Zero to One Notes

Notes on Startups, or
How to Build the Future

Book by Peter Thiel
Notes by Frank Lin

Preface – Zero to One
"Every moment in business happens only once."
Going from 1 to n – adding more of something familiar
Going from 0 to 1 – creating something new
"Today's 'best practices' lead to dead ends; the best paths are new and untried"
Experience as:
- Co-founder of PayPal and Palantir
- Investor in hundreds of startups including Facebook and SpaceX

Book stems from Stanford startup course that he taught
"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
Interview question: "What important truth do very few people agree with you on?"
Good answer: "Most people believe in x, but the truth is the opposite of x."
No one can predict the future exactly, but we know two things:
- It's going to be different
- It's going to be rooted in today's world

Most answers are different ways of seeing the present
Good answers are ways we can look into the future
Horizontal (extensive) progress – copying things that work
- At the macro level, this is globalization
- (e.g. China's 20-year plan is to become the U.S. of today)

Vertical (intensive) progress – doing new things
- At the macro level, this is technology
- (e.g. Silicon Valley has become the capital of "technology")

Most people think world will be defined by globalization, but technology matters more
In a world of scarce resources, globalization without new technology is unsustainable
New technology tends to come from new ventures – startups
- Any bigger: bureaucratic hierarchies, entrenched interests
- Any smaller: lone genius cannot create an entire industry

Startup – largest group of people you can convince of a plan to build a different future

Chapter 2 – Party Like It's 1999
Delusional popular beliefs ⇒ contrarian truths
Conventional beliefs only ever come to appear arbitrary and wrong in retrospect
Bubble – when conventional beliefs collapse
"The distortions caused by bubbles don't disappear when they pop."
Case Study: 1990s
- Began with fall of the Berlin Wall, then recession and shift to service economy
- General malaise in the United States led to the Ross Perot election
- Silicon Valley was sluggish and Japan seemed to be winning semiconductor war
- "The internet changed all this," but perhaps too much as market went crazy
- East Asian financial crisis of 1997 and skeptical launch of the euro
- The setup for the dot-com mania of 1998 to 2000

Four big lessons learned from the dot-com crash:
- Make incremental advances: be humble and don't have grand visions
- Stay lean and flexible: companies must be unplanned
- Improve on the competition: start with already existing customer
- Focus on product, not sales: if product requires advertising, not good enough

"And yet the opposite principles are probably more correct."

- It is better to risk boldness than triviality
- A bad plan is better than no plan
- Competitive markets destroy profits
- Sales matters just as much as product

"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."

Chapter 3 – All Happy Companies Are Different

"What valuable company is nobody building?"

"Creating value is not enough – you also need to capture some of the value you create."

A spectrum extends from perfect competition to monopoly

Most businesses are much closer to one extreme than we commonly realize

Lesson for entrepreneurs: if you want to create and capture lasting value, don't build an undifferentiated commodity business

Monopolies conceal their monopoly (e.g. Google)

- Frame their market as the union of several large markets

Non-monopolies pretend they're in a league of their own (e.g. Palo Alto UK restaurant)

- Define their market as the intersection of various smaller markets

"Money is either an important thing or it is everything."

"Creative monopolists give customers more choices by adding entirely new categories of abundance to the world. Creative monopolies aren't just good for the rest of society; they're powerful engines for making it better."

"The history of progress is a history of better monopoly businesses replacing incumbents."

"Perfect equilibrium may describe the void that is most of the universe. It may even characterize many businesses. But every new creation takes place far from equilibrium. In the real world outside economy theory, every business is successful exactly to the extent that it does something others cannot."

"Monopoly is the condition of every successful business."

"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."

Chapter 4 – The Ideology of Competition

Q: Why do people believe that competition is healthy?

A: Competition is an ideology – the ideology – that pervades our society and distorts our thinking. (e.g. competition in academia and for Supreme Court clerkships)

Two models for understanding every kind of conflict:

- Marx: people fight because they are different, the proletariat and the bourgeoisie fight because they have different ideas and goals; greater differences ⇒ greater conflict
- Shakespeare: combatants look more or less alike and grow more similar as the feud escalates; eventually, they lose sight of why they started fighting in the first place

Shakespearean model is more applicable for the world of business

Microsoft (OS and office applications) v. Google (search engine) transformed into Windows vs. Chrome OS, Bing vs. Google Search, Explorer vs. Chrome, Office vs. Docs, Surface vs. Nexus; as Microsoft and Google fought, Apple overtook both

"Rivalry causes us to overemphasize old opportunities and slavishly copy what has worked in the past."

"The hazards of imitative competition may partially explain why individuals with an Asperger's-like social ineptitude seem to be at an advantage in Silicon Valley today."

“Competition can make people hallucinate opportunities where none exist.”
“If you can’t beat a rival, it may be better to merge.” (e.g. Thiel and Musk)
“Sometimes you do have to fight. Where that’s true, you should fight and win. There is no middle ground: either don’t throw any punches, or strike hard and end it quickly.”
“Anyone would fight for things that matter; true heroes take their personal honor so seriously they will fight for things that don’t matter. This twisted logic is part of human nature, but it’s disastrous in business. If you can recognize competition as a destructive force instead of a sign of value, you’re already more sane than most.”

