Zero to One (2014, 210pp)

Notes on Startups *or* How to Build the Future
Peter Thiel *with* Blake Masters

A Summary

Preface

Zero To One (ZTO) is about how to create companies that invent new things. While there is no preset algorithm for doing so, there are many patterns that Peter Thiel has noticed, thanks to his background as founder of Paypal, Palantir and as the first investor in Facebook.

According to him, the single most important pattern is that successful entrepreneurs locate value in unusual settings, helped by their ability to think from first principles, not algorithms.

Chapter 1 - The Challenge of the Future

Peter Thiel has a question that he always asks when he interviews "What important truth do very few people agree with you on?" He uses the question to evaluate how closely the candidate can look into the future.

Thiel considers the future as a time when the world looks different from what it is presently, not just a time event ahead of us. If so, then answers to the above question are essentially different ways of looking at the present; and good answers are thus the closest we can come to looking into the future.

Thiel envisions two kinds of progress – this is detailed in the table below

0 → 1	Vertical or Intensive Progress	"Doing new things"	Innovation or Technology	Silicon Valley
1 → n	Horizontal or Extensive Progress	"Copying things that work"	Globalization	China

New technology is usually pioneered by startups. Transformational ideas rarely emerge in large companies, thanks to bureaucracy and vested interests. And rarely do we find a superstar individual who can pioneer an industry sector. Usually it is in a startup that we find a number large enough to get things done, and small enough to be able to do it. Thiel defines a startup as "the largest group of people you can convince of a plan to build a different future".

Chapter 2 – Party Like it's 1999

The 2000 dot-com crash scarred survivors, leading them to assume 4 big take-aways that have become a dogma of sorts for startup entrepreneurs.

1. Take small, incremental steps
2. Stay lean and flexible – iterate continuously
3. Improve on the competition
4. Focus on product over advertising and sales

According to Thiel, the opposite rules are more appropriate today

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

(*quoted verbatim from the book*)

Thiel urges entrepreneurs to cast away past dogmas in favour of principles that are freshly thought-through, and not merely over-reactions to past events.

Chapter 3 – All Happy Companies Are Different

Thiel puts a spin on Tolstoy's famous lines from Anna Karenina "All happy families are alike; each unhappy family is unhappy in its own way", elaborating that in business a happy company is one that solves a distinctive problem and thus earns for itself a monopoly. All failures in business are similar; they are companies that could not go from 0 → 1, unable to break away from competition.

Thiel contrasts companies as either creative monopolists or competitive businesses. He gives the example of Google – a monopoly in search vs Airlines, who are in a severely competitive business. Google with revenues of $50b in 2012, made over $10b in profits, over 100 times the Airline industries profits, even though the Airline industry made over 3 times Google's revenues.

In this regard, Thiel states that it is important not just to create value. You need to capture value as well. Your company shouldn't end up creating value (XEROX Parc) without you being able to capture it.

Getting back to monopolies, which have a bad rap in today's world. This comes from the older perception of monopolists as price-fixers ruthlessly

squeezing money out of its hapless customers. In contrast the new Creative Monopolies such as Google, Facebook, Twitter are innovative firms that owe their monopoly status to their ability to invent and build entirely new products and business models. They are aware that if they stop innovating, they could cede leadership to entirely new products and business models, as Microsoft has found its monopoly status in Desktop Operating Systems mattering less and less as the Cloud and Mobile take centrestage.

Thiel gives an interesting contrast between Competitive Businesses, which exaggerate their uniqueness by describing their business as the intersection of various smaller spaces
Online ∩ Laundry ∩ India
Whereas a Creative Monopolist hides his monopoly status by describing himself as a small fish in a big pond – he does so by describing his market as a union of many other larger markets
Electric ∪ Automobile

Chapter 4 - The Ideology of Competition

Thiel provides examples of competition between companies that results in dissipation of energies and profits, and loss of value – Microsoft vs Google, battle between Square and other mobile credit card readers, Oracle vs Siebel etc. He argues that if you are stuck in a competitive stalemate with a rival, then it may be better to merge as he did himself (PayPal merged with X.com, a fierce rival in ‘00).

