the most substantive advantage a company can have because it makes your product difficult or impossible to replicate. Google's search algorithms, for example, return results better than anyone else's. Proprietary technologies for extremely short page load times and highly accurate query autocompletion add to the core search product's robustness and defensibility. It would be very hard for anyone to do to Google what Google did to all the other search engine companies in the early 2000s.
- **Network effects** – Network effects make a product more useful as more people use it. For example, if all your friends are on Facebook, it makes sense for you to join Facebook, too. Unilaterally choosing a different social network would only make you an eccentric.
- **Economies of scale** – A monopoly business gets stronger as it gets bigger: the

fixed costs of creating a product (engineering, management, office space) can be spread out over ever greater quantities of sales. Software startups can enjoy especially dramatic economies of scale because the marginal cost of producing another copy of the product is close to zero.

- **Branding** – A company has a monopoly on its own brand by definition, so creating a strong brand is a powerful way to claim a monopoly. Today's strongest tech brand is Apple: the attractive looks and carefully chosen materials of products like the iPhone and MacBook, the Apple Stores' sleek minimalist design and close control over the consumer experience, the omnipresent advertising campaigns, the price positioning as a maker of premium goods, and the lingering nimbus of Steve Jobs's personal charisma all contribute to a perception that Apple offers products so good as to constitute a category of their own.

You've probably heard about "first mover advantage": if you're the first entrant into a market, you can capture significant market share while competitors scramble to get started. But moving first is a tactic, not a goal. What really matters is generating cash flows in the future, so being the first mover doesn't do you any good if someone else comes along and unseats you. It's much better to be the last mover—that is, to make the last great development in a specific market and enjoy years or even decades of monopoly profits. The way to do that is to dominate a small niche and scale up from there, toward your ambitious long-term vision.

### **YOU ARE NOT A LOTTERY TICKET**

You can expect the future to take a definite form or you can treat it as hazily uncertain. If you treat the future as something definite, it makes sense to understand it in advance and to work to shape it. But if you expect an indefinite future ruled by randomness, you'll give up on trying to master it.

You can also expect the future to be either better or worse than the present. Optimists welcome the future; pessimists fear it. Combining these possibilities yields four views:

	DEFINITE	INDEFINITE
OPTIMISTIC	U.S., 1950s–1960s	U.S., 1982–present
PESSIMISTIC	China, present	Europe, present

- **Indefinite pessimism** – An indefinite pessimist looks out onto a bleak future, but he has no idea what to do about it. This describes Europe since the early 1970s, when the continent succumbed to undirected bureaucratic drift. Today the whole Eurozone is in slow-motion crisis, and nobody is in charge.
- **Definite pessimism** – A definite pessimist believes the future can be known, but since it will be bleak, he must prepare for it. Perhaps surprisingly, China is probably the most definitely pessimistic place in the world today. While every other country is amazed by China's growth and thinks it's going to take over the world. China is the only country afraid that it won't.
- **Definite optimism** – To a definite optimist, the future will be better than the present if he plans and works to make it better. From the 17th century through the 1950s and '60s, definite optimists led the Western world.
- **Indefinite optimism** – To an indefinite optimist, the future will be better, but he doesn't know how exactly, so he won't make any specific plans. He expects to profit from the future but sees no reason to design it concretely.

A startup is the largest endeavor over which you can have definite mastery. You can have agency not just over your own life, but over a small and important part of the world. It begins by rejecting the unjust tyranny of Chance. You are not a lottery ticket.

### FOLLOW THE MONEY

This chapter shows how the power law becomes visible when you follow the money: in venture capital, where investors try to profit from exponential growth in early-stage companies, a few companies attain exponentially greater value than all others.

Our results at Founders Fund illustrate this skewed pattern: Facebook, the best investment in our 2005 fund, returned more than all the others combined. Palantir,

the second-best investment, is set to return more than the sum of every other investment aside from Facebook. This highly uneven pattern is not unusual: we see it in all our other funds as well. The biggest secret in venture capital is that the best investment in a successful fund equals or outperforms the entire rest of the fund combined.

The power law is not just important to investors; rather, it's important to everybody because everybody is an investor. An entrepreneur makes a major investment just by spending her time working on a startup. Therefore every entrepreneur must think about whether her company is going to succeed and become valuable. Every individual is unavoidably an investor, too. When you choose a career, you act on your belief that the kind of work you do will be valuable decades from now.