<u>Chapter 5 – Last Mover Advantage</u>

A monopoly is only a great business if it can endure in the future
A business is defined by its ability to generate cash flows in the future
The value of a business today is the sum of all the money it will make in its future
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?
Instead, one must think critically about the qualitative characteristics of one’s business:

- Proprietary technology: most substantive advantage a company can have since it makes one’s product difficult or impossible to replicate (e.g. Google’s search algorithms); rule of thumb: proprietary technology must be at least 10 times better than its closest substitute in some important dimension to lead a real monopolistic advantage; how to do this? Invest something completely new or radically improve an existing solution (e.g. Amazon and bookstores, Apple and tablets)
- Network effects: make a product more useful as more people use it; however, network effects businesses must start with especially small markets (e.g. Facebook and Harvard students)

· Note: “This is why successful network businesses rarely get started by MBA types: the initial markets are so small that they often don’t even appear to be business opportunities at all.”

- Economies of scale: monopoly business gets stronger as it gets bigger and can be spread out over greater quantities of sales; a good startup should have the potential for great scale built into its first design (e.g. Twitter has no inherent reason for why it should ever stop growing)
- Branding: a company has a monopoly on its own brand, so creating a strong brand is a powerful way to claim a monopoly (e.g. Apple and its aura); however, no technology can be built on branding alone, there must be substance

Every startup starts small, every monopoly dominates a large share of its market
Therefore, every startup should start with a very small market
“If you think your initial market might be too big, it almost certainly is.”
Small does not mean nonexistent (e.g. PalmPilots)
Perfect target market: small group of particular people concentrated together and served by few or no competitors
Once you dominate the niche market, you can gradually expand into related markets
(e.g. Amazon from books ⇒ CDs, videos, and software)
“Sequencing markets correctly is underrated”
“Silicon Valley has been obsessed with ‘disruption.’”
Disruption (originally) – term of art to describe how a firm can use new technology to introduce a low-end product at low prices, improve the product over time, and eventually overtake even the premium products offered by incumbent companies using older technology (e.g. PCs disrupted market for mainframe computers, maybe phones/PCs)
However, disruption as a term has lost its original meaning because it inherently leads of an entrepreneur to understand himself through the view of competition

“If you think of yourself as an insurgent battling dark forces, it’s easy to become unduly fixated on the obstacles in your path. But if you truly want to make something new, the act of creation is far more important than the old industries that might not like what you create. Indeed, if your company can be summed up by its opposition to already existing firms, it can’t be complete new and it’s probably not going to become a monopoly.”
Disruption also attracts attention and leads to unwinnable fights (e.g. Napster)
“As you craft a plan to expand to adjacent markets, don’t disrupt: avoid competition as much as possible.”
“Moving first is a tactic, not a goal.”
What matters is generating cash flows in the future
It’s much better to be the last mover
José Raúl Capablanca – to succeed, “you must study the endgame before everything else.”

Chapter 6 – You Are Not a Lottery Ticket
Q: Does business in success come from luck or skill?
A: If you believe your life is mainly a matter of chance, why read this book? Learning about startups is worthless if you’re just reading stories about people who won the lottery.
Two views of the world: indefinite and definite
Indefinite attitude – process trumps substance
- e.g. hoarding extracurricular activities, curating a diverse résumé

Definite attitude – favor firm convictions
- e.g. instead of well-roundedness, determine the one best thing to do and do it

“This is not what young people do today, because everyone around them has long since lost faith in a definite world. No one gets into Stanford by excelling at just one thing, unless that thing happens to involve throwing or catching a leather ball.”
Two other views of the world: optimist and pessimist
Optimist view – welcome the future
Pessimist view – fear the future
Four combined possibilities
- Indefinite pessimism: believes the future is bleak, but has no idea what to do about it (e.g. Europe since the early 1970s); “Europeans just react to events as they happen and hope things don’t get worse. The indefinite pessimist can’t know whether the inevitable decline will be fast or slow, catastrophic or gradual. All he can do is wait for it to happen, so he might as well eat, drink, and be merry in the meantime: hence Europe’s famous vacation mania.”
- Definite pessimism: believes the future can be known, but since it will be bleak, he must prepare for it (e.g. China today); “When Americans see the Chinese economy grow ferociously fast, we imagine a confident country mastering its future. But that’s because Americans are still optimists, and we project our optimism onto China. From China’s viewpoint, economic growth cannot come fast enough. Every other country is afraid that China is going to take over the world; China is the only country afraid that it won’t.”; “Outsiders are fascinated by the great fortunes being made inside China, but they pay less attention to the wealthy Chinese trying hard to get their money out of the country. Poorer Chinese just save everything they can and hope it will be enough. Every class of people in China takes the future deadly seriously.”
- Definite optimism: believes the future will be better than the present if he plans and works to make it better (e.g. Western world from 1600s through 1960s); “Every generation’s inventors and visionaries surpassed their predecessors,” from the first crossing underneath the River Thames (1843) to the Suez Canal (1869) to the Panama Canal (1914) to the Empire State Building (1931) to the Golden Gate Bridge (1937) to the Manhattan Bridge