In the chapter, Thiel quotes a passage from Hamlet which he interprets as follows “For Hamlet, greatness means willingness to fight for reasons as thin as an eggshell: anyone would fight for things that matter; true heroes take their personal honour so seriously that they will fight for things that don’t matter. This twisted logic is part of human nature, but it’s disastrous in business.”

Chapter 5 - Last Mover Advantage

Thiel contrasts the diverging fortunes of *The New York Times* (NYT) and Twitter. Even though NYT is profitable while Twitter is not, the former’s marketcap is a fraction of the latter. Why is this so? Because, financial markets value a business that can generate sustained cash flows in the future. Business such as NYT and other newspapers are expected to see declining cash flows in the coming years, whereas Twitter is expected to see rising cash flows given its monopoly status. Thiel illustrates this

through the example of extremely competitive businesses such as restaurants, which see healthy cash flows today, but will see sharp drops once customers ditch them for the next new one.

Typically internet businesses lose money for the first few years – they may have to forgo revenue to acquire customers, and thus obtain a monopoly position etc – therefore most of their value comes 10-15 years into the future. Thiel illustrates this through the example of Paypal – in 2001, when Paypal was just over 2 yrs old, about 75% of its value was expected to come from 2011 onwards. Thiel states that this has actually turned out to be an understatement. It still has so much growth left that today most of its value is expected to come from 2020 and beyond.

To be genuinely valuable, a company must not only have rising future profits, but it should also endure so as to capture that value. Thiel cites Groupon and Zynga as examples of fast-growing businesses that ran out of gas. Their focus on near-term growth distracted them from key strategic issues that impacted the durability of their business models.

How does one find out if your business can sustain rising cash flows far into the future? Typically, these are businesses with the following four characteristics

- Proprietary technology (google's search algorithm, amazon's inventory management system and process etc) which Thiel says has to be at least 10x better than your competitor's; else it will be seen as a marginal improvement
- Network effects; The paradox of network effects is that they need to start small, and thus have to be especially valuable to use for the first few users, who will not otherwise sign on to a nascent network with very few users. Thus the initial market sizes are so small, and given of the focus on catering to a niche, there do not appear to be much of a business opportunity. Thus these markets do not attract mainstream players (and MBAs, Thiel says)
- Economies of scale: A good startup should have economies of scale built into its design. This is particularly true of software startups, especially platforms. Services businesses such as restaurants are the opposite of this.
- Branding

Businesses that combine brand, scale, network effects and proprietary tech will typically be monopolies of some kind. All monopolies start small, serving the needs of a small group very effectively, and thereby monopolizing the services or wallets of this small group when it comes

to a particular need. As Thiel says “the perfect target market for startups is a small group of concentrated consumers served by none to few competitors”.

Once this niche market is dominated, Thiel says, the scale effects enable you to expand your business into adjacent markets. Amazon is the ur-example in this regard, parlaying its initial dominance of niche categories such as books and CDs into cracking open bigger categories such as electronics, grocery etc.

Companies which “dominate a small niche and scale up” smartly can by playing their cards right become the last mover in a market – “make the last great development in a specific market and enjoy years or decades of monopoly profits”. This is what Thiel terms as ‘Last Mover Advantage’.

Chapter 6 - You Are Not a Lottery Ticket

Despite the protestations of successful billionaires such as Warren Buffett and Bill Gates that they were fundamentally lucky, and notwithstanding the theories of Malcolm Gladwell et al, Thiel believes that success is never accidental.

From here, Thiel segues to our attitudes about the future. He classifies this in the form of a 2x2 matrix where he contrasts Optimism with Pessimism on one axis and Definite Outlook with Indefinite Outlook on the other axis, and cites examples of cultures who hold those attitudes.

	Definite Outlook	Indefinite Outlook
Optimistic	U.S. 1950s-60s	U.S. 1982 onwards
Pessimistic	China today	Europe today

An indefinite pessimist has a bleak view of the future and doesn’t know what to do about it. He waits for the future (decline) to happen, and in the meantime makes merry (Thiel cites Europe’s vacation mania as an example). A definite pessimist in contrast prepares relentlessly for the bleak future.