If you do start your own company, you must remember the power law to operate it well. The most important things are singular: One market will probably be better than all others, as we discussed in Chapter 5. One distribution strategy usually dominates all others, too—for that see Chapter 11. Time and decision-making themselves follow a power law, and some moments matter far more than others—see Chapter 9. However, you can't trust a world that denies the power law to accurately frame your decisions for you, so what's most important is rarely obvious. It might even be secret. But in a power law world, you can't afford not to think hard about where your actions will fall on the curve.

## **SECRETS**

Every one of today's most famous and familiar ideas was once unknown and unsuspected. The mathematical relationship between a triangle's sides, for example, was secret for millennia. Today, Pythagoras's theorem has become a convention—a simple truth we teach to grade schoolers. A conventional truth can be important—it's essential to learn elementary mathematics, for example—but it won't give you an edge. It's not a secret.

Of course, there are many things we don't yet understand, but some of those things may be impossible to figure out—mysteries rather than secrets. For example, string theory describes the physics of the universe in terms of vibrating one-dimensional objects called “strings.” Is string theory true? You can't really design experiments to test it. Very few people, if any, could ever understand all its implications. But is that just because it's difficult? Or is it an impossible mystery? The difference matters. You can achieve difficult things, but you can't achieve the impossible.

What valuable company is nobody building? Every correct answer to this question is necessarily a secret: something important and unknown, something hard to do but doable. If there are many secrets left in the world, there are probably many world-changing companies yet to be started.

There are two kinds of secrets: secrets of nature and secrets about people. Natural secrets exist all around us; to find them, one must study some undiscovered aspect of the physical world. Secrets about people are different: they are things that people don't know about themselves or things they hide because they don't want others to know. So when thinking about what kind of company to build, there are two distinct questions to ask: What secrets is nature not telling you? What secrets are people not telling you?

## **FOUNDATIONS**

Every great company is unique, but there are a few things that every business must get right at the beginning. I stress this so often that friends have teasingly nicknamed it “Thiel’s law”: a startup messed up at its foundation cannot be fixed. As a founder, your first job is to get the first things right, because you cannot build a great company on a flawed foundation.

- **Founding matrimony** – When you start something, the first and most crucial decision you make is whom to start it with. Choosing a co-founder is like getting married, and founder conflict is just as ugly as divorce. Founders should share a prehistory before they start a company together—otherwise they’re just rolling dice.
- **Ownership, possession & control** – To anticipate likely sources of misalignment in any company, it’s useful to distinguish between three concepts: Ownership: who legally owns a company’s equity? Possession: who actually runs the company on a day-to-day basis? Control: who formally governs the company’s affairs?
- **On the bus or off the bus** – As a general rule, everyone you involve with your company should be involved full-time. Sometimes you’ll have to break this rule; it usually makes sense to hire outside lawyers and accountants, for example. However, anyone who doesn’t own stock options or draw a regular salary from your company is fundamentally misaligned.
- **Cash is not king** – Cash is attractive. It offers pure optionality: once you get your paycheck, you can do anything you want with it. However, high cash compensation teaches workers to claim value from the company as it already exists instead of investing their time to create new value in the future. A cash bonus is slightly better than a cash salary—at least it’s contingent on a job well done. But even so-called incentive pay encourages short-term thinking and

value grabbing. Any kind of cash is more about the present than the future.

- **Vested interests** – Startups don't need to pay high salaries because they can offer something better: part ownership of the company itself. Equity is the one form of compensation that can effectively orient people toward creating value in the future.
- **Extending the founding** – The founding moment of a company, however, happens just once: only at the very start do you have the opportunity to set the rules that will align people toward the creation of value in the future.

### **THE MECHANICS OF MAFIA**

The founding team is far more important than any company culture. A startup is a team of people on a mission, and a good culture is just what that looks like on the inside. A company doesn't have a culture, it is a culture.

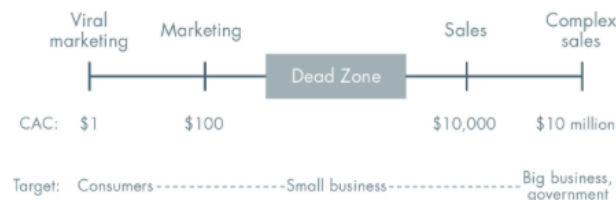
From the outside, everyone in your company should be different in the same way. The early PayPal team worked well together because we were all the same kind of nerd. We all loved science fiction: Cryptonomicon was required reading, and we preferred the capitalist Star Wars to the communist Star Trek. Most important, we were all obsessed with creating a digital currency that would be controlled by individuals instead of governments. For the company to work, it didn't matter what people looked like or which country they came from, but we needed every new hire to be equally obsessed.