(1945) to the Interstate Highway System (1956) to the Apollo Program (1961); “Bold plans were not reserved just for political leaders of government scientists.”
- Indefinite optimism: believes the future will be better, but he doesn’t know how exactly, so he won’t make any specific plans (e.g. America since 1982); “Instead of working for years to build a new product, indefinite optimists rearrange already-invested ones. Bankers make money by rearranging the capital structures of already existing companies. Lawyers resolve disputes over old things or help other people structure their affairs. And private equity investors and management consultants don’t start new businesses, they squeeze extra efficiency from old ones with incessant procedural optimizations. It’s no surprise that these fields all attract disproportionate numbers of high-achieving Ivy League optionality chasers; what could be a more appropriate reward for two decades of résumé-building than a seemingly elite, process-oriented career that promises to ‘keep options open’?”; for Baby Boomers, technological advance seemed to accelerate automatically, so the Boomers grew up with great expectations but few specific plans for how to fulfill them; then, increasing income inequality rescued the most elite Boomers in the 1970s and today, they continue to believe that tracked careers work

Malcolm Gladwell says you can’t understand Bill Gates’s success without understanding his fortunate personal context with a good family, private school with a computer lab, and Paul Allen as a childhood friend

Peter Thiel says you can’t understand Malcolm Gladwell without understanding his historical context as a Boomer who point to the power of a particular individual’s context as determined by chance

“But they miss the even bigger social context for their own preferred explanations: a whole generation learned from childhood to overrate the power of chance and underrate the importance of planning. Gladwell at first appears to be making a contrarian critique of the myth of the self-made businessman, but actually his own account encapsulates the conventional view of a generation.”

Examples of our indefinitely optimistic world
- Indefinite finance: finance is the only way to make money when you have no idea how to create wealth; bright college graduates who don’t go to law school go to Wall Street because they have no real career plans, where they then find that even inside finance, everything is indefinite (the fundamental tenet is that the market is random, and thus diversification is key); “In a financialized world, [when successful entrepreneurs sell their company], the founders don’t know what to do with it, so they gave it to a large bank. The bankers don’t know what to do with it, so they diversify by spreading it across a portfolio of institutional investors. Institutional investors don’t know what to do with their managed capital, so they diversify by amassing a portfolio of stocks. Companies try to increase their share price by generating free cash flows. If they do, they issue dividends or buy back share and the cycle repeats.”; “At no point does anyone in the chain know what to do with money in the real economy. But in an indefinite world, people actually prefer unlimited optionality; money is more valuable than anything you could possible do with it. Only in a definite future is money a means to an end, not the end itself.”
- Indefinite politics: politicians are attuned to what the public thinks at every moment; today, we are more fascinated today by statistical predictions of where the country will be thinking in a few weeks’ time than by visionary predictions of what the country will look like 10 or 20 years from now; in the past, the government coordinated complex solutions to problems like atomic weaponry and lunar exploration, but today, it merely provides insurance via means such as Medicare, Social Security, and a dizzying array of other transfer payment programs; “Entitlement spending has eclipsed discretionary spending every year since 1975. To increase discretionary spending we’d need definite plans to solve specific

problems. But according to the indefinite logic of entitlement spending, we can make things better just by sending out more checks."

- Indefinite philosophy: modern philosophers, John Rawls and Robert Nozick, on the egalitarian left and libertarian right respectively, both believed that people could get along with each other peacefully without any specific vision of the future; for Rawls, the "veil of ignorance" meant that fair political reasoning is supposed to be impossible for anyone with knowledge of the world as it concretely exists and he fantasized about an inherently stable society with lots of fairness but little dynamism; for Nozick, any voluntary exchange must be allowed and no social pattern could be noble enough to justify maintenance by coercion
- Indefinite life: society has seemed to given up the search for secrets about longevity and today our society is permeated by the twin ideas that death is both inevitable and random; probabilistic attitudes have shifted the way that we approach biology and biotechnology progresses slowly; Eroom's law (Moore's law backward) observes that the number of new drugs approved per billion dollars spent on R&D has halved every nine years since 1950; biotech is and will continue to be held back by indefinite optimism

Indefinite optimism cannot work, the other three views of the future can work
"How can the future get better if no one plans for it?"
Commonly, people resort to Darwinian theories of evolution as an answer
Adaptability as a buzzword for "lean startups" in Silicon Valley
"Leanness is a methodology, not a goal. Making small changes to things that already exist might lead you to a local maximum, but it won't help you find the global maximum."
"Darwinism may be a fine theory in other contexts, but in startups, intelligent design works best."
We must prioritize design over chance
"The greatest thing Jobs designed was his business. Apple imagined and executed definite multi-year plans to create new products and distribute them effectively."
"Ever since he started Apple in 1976, Jobs saw that you can change the world through careful planning, not by listening to focus group feedback or copying others' successes."
"Long-term planning is often undervalued by our indefinite short-term world."
Power of planning is why valuing private companies is difficult and big companies offering for smaller startups always offer either too much or too little
"Founders only sell when they have no more concrete visions for the company, in which case the acquirer probably overpaid; definite founders with robust plans don't sell, which means the offer wasn't high enough." (e.g. Zuckerberg quick rejection of Yahoo's $1b offer in 2006)
"A business with a good definite plan will always be underrated in a world where people see the future as random."
Q: If we want to return to a definite future, how can we get there?
A: The Western world needs nothing short of a revolution, which will be difficult to start in established and entrenched fields like philosophy and politics.
"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 beings by rejecting the unjust tyranny of Chance. You are not a lottery ticket."