The definite optimist is one who believes the world will be better provided he plans for it. He is also clear as to what the way forward is. Contrast this with today’s attitude of the future – we know it will be better but we don’t have any grand plans – we prefer to take it as it comes.

Thiel elaborates two interesting consequences of this attitude

- Keeping options open: At every stage, from education to working life, the elite desire to have maximum degrees of freedom because they have no definite plan. A Liberal Arts degree from Yale, a couple of years at McKinsey followed by a MBA from Harvard is desired precisely because it allows the protagonist to keep options open for any sort of career.
- Indefinite Finance: Unlike Definite Optimism, which calls for Engineers and Scientists to execute clear visions (build settlements in space, explore the oceans etc), Indefinite Optimism demands a large number of Finance professionals and lawyers. In Indefinite Optimism, the investor has no clear plan to make money. He hands over the money to his bank, who gives it to a PE investor who invests the same in a company…at every stage money is dealt with as an abstraction, with no links to the real economy. Given this a large multi-layered Financial Industrial Complex has emerged along with a large number of advisors, lawyers, wealth managers to manage this process.

Thiel moves on to contrast Biotech and Software startups, and elaborates as to why Biotech startups haven't given as good returns as Software startups have. He proposes that the core reason why Biotech startups have yielded poor returns is their attitude of Indefinite Optimism. As an illustration of this, he cites how Professors become part-time consultants instead of full-time employees, reflecting their indefinite attitude.

Here Thiel attempts an answer to the query "How can the future get better if no one plans for it?" – The answer he says is simple. This is nothing but evolution: after all that is what "progress without planning" is. And it works. But Thiel doesn't agree that Darwinism is an ideal model to follow for startups. Intelligent Design is a better model according to him – "after all why would a startup work without a plan to make it happen?"

Thiel elaborates on the concept of Business Design, which is built and sustained through careful long-term planning. Apple is the ur-example of business design. The full consequence of the iPod – which served to be the Trojan Horse to bring people into the Apple ecosystem – would not be understood till years later.

Thiel illustrates the significance of long-term planning through the example of Yahoo's $1b offer for Facebook in '06. Zuckerberg had a clear long-term plan for FB, and in that context did not see Yahoo's offer as anywhere near the correct offer. "Founders only sell when they have no

more concrete visions for the company, in which case the acquirer overpaid", says Thiel. Thus a startup with a founder who has a clear long-term plan becomes very hard to value correctly. Only by dramatically over-paying can it be acquired.

Chapter 7 - Follow the Money

Small minorities often achieve disproportionate results, as expressed by Pareto's Principle (80:20 rule). This stark pattern in which a small few radically outstrip all rivals, surrounds us everywhere. The biggest cities dwarf all towns put together. Monopoly businesses capture more value than millions of undifferentiated competitors put together. The power law (exponential equations define severely unequal distributions) is the law of the universe.

An example power-law graph, being used to demonstrate ranking of popularity. To the right is the long tail, and to the left are the few that dominate (also known as the 80–20 rule).

In venture capital, a few of the investee companies attain exponentially greater value than all others. In fact, the biggest secret in a VC fund is that the best investment in a successful fund equals or outperforms the entire rest of the fund combined. This is why when VCs invest, they have to invest only in companies that have the potential to return the entire fund. Of course, no one can know with any certainty which companies will succeed, so even the best VC firms end up with a portfolio of diversely successful companies, but every single co in a good VC fund must have the potential to succeed at vast scale.

An interesting corollary to the above rule is that whenever they invest they have to put a lot more money into any company worth funding. Why? Here Peter Thiel cites the example of Andreessen Horowitz's $250K early in Instagram, leading to a $78m return – 312x – when Facebook acquired Instagram. The real tragedy is that AH was unable to put in more money into Instagram in later rounds due to a conflicting

investment. Because AH has a $1.5b fund, they would have had to find 19 Instagrams just to break even on the overall fund. Hence VCs must find the handful of companies that go from 0 to 1, and then back them with every resource.

Thiel cites examples of how the power law plays out – the top dozen tech cos were all venture-funded. Together these 12 cos are worth more than $2trillion, worth more than all other tech cos combined.