On the inside, every individual should be sharply distinguished by her work. The best thing I did as a manager at PayPal was to make every person in the company responsible for doing just one thing. Every employee's one thing was unique, and everyone knew I would evaluate him only on that one thing. I had started doing this just to simplify the task of managing people. But then I noticed a deeper result: defining roles reduced conflict. Most fights inside a company happen when colleagues compete for the same responsibilities. Startups face an especially high risk of this since job roles are fluid at the early stages. Eliminating competition makes it easier for everyone to build the kinds of long-term relationships that transcend mere professionalism.

### **IF YOU BUILD IT, WILL THEY COME?**

Superior sales and distribution by itself can create a monopoly, even with no product differentiation. The converse is not true. No matter how strong your product—even if it easily fits into already established habits and anybody who tries it likes it immediately—you must still support it with a strong distribution plan.

Two metrics set the limits for effective distribution. The total net profit that you earn on average over the course of your relationship with a customer (Customer Lifetime Value, or CLV) must exceed the amount you spend on average to acquire a new customer (Customer Acquisition Cost, or CAC). In general, the higher the price of your product, the more you have to spend to make a sale—and the more it makes sense to spend it. Distribution methods can be plotted on a continuum:



- **Complex sales** – If your average sale is seven figures or more, every detail of every deal requires close personal attention. It might take months to develop the right relationships. You might make a sale only once every year or two. It's hard to do, but this kind of "complex sales" is the only way to sell some of the most valuable products.
- **Personal sales** – Most sales are not particularly complex: average deal sizes might range between \$10,000 and \$100,000, and usually the CEO won't have to do all the selling himself. The challenge here isn't about how to make any particular sale, but how to establish a process by which a sales team of modest size can move the product to a wide audience.
- **Distribution doldrums** – In between personal sales (salespeople obviously required) and traditional advertising (no salespeople required) there is a dead zone. For a \$1000 product you need a personal sales effort, but at that price point, you simply don't have the resources to send an actual person to talk to every prospective customer. Advertising is too general and not targeted enough. The result is you get stuck in the sales doldrums.
- **Marketing and advertising** – Marketing and advertising work for relatively low-priced products that have mass appeal but lack any method of viral distribution. Procter & Gamble can't afford to pay salespeople to go door-to-door selling laundry detergent. To reach its end user, a packaged goods company has to produce television commercials, print coupons in newspapers, and design its product boxes to attract attention.
- **Viral marketing** – A product is viral if its core functionality encourages users to invite their friends to become users too. This is how Facebook and PayPal both grew quickly: every time someone shares with a friend or makes a payment, they naturally invite more and more people into the network. This isn't just cheap—it's fast, too. If every new user leads to more than one additional user, you can achieve a chain reaction of exponential growth. The ideal viral loop

should be as quick and frictionless as possible.

We might wish that distribution could be ignored and salesmen banished to another planet. All of us want to believe that we make up our own minds, that sales doesn't work on us. But it's not true. Everybody has a product to sell—no matter whether you're an employee, a founder, or an investor. It's true even if your company consists of just you and your computer. Look around. If you don't see any salespeople, you're the salesperson.

### **MAN AND MACHINE**

Everyone expects computers to do more in the future—so much more that some wonder: 30 years from now, will there be anything left for people to do? VC Andy Kessler sounds almost gleeful when he explains that the best way to create productivity is “to get rid of people.” Forbes captured a more anxious attitude when it asked readers: Will a machine replace you?

Futurists can seem like they hope the answer is yes. Luddites are so worried about being replaced that they would rather we stop building new technology altogether. Neither side questions the premise that better computers will necessarily replace human workers. But that premise is wrong: computers are complements for humans, not substitutes. The most valuable businesses of coming decades will be built by entrepreneurs who seek to empower people rather than try to make them obsolete.

Complementarity between computers and humans isn't just a macro-scale fact. It's also the path to building a great business.

Think of what professionals do in their jobs today. Lawyers must be able to articulate solutions to thorny problems in several different ways—the pitch changes depending on whether you're talking to a client, opposing counsel, or a judge. Doctors need to marry clinical understanding with an ability to communicate it to non-expert patients. And good teachers aren't just experts in their disciplines: they must also understand how to tailor their instruction to different individuals' interests and learning styles. Computers might be able to do some of these tasks, but they can't combine them effectively. Better technology in law, medicine, and education won't replace professionals; it will allow them to do even more.