<u>Chapter 7 – Follow the Money</u>

Small minorities often achieve disproportionate results
Pareto principle - for many events, roughly 80% of the effects come from 20% of the causes, just like 80% of the peas came from 20% of the peapods in Pareto's garden
The power law is the law of the universe, and is present everywhere in the natural and social world:

- The most destructive earthquakes are many times more powerful than all smaller earthquakes combined
- The biggest cities dwarf all mere towns put together

- Monopoly businesses capture more value than millions of undifferentiated competitors

Venture capitalists aim to profit from promising early-stage companies
They pool money from the rich and invest in tech companies, taking around a 20% cut
Venture funds usually have a ten-year lifespan
However, most venture-backed companies fail soon after they start
Successful portfolio companies hit exponential growth spurts and scale
Many expect venture returns to be normally distributed, but they follow a power law
A small handful of companies radically outperform all others
“If you focus on diversification instead of single-minded pursuit of the very few companies that can become overwhelmingly valuable, you’ll miss those rare companies in the first place.”
“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.” (e.g. 2005 Founders Fund, Facebook outperformed rest combined, Palantir outperformed rest combined aside from Facebook)
“Every single company in a good venture portfolio must have the potential to succeed at vast scale.”
Founders Fund focuses on five to seven companies in a fund, each of which has multibillion-dollar business potential based on unique fundamentals
Less than 1% of new businesses started each year in the US receives venture funding
Total VC investment accounts for less than 0.2% of GDP
Venture-backed companies create 11% of all private sector jobs
They generate annual revenues equivalent to 21% of GDP
“The dozen largest tech companies were all venture-backed. Together those 12 companies are worth more than $2 trillion, more than all other tech companies combined.
Q: How can we use the power law in our individual lives?
A: Every individual is an investor, too, since when we choose careers, we act on our beliefs that the kind of work we do will be valuable decades from now.
Convention recommends diversification, allowing us to hedge against the uncertainty of the future
“Life is not a portfolio … An entrepreneur cannot ‘diversify’ herself: you cannot run dozens of companies at the same time and then hope that one of them works out well. Less obvious but just as important, an individual cannot diversify his own life by keeping dozens of equally possible careers in ready reserve.”
American school system and universities reassure us that “it doesn’t matter what you do, as long as you do it well”
“That is completely false. It does matter what you do. You should focus relentlessly on something you’re good at doing, but before that you must think hard about whether it will be valuable in the future.”
In the startup world, this means you shouldn’t necessarily start your own company
“The power law means that differences between companies will dwarf the differences in roles inside companies.”
If you do start a company, it’s essential to remember the power law to operate it well

Chapter 8 – Secrets

“What important truth do very few people agree with you on?”
The world still has secrets to give up, lying between conventional truth and mysteries
“What valuable company is nobody building?”
The secrets are things important and unknown that are hard to do but doable
“If there are many secrets left in the world, there are probably many world-changing companies left in the world.”
Trichotomy: the easy, the hard, and the impossible

- Ted Kaczynski: “Modern people are depressed because all the world’s hard problems have already been solved. What’s left to do is either easy or impossible and pursuing those tasks is deeply unsatisfying. What you can do, even a child can do what you can’t do, even Einstein couldn’t have done.”
- Religious fundamentalism: easy truths that children should know and mysteries of God which can’t be explained; everything in the middle is heresy
- Environmentalism: easy truth is we must protect the environment and beyond that, Mother Nature knows best
- Free marketeers: children can lookup stock quotes, value of things is set by the market, but don’t question prices since market knows more than we ever could

Q: Why has so much of our society come to believe that there are no hard secrets left?
A: It might start with geography. There are no more explorers. Four other social trends:

- Incrementalism: the right way to do things is to proceed one very small step at a time (e.g. don’t learn things not on the test, do exactly what’s asked of you and get an A; academics chasing large numbers of trivial publications instead of new frontiers)
- Risk aversion: people are scared of secrets because they are scared of being wrong; prospect of being lonely but right is already hard, prospect of being lonely and wrong is unbearable
- Complacency: why search for a new secret if you can comfortably collect rents on everything that has already been done?
- “Flatness”: people perceive the world as one homogeneous, highly competitive marketplace; if it were possible to discover something new, wouldn’t someone from the faceless global talent pool of smarter and more creative people have found it already?