Venture capitalists who understand power laws make as few investments as possible. They don't try to build a diversified portfolio, unlike what conventional financial wisdom says. Rather their portfolio is the end result of the paths that high-potential companies take.

Graduates entering the workforce would do well to understand the implications of the power law, which states that differences between companies will dwarf the differences in roles inside companies. Hence joining Google as the 1,000th employee ending with 0.01% of the co will make you $35m, much more than if you owned 100% of a failing startup. If you are a graduate entering the workforce, even if you are extraordinarily talented, you should not necessarily start your own co. People who understand the power law well will hesitate to start a new co, knowing that they could become tremendously successful by joining the best co while it is growing fast.

If you do start your co, then remember the power law. One market will probably be better than all the others. One distribution strategy will dominate all others, some moments will matter more than all others etc etc.

Chapter 8 - Secrets

The business corollary to the contrarian question "What important truth do very few people agree with you on?" is "What valuable company is nobody building?" Every correct answer to this last question is a secret – something important and unknown, something hard to do but doable.

There are two kinds of secrets – secrets of nature and secrets about people. To find secrets of nature one must find some undiscovered aspect of the physical world. To find secrets about people, you must find things that people didn't know about themselves, or things that they hide because they don't want other people to know.

So when thinking about what company to build, there are two distinct questions to ask : what secrets is nature not telling you? What secrets are people not telling you.

Thiel illustrates how we could look for secrets. Most people think only in terms of what they have been taught. And school only imparts conventional wisdom. So ask yourself: are there any fields that matter that haven't been standardized and institutionalized? Nutrition, Fitness come up as possibilities. The entire space of wearables measuring activity (FuelBand, Up) could be seen in terms of using tech to measure a previously non-standardized space.

Every great business is built around a secret that is hidden from the outside. A great company is a conspiracy to change the world; when you share your secret, the recipient becomes a fellow conspirator. So make sure you share your secrets wisely.

Chapter 9 – Foundations

The founding moment of a company 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.

If you mess it up at the start, it is usually difficult to set it right later. Thus Thiel's Law : "a startup messed at its foundation cannot be fixed".

What are the key things that you need to get right?

1) Founding team: when you start something, the most crucial decision you make is whom to start it with. It is almost like getting married. Founders should share a prehistory before they start a co together. Else it is like rolling dice.
2) Align ownership, possession and control:
    a. Ownership: who holds the equity? (Founders)
    b. Possession: who actually runs the co on a day-to-day basis (Managers)
    c. Control: who formally governs the co's affairs? (Board of Directors)

    Misalignment could happen when the mangers have very low equity stakes in the co, e.g., in large corporates, managers are incentivized to reward themselves through the power of possession (posting good quarterly results to maintain high salaries) than through the power of ownership (typically by

creating long-term value realized through increase in value of stake).

In startups typically the founders and managers are the same. The conflict is usually between founders + managers and the board. That is why it is critical to chose wisely. Keep the board small. 3-5 is ideal! A huge board merely gives cover for the microdictator who actually runs the organization.

3) Align compensation: Anyone who doesn't own stock options and is involved full-time is fundamentally misaligned. They will be biased to claim value in the near term, not help you create value in the future.

   The CEO or C-level executives should be purposely cash-poor (paid low salaries). Cash is attractive, and it offers pure optionality; once you get your paycheck you can do what you want with it. High cash compensation (even stuff like bonuses) will encourage workers to claim value from the co as it already exists instead of investing their time to create new value in the future. Equity orients them to create value in the future, and to incentivize them to think long-term. There is no better tool.

   Thiel cites the example of Box.com's Aaron Levie, who paid himself the lowest salary in the co. As a consequence, he was living in a 1BHK with just a mattress. Every employee noticed his commitment to the co and emulated it. If a CEO doesn't set an example by taking the lowest salary in the co, then he can do the same thing by drawing the highest salary. Provided the figure is still modest, it sets an effective ceiling on cash compensation.

4) On equity compensation, Thiel says that to create commitment than conflict, never allocate it equally. All individuals have different opportunity costs, skills and abilities. So granting equal shares will seem arbitrary not fair. And never make it public. Why? To avoid resentment between employees. These will naturally arise. A secretary who joins in the early stages of a co will have more stock options than a senior engineer who joins 3 yrs later closer to the IPO. Keeping that info secret avoids a lot of pain.