### **SEEING GREEN**

Why did cleantech fail? Conservatives think they already know the answer: as soon as green energy became a priority for the government, it was poisoned. But there really were (and there still are) good reasons for making energy a priority. And the

truth about cleantech is more complex and more important than government failure. Most cleantech companies crashed because they neglected one or more of the seven questions that every business must answer:

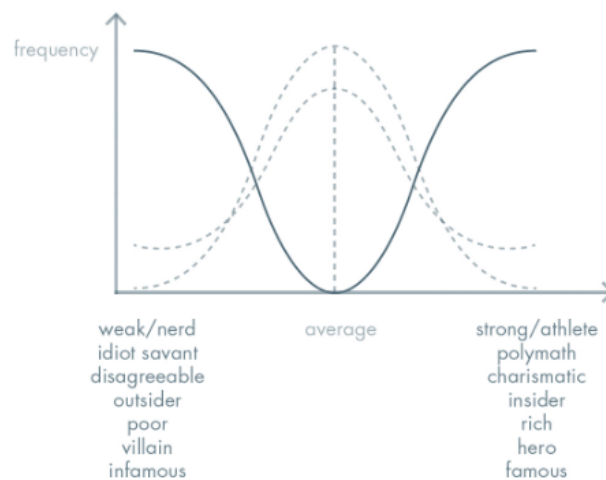
1. The Engineering Question – Can you create breakthrough technology instead of incremental improvements?
2. The Timing Question – Is now the right time to start your particular business?
3. The Monopoly Question – Are you starting with a big share of a small market?
4. The People Question – Do you have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

Whatever your industry, any great business plan must address every one of these questions. If you don't have good answers to these questions, you'll run into lots of "bad luck" and your business will fail. If you nail all seven, you'll master fortune and succeed. Even getting five or six correct might work. But the striking thing about the cleantech bubble was that people were starting companies with zero good answers—and that meant hoping for a miracle.

### **THE FOUNDER'S PARADOX**

Are all founders unusual people? Or do we just tend to remember and exaggerate whatever is most unusual about them? More important, which personal traits actually matter in a founder?

Almost all successful entrepreneurs are simultaneously insiders and outsiders. And when they do succeed, they attract both fame and infamy. When you plot them out, founders' traits appear to follow an inverse normal distribution:



Where does this strange and extreme combination of traits come from? They could be present from birth (nature) or acquired from an individual's environment (nurture). But perhaps founders aren't really as extreme as they appear. Might they strategically exaggerate certain qualities? Or is it possible that everyone else exaggerates them? All of these effects can be present at the same time, and whenever present they powerfully reinforce each other. The cycle usually starts with unusual people and ends with them acting and seeming even more unusual.

As an example, take Sir Richard Branson, the billionaire founder of the Virgin Group. He could be described as a natural entrepreneur: Branson started his first business at age 16, and at just 22 he founded Virgin Records. But other aspects of his renown—the trademark lion's mane hairstyle, for example—are less natural: one suspects he wasn't born with that exact look. As Branson has cultivated his other extreme traits (Is kiteboarding with naked supermodels a PR stunt? Just a guy having fun? Both?), the media has eagerly enthroned him: Branson is "The Virgin King," "The Undisputed King of PR," "The King of Branding," and "The King of the Desert and Space." When Virgin Atlantic Airways began serving passengers drinks with ice cubes shaped like Branson's face, he became "The Ice King."

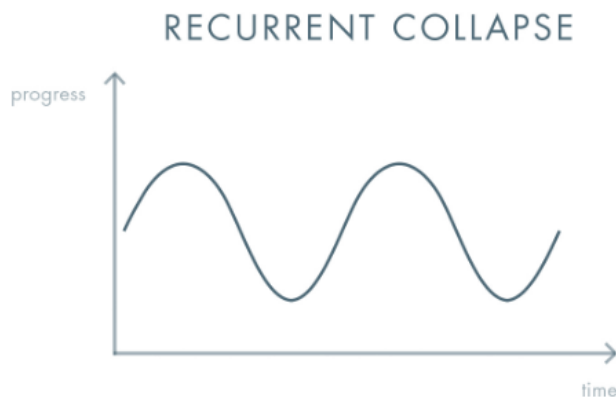
Is Branson just a normal businessman who happens to be lionized by the media with the help of a good PR team? Or is he himself a born branding genius rightly singled out by the journalists he is so good at manipulating? It's hard to tell—maybe he's both.