Result: we have fewer crazy cults now, yet we also have given up our sense of wonder at secrets left to be discovered
Disbelief in secrets:

- Justice: “To say that there are no secrets left today would mean that we live in a society with no hidden injustices.”
- Economics: disbelief in secrets leads to faith in efficient markets, but the existence of financial bubbles shows that markets can have extraordinary inefficiencies
- e.g. Hewlett-Packard’s 1990s decade of invention to board dysfunction and fall

“If you think something hard is impossible, you’ll never even start trying to achieve it. Belief in secrets is an effective truth.”
“The actual truth is that there are many more secrets left to find, but they will yield only to relentless searchers.” (e.g. cure cancer, dementia, and all the diseases of age and metabolic decay; generate energy that frees the world from conflict over fossil fuels, invent faster ways to travel the world, find ways to escape it entirely and settle elsewhere)
Same can be said for business, simply consider Silicon Valley startups that have harnessed the spare capacity that is all around us but often ignored (e.g. Airbnb, Lyft/Uber, Facebook)
Two types 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: things that people don’t know about themselves or things they hide because they don’t want others to know

What secrets is nature not telling you?
What secrets are people not telling you?
Q: If you find a secret, what do you do with it?
A: Unless you have perfectly conventional beliefs, it’s rarely a good idea to tell everybody everything that you know. So who do you tell? Whoever you need to, and no more. In practice, there’s always a golden mean between telling nobody and telling everybody – and that’s a company.

Chapter 9 – Foundations

"Thiel's Law" – a startup messed up at its foundation cannot be fixed
Companies are like countries in that bad decisions made early on are very hard to correct after they are made
As a founder, your first job is to get the first things right, because you cannot build a great company on a flawed foundation
"Choosing a co-founder is like getting married, and founder conflict is just as ugly as divorce. Optimism abounds at the start of every relationship. It's unromantic to think soberly about what could go wrong, so people don't. But if the founders develop irreconcilable differences, the company becomes the victim."
"Technical abilities and complementary sill set matter, but how well the founders know each other and how well they work together matter just as much. Founders should share a prehistory before they start a company together – otherwise they're just rolling dice."
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?
Typically, in startups:

- Ownership ⇒ founders, employees, investors
- Possession ⇒ managers, employees
- Control ⇒ board of directors (founders, investors)

Lots of potential for misalignment
Most startup conflicts erupt between ownership and conflict
Potential for conflict increases over time as interests diverge
In the boardroom, less is more; the smaller the board, the easier it is to communicate
"If you want an effective board, keep it small."
A board of three is ideal and a board should never exceed five people (unless public)
Everyone involved with the company should be involved full-time (except lawyers and accountants, for example)
Anyone who doesn't own stock options or draw a regular salary from your company is fundamentally misaligned
Ken Kesey: "you're either on the bus or off the bus"
One of the single clearest patterns: "A company does better the less it pays the CEO"
"In no case should a CEO of an early-stage, venture-backed startup receive more than $150,000 per year in salary."
"If a CEO doesn't set an example by taking the lowest salary in the company, he can do the same thing by drawing the highest salary" (as long as it's modest)
"Any kind of cash is more about the present than the future."
Startups can offer something better than high salaries: equity
Equity must be allocated carefully to create commitment rather than conflict
Since it's impossible to distribute fairly, founders would do well to keep the details secret
People often find equity unattractive: it's liquid and tied to one specific company, and potentially worthless if that company doesn't succeed
This makes equity a powerful tool; equity can't create perfect incentives, but it's the best way for a founder to keep everyone in the company broadly aligned
"The most valuable kind of company maintains an openness to invention that is most characteristic of beginnings. This leads to a second, less obvious understanding of the founding: it lasts as long as a company is creating new things, and it ends when creation stops."

Chapter 10 – The Mechanics of Mafia

"'Company culture' doesn't exist apart from the company itself: no company has a culture; every company is a 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 merely professional view of the workplace: free agents check in and out on a transactional basis, which is worse than cold: it's not even rational
"Since time is your most valuable asset, it's odd to spend it working with people who don't envision any long-term future together."
Stronger relationships ⇒ more successful in careers even beyond the company
Hire people who would actually enjoy working together
"They had to be talented, but even more than that they had to be excited about working specifically with us." (the PayPal Mafia)
Recruiting: why should the 20th employee join your company?
Q: Why would someone join your company as its 20th engineer when she could go work at Google for more money and more prestige?
A: Good answers are specific to your company. Bad answers are claims that every company makes (e.g. stock options will be worth more, work with smartest people, etc.)
Even a great mission is not enough
"Are these the kind of people I want to work with?"
Do not fight the perk war
"Anybody who would be more powerfully swayed by free laundry pickup or pet day care would be a bad addition to your team. Just cover the basics like health insurance and then promise what no others can: the opportunity to do irreplaceable work on a unique problem alongside great people."
"From the outside, everyone in your company should be different in the same way."
"Unlike people on the East Coast, who all wear the same skinny jeans or pinstripe suits depending on their industry, young people in Mountain View and Palo Alto go to work wearing T-shirts. It's a cliché that tech workers don't care about what they wear, but if you look closely at those T-shirts, you'll see the logos of the wearers' companies – and tech workers care about those very much. What makes a startup employee instantly distinguishable to outsiders is the branded T-shirt or hoodie that makes him look the same as his co-workers. The startup uniform encapsulates a simple but essential principle: everyone at your company should be different in the same way – a tribe of like-minded people fiercely devoted to the company's mission."
Max Levchin: startups should make their early staff as personally similar as possible. Startups have limited resources and small teams. They must work quickly and efficiently in order to survive, and that's easier to do when everyone shares an understanding of the world.
e.g. at PayPal, the entire team loved science fiction and preferred Stars Wars to Star Trek; they were all obsessed with creating a digital currency that would be controlled by individuals instead of governments
"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."
"Internal conflict is like an autoimmune disease: the technical cause of death may be pneumonia, but the real cause remains hidden from plain view."
Eliminating competition between internal roles builds long-term relationships that transcend mere professionalism
Spectrum from consultants (nihilism) to cults (dogmatism)
"The best startups might be considered slightly less extreme kinds of cults."
The difference: cults tend to be fanatically wrong about something important; successful startups tend to be fanatically right about something those outside it have missed

Chapter 11 – If You Build It, Will They Come?

"Even though sales is everywhere, most people underrate its importance. Silicon Valley underrates it more than most."
Distribution – catchall term for everything it takes to sell a product
Especially in Silicon Valley, engineers are biased toward building cool stuff rather than selling it
Advertising matters because it works
"Advertising doesn't exist to make you buy a product right away; it exists to embed subtle impressions that will drive sales later. Anyone who can't acknowledge its likely effect on himself is doubly deceived."
It takes hard work to make sales look easy
All salesmen are actors and their priority is persuasion
There is a wide range of sales ability, from novices to experts to masters
Sales works best when it is hidden:

- People who sell advertising: account executives
- People who sell customers: business development
- People who sell themselves: politicians

None of us wants to be reminded when we're being sold
"The most fundamental reason that even businesspeople underestimate the importance of sales is the systematic effort to hide it at every level of every field in a world secretly driven by it."
Path dependence – specific historical circumstances independent of objective equality can determine which products enjoy widespread adoption
Bad business: invent something new, but don't invent an effective way to sell it
Superior sales and distribution can create a monopoly, even with no product differentiation
Opposite is not true; no matter how strong your product is, you must still support it with a strong distribution plan
Two metrics set the limits for effective distribution:

- Customer Lifetime Value (CLV): total net profit that you earn on average over the course of your relationship with a customer
- Customer Acquisition Cost (CAC): total amount you spend on average to acquire a new customer

Customer Lifetime Value must exceed Customer Acquisition Cost
The higher the price of your product, the more you must spend to make a sale
Spectrum of sales:

- Complex sales: average sales of seven figures or more; requires close personal attention, might take months to develop right relationships, might make sale only once every year or two, and usually will have follow ups long after deal is done (e.g. SpaceX and Palantir); success entails 50% to 100% year-over-year growth over a decade
- Personal sales: average sales between $10,000 and $100,000; usually the CEO won't have to do all the selling himself (e.g. Box, ZocDoc); challenge 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: the dead zone of the spectrum between personal sales (salespeople required) and traditional advertising (no salespeople required) with average sales around $1,000; no good distribution channel to reach the small businesses that might buy it; advertising would either be too broad or too efficient and the product needs a personal sales effort, which would require too many resources; distribution is the hidden bottleneck
- Marketing and advertising: relatively low-priced products that have mass appeal but lack any method of viral distribution; might use television commercials, newspaper coupons, and attention-grabbing product boxes (e.g. Procter & Gamble); advertising can work for startups when customer acquisition costs and customer lifetime value make very other

distribution channel uneconomical; startups should resist temptation to compete with bigger companies since no early-stage startup can match big companies' advertising budgets

- Viral marketing: products with core functionality that encourages users to invite their friends to become users too (e.g. Facebook, PayPal); both cheap and fast and can lead to chain reaction of exponential growth; ideal viral loop should be as quick and frictionless as possible; "whoever is first to dominate the most important segment of a market with viral potential will be the last mover in the whole market"

Power law of distribution – "If you can get just one distribution channel to work, you have a great business. If you try for several but don't nail one, you're finished."
Selling one's company to the media is a necessary part of selling it to everyone else
Never assume that people will admire your company without a public relations strategy
"If you don't see any salespeople, you're the salesperson."

<u>Chapter 12 – Man and Machine</u>
Q: 30 years from now, will there be anything left for people to do?
A: 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.
"Americans fear technology in the near future because they see it as a replay of the globalization of the near past." (e.g. cheaper Mexican substitutes) "But the situations are very different: people compete for jobs and for resources; computers compete for neither."
Globalization means substitution

- In theory, free trade means specialization and maximized wealth
- In practice, it's not unambiguously clear how well free trade has worked
- People compete to supply both labor and resources

Technology means complementarity

- Man and machine are good at fundamentally different things
- People form plans and make decisions in complicated situations (intentionality)
- Computers excel at efficient data processing
- Stark differences mean that gains from working with computers are much higher than gains from trade with other people
- Differences are even deeper on demand side

"Properly understood, technology is the one way for us to escape competition in a globalizing world. As computers become more and more powerful, they won't be substitutes for humans: they'll be complements."
Man-machine symbiosis
Case Study: Palantir

- A software company that helps people extract insight from divergent sources of information
- Knew before founding that FBI would be interested
- "Neither human intelligence by itself nor computers alone will be able to make us safe."
- Palantir aims to transcend opposing biases by having software analyze data the government feeds it and flagging suspicious activities for a trained analyst to review
- Has also helped with prosecuting insider trading, taking down cp, fighting foodborne disease outbreaks, and fraud detection

"Better technology in law, medicine, and education won't replace professionals; it will allow them do even more." (e.g. LinkedIn)
Q: Why do so many people miss the power of complementarity?
A: It starts in school, where software engineers tend to work on projects that replace human efforts, academics do specialized research and publish papers that respect the limits of a particular discipline, and computer scientists reduce human capabilities into specialized tasks that computers can be trained to conquer one by one.