The lesson for business is that we need founders. If anything, we should be more tolerant of founders who seem strange or extreme; we need unusual individuals to lead companies beyond mere incrementalism. The lesson for founders is that individual prominence and adulation can never be enjoyed except on the condition

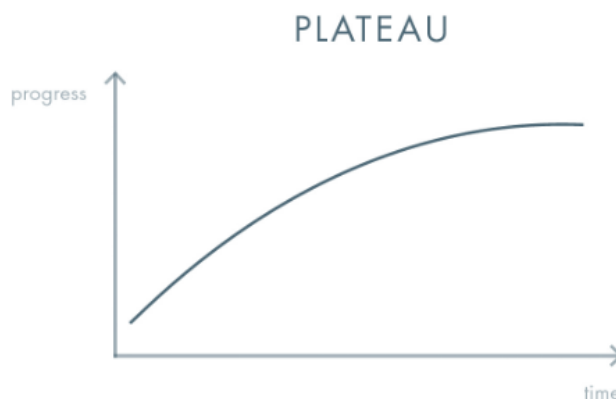
that it may be exchanged for individual notoriety and demonization at any moment —so be careful. Above all, don't overestimate your own power as an individual. Founders are important not because they are the only ones whose work has value, but rather because a great founder can bring out the best work from everybody at his company.

### **CONCLUSION: STAGNATION OR SINGULARITY?**

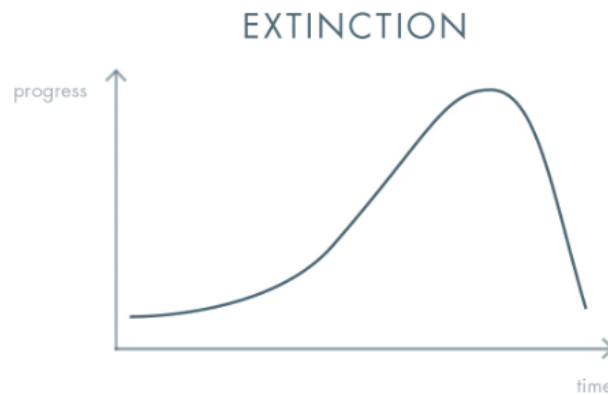
If even the most farsighted founders cannot plan beyond the next 20 to 30 years, is there anything to say about the very distant future? We don't know anything specific, but we can make out the broad contours. Philosopher Nick Bostrom describes four possible patterns for the future of humanity.



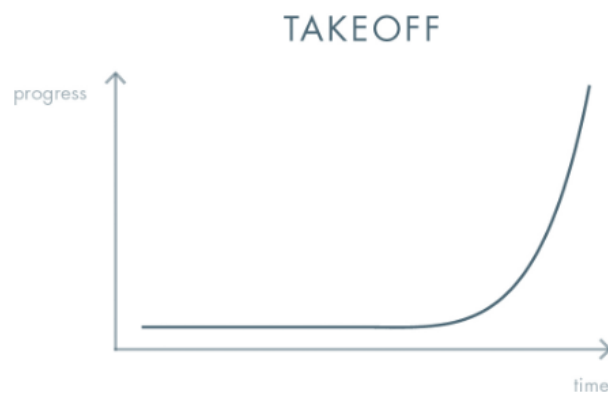
The ancients saw all of history as a neverending alternation between prosperity and ruin. Only recently have people dared to hope that we might permanently escape misfortune, and it's still possible to wonder whether the stability we take for granted will last.



Conventional wisdom seems to assume instead that the whole world will converge toward a plateau of development similar to the life of the richest countries today. In this scenario, the future will look a lot like the present.



Given the interconnected geography of the contemporary world and the unprecedented destructive power of modern weaponry, it's hard not to ask whether a large-scale social disaster could be contained were it to occur. This is what fuels our fears of the third possible scenario: a collapse so devastating that we won't survive it.



The last of the four possibilities is the hardest one to imagine: accelerating takeoff toward a much better future. The end result of such a breakthrough could take a number of forms, but any one of them would be so different from the present as to defy description.

The fourth scenario seems the most likely. The most dramatic version of this outcome is called the Singularity, an attempt to name the imagined result of new technologies so powerful as to transcend the current limits of our understanding.

According to Kurzweil, “the Singularity is near,” it’s inevitable, and all we have to do is prepare ourselves to accept it.

Our task today is to find singular ways to create the new things that will make the future not just different, but better—to go from 0 to 1. The essential first step is to think for yourself. Only by seeing our world anew, as fresh and strange as it was to the ancients who saw it first, can we both re-create it and preserve it for the future.