Trendy fields in computer science all suggest substitution over complementarity:

- Machine learning – suggests that computers can be taught to perform almost any task, as long as we feed them enough training data
- Big data – companies believe that more data always creates more value, but “big data is usually dumb data”; computers can find patterns that elude humans, but they don’t know to compare patterns from different sources or how to interpret complex behaviors that only human analysts can (or in the future, perhaps generalized artificial intelligence)

“We have let ourselves become enchanted by big data only because we exoticize technology. We’re impressed with small feats accomplished by computers alone, but we ignore big achievements from complementarity because the human contribution makes them less uncanny.”
“The most valuable companies in the future won’t ask what problems can be solved with computers alone. Instead, they’ll ask: how can computers help humans solve hard problems?”
Future of computing is full of unknowns
Logical endpoint to substitutionist thinking is “strong AI”
Strong AI – computers that eclipse humans on every important dimension
“Strong AI is like a cosmic lottery ticket: if we win, we get utopia; if we lose, Skynet substitutes us out of existence.”
“Even if strong AI is a real possibility rather than an imponderable mystery, it won’t happen anytime soon: replacement by computers is a worry for the 22nd century.”
“Indefinite fears about the far future shouldn’t stop us from making definite plans today.”

Chapter 13 – Seeing Green

Start of 21st century – next big thing was clean technology
“So began the quest to cleanse the world. It didn’t work. Instead of a healthier planet, we got a massive cleantech bubble.”
Q: Why did cleantech fail?
A: Most cleantech companies crashed because they neglected one or more of the seven questions that every business must answer:

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

Any great business plan must address every one of these seven elements
Otherwise, you’ll run into lots of “bad luck” and your business will fail
Case Study: Cleantech

- The Engineering Question: Great technology companies should have proprietary technology at least an order of magnitude better than its nearest substitute, but cleantech companies rarely even produced 2x improvements, never mind 10x; companies must strive for 10x better because incremental improvements often end up meaning no improvement at all for the end user
- The Timing Question: Unlike the microprocessor industry, the solar industry was not a fast-moving market; entering a slow-moving market can be a good strategy if you have a definite and realistic plan to take it over, but cleantech companies did not
- The Monopoly Question: Energy is a trillion-dollar market, which means ruthless, bloody competition; exaggerating your own uniqueness is an easy way to botch the monopoly

question; cleantech entrepreneurs' thinking about markets was hopelessly confused; "you can't dominate a submarket if it's fictional, and huge markets are highly competitive, not highly attainable"

- The People Question: Energy problems are engineering problems, but failed cleantech companies were run by salesman-executives who were good at raising capital and securing government subsidies, but not at building products that customers wanted to buy; "At Founders Fund, we saw this coming. The most obvious clue was sartorial: cleantech executives were running around wearing suits and ties. This was a huge red flag, because real technologists wear T-shirts and jeans. So we instituted a blanket rule: pass on any company whose founders dressed up for pitch meetings."; "The best sales is hidden. There's nothing wrong with a CEO who can sell, but if he actually looks like a salesman, he's probably bad at sales and worse at tech."
- The Distribution Question: Cleantech companies often forgot about customers, but selling and delivering a product is at least as important as the product itself
- The Durability Question: Every entrepreneur should plan to be the last mover in her particular market; ask what the world will look like 10 and 20 years from now and how your business will fit in; few cleantech companies had a good answer; many blamed Chinese manufacturers, but was competition from Chinese manufacturers really impossible to predict?; cleantech also embraced misguided assumptions about the energy market as a whole, with the rise of fracking
- The Secret Question: Cleantech companies justified themselves with conventional truths about the need for a cleaner world, but great companies have secrets: specific reasons for success that other people don't see

Cleantech bubble was just one phenomenon in the history of social entrepreneurship
Philanthropic approach to business starts with idea that corporations and nonprofits are polar opposites and should be combined
"Social entrepreneurs aim to combine the best of both worlds and 'do well by doing good.' Usually they end up doing neither."
Problem is that whatever is good enough to receive applause from all audiences can only be conventional
Hundreds of undifferentiated products all in the name of one overbroad goal
Instead, doing something different is what's truly good for society
"The best projects are likely to be overlooked, not trumpeted by a crowd; the best problems to work on are often the ones nobody else even tries to solve."
Case Study: Tesla

- The Engineering Question: Tesla's technology is so good that other companies rely on it; their greatest achievement isn't any single part or component, but rather the ability to integrate many components into one superior product
- The Timing Question: Tesla CEO Elon Musk secured a $465 million loan from the U.S. Department of Energy under the Obama administration right before the subsidy question was politicized
- The Monopoly Question: Tesla started with a tiny submarket that it could dominate: the market for high-end electric sports cars; starting small allowed Tesla to undertake the necessary R&D and now, Tesla is in prime position to expand to broader markets in the future
- The People Question: Tesla's CEO is the consummate engineer and salesman, so it's not a surprise that he's assembled a team that's very good at both; Elon: "If you're at Tesla, you're choosing to be at the equivalent of Special Forces. There's the regular army, and that's fine, but if you are working at Tesla, you're choosing to step up your game."
- The Distribution Question: Tesla took distribution so seriously that it decided to own the entire distribution chain; it sells and services its vehicles in its own stores; the up-front costs

of Tesla’s approach are much higher than traditional dealership distribution, but it affords control over the customer experience, strengthens Tesla’s brand, and saves the company money in the long run
- The Durability Question: Tesla has a head start and is also moving faster than anyone else; Tesla’s coveted brand is the clearest sign of its breakthrough: a car is one of the biggest purchasing decisions that people ever make, and consumers’ trust in that category is hard to win
- The Secret Question: Tesla knew that fashion drove interest in cleantech and rich people wanted to appear “green”; so, Tesla decided to build cars that made drivers look cool, period (like Leonardo DiCaprio); “While generic cleantech companies struggled to differentiate themselves, Tesla built a unique brand around the secret that cleantech was even more of a social phenomenon than an environmental imperative.”

There is nothing inherently wrong with cleantech
The biggest idea behind it is right: the world will need new sources of energy
Cleantech gave people a way to be optimistic about the future of energy
Indefinitely optimistic investors betting on the general idea of green energy funded cleantech companies that lacked specific businesses plans was just like the dot-com bubble a decade earlier
“An entrepreneur can’t benefit from macro-scale insight unless his own plans begin at the micro-scale.”

Chapter 14 – 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? This chapter is about why it’s more powerful but at the same time more dangerous for a company to be led by a distinctive individual instead of an interchangeable manager.”
When plotting out where everyone’s traits falls, you’ll see a normal distribution
Since so many founders seem to have extreme traits, you might guess that a plot showing only founders’ traits would have fatter tails at either end
Strangest thing about founders is that founders can be at both ends at the same time (e.g. cash poor but millionaires on paper; oscillate between sullen jerkiness and appealing charisma)
“Almost all successful entrepreneurs are simultaneously insiders and outsiders. And when they do succeed, they attract both fame and infamy.”
When you plot out founders’ traits, you see an inverse normal distribution
This strange and extreme combination of traits comes from nature or nurture
Perhaps founders aren’t really as extreme as they appear and they exaggerate certain qualities, which leads to a cycle which starts with unusual people and ends with them acting and seeming even more unusual (e.g. Richard Branson, Sean Parker, Lady Gaga, Oedipus, Romulus)
“The famous and infamous have always served as vessels for public sentiment: they’re praised amid prosperity and blamed for misfortune.”
Scapegoats are like founders: extreme and contradictory figures
“Perhaps every modern king is just a scapegoat who has managed to delay his own execution.”
Today’s royalty are supposedly celebrities until they aren’t (e.g. Elvis Presley, Michael Jackson, Britney Spears)
“Perhaps the only way to be a rock god forever is to die an early death.” (e.g. Janis Joplin, Jimi Hendrix, Jim Morrison, Kurt Cobain)
Technology founders are similar to celebrities (e.g. Howard Hughes, Bill Gates)
Case Study: Steve Jobs
- Return to Apple demonstrated the irreplaceable value of a company’s founder

- The opposite of Bill Gates: Jobs was an artist, preferred closed systems, and spent his time thinking about great products above all else; Gates was a businessman kept his products open, and wanted to run the world
- Both were insider/outsiders, and both pushed the companies they started to achievements that nobody else would have been able to match
- Eccentricity backfired for Jobs when he was kicked out of his own company in 1985
- His return 12 years later shows how the most important task in business – the creation of new value – cannot be reduced to a formula and applied by professionals
- Introduced the iPod, the iPhone, and the iPad and Apple became the single most valuable company in the world

"A unique founder can make authoritative decisions, inspire strong personal loyalty, and plan ahead for decades."
"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."
"The single greatest danger for a founder is to become so certain of his own myth that he loses his mind. But an equally insidious danger for every business is to lose all sense of myth and mistake disenchantment for wisdom."

Conclusion – Stagnation or Singularity?

Q: 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?
A: We don't know anything specific, but we can make out the broad contours.
Nick Bostrom's four possible patterns for the future of humanity:

- Recurrent collapse: history as a never-ending alternation between prosperity and ruin
- Plateau: world converges toward plateau of development similar to life of the richest countries today
- Extinction: collapse so devastating that we won't survive it
- Takeoff: accelerating takeoff toward a much better future

Q: Which will it be?
A: Recurrent collapse seems unlikely, a plateau likely couldn't last, the other two are possible. Perhaps we'll have the Singularity.
"But no matter how many trends can be traced, the future won't happen on its own. What the Singularity would look like matters less than the stark choice we face today between the two most likely scenarios: nothing or something. It's up to us. We cannot take for granted that the future will be better, and that means we need to work to create it today."
"Whether we achieve the Singularity on a cosmic scale is perhaps less important than whether we seize the unique opportunities we have to do new things in our own working lives. Everything important to us – the universe, the planet, the country, your company, your life, and this very moment – is singular."
"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."