The ideal startup, according to Thiel, will keep extending its founding. By this, he means that it will keep an openness to invention and creating new things. Founding lasts as long as a co is creating new things, and it stops when creation stops. A great startup not only gets its founding

right, it also steers its distant future towards the creation of new things instead of the stewardship of inherited success. Google is a great example of a startup that has extended its founding indefinitely through creating Android, Glass, Calico etc.

Chapter 10 – The Mechanics of Mafia

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. Thiel cites the example of Paypal and the resultant Paypal Mafia as an example of strong culture that has transcended an entire co.

The Paypal culture was built on effective recruitment, not merely of the most talented engineers, but of those who got along effectively with one another. "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". In addition, these engineers were excited about the mission of the co specifically. All this combined to build a powerful culture and a powerful company.

Thiel encourages startup founders to ask the question: Why should the 20th employee join you rather than join Google for more money and prestige? The bad answers are – you will make a billion here or make more on your stock options than in Google. But every co makes these claims, so yours will not stand out. The right answer is specific to your co – its mission, and perhaps the team. If your mission is compelling, and if they are excited about working with your team, they will come aboard. The right person wont be excited by your perks alone – she is excited by the opportunity to do irreplaceable work on a unique problem alongside great people.

Max Levchin, Thiel's co-founder at PayPal says that startups should make their early staff as personally similar as possible. Startups have limited resources and small teams where everyone needs to work quickly and efficiently, and this is easier to do when everyone shares an understanding of the world. Thiel states "From the outside, everyone in your company should be different in the same way".

Thiel likens successful startups to one step short of cults with their near-total dedication to their mission, than consulting companies like Accenture which have no distinctive mission of their own and have

consultants dropping in and out of companies to which they have no long-term connection whatsoever.

Thiel states that, “on the inside, every individual should be sharply distinguished by her work”. When assigning responsibilities to employees in PayPal, he states that he made every person in the company responsible for doing just one thing. Every employee’s one thing was unique – this simplified the task of managing people – but more importantly he noticed that defining roles reduced conflict. Job definitions are typically more fluid at startups. Eliminating competition between employees made it easier for everyone to build long-term relationships and overcome factionalism etc.

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

Silicon Valley is biased towards Engineers. And Engineers dislike Salesmen. All Engineers think their products sell themselves automatically. But this isn’t true.

At the root of Engineers’ (and ours) dislike towards salesmen is the belief that salesmen are not transparent; that they lie. There is a bit of truth in this – salesmen are here to persuade us, not to be sincere. But like good acting, sales works best when it is hidden. And there is a wide range of sales ability – at the apex are ‘sales grandmasters’ – so smooth that you do not even know that they are selling you something.

Curiously no sales person will have a title with sales in it…they are either account execs or business development managers or bankers etc. “No one wants to be reminded when we are being sold.”

The Engineer’s holy grail is a product that sells itself. But the best product doesn’t always win. Economists attribute this to path dependence – specific historical circumstances independent of objective quality can determine which products enjoy widespread adoption, such as QWERTY keyboard layouts.

Superior sales & distribution by itself can create a monopoly, even with no product differentiation. But the converse is not true. No matter how strong your product, you need to support it with a strong distribution plan. Thiel suggests that distribution methods can be viewed along a continuum.

Viral Marketing	Marketing	**Dead Zone**	Sales	Complex Sales
CAC: $1	CAC: $100		CAC: $10K	CAC: $1m
Consumers		*Small Business*		*Corporates, Government*

By CAC, Thiel means Customer Acquisition Cost. This must never exceed the Customer Lifetime Value – the total net profit that you earn on average over the course of your relationship with the consumer.

In complex sales, the CEO / Founder needs to be involved in selling. It can't be left to VP of Sales alone. Startups in this space grow slower (50-100% yoy growth over a decade) than consumer-based startups.

For products in the $1-100 CAC range, advertising + marketing is a good option, though in no way should startups even consider matching larger companies' budgets. It typically works for low-priced products that have mass appeal but ack any method of viral distribution.

A truly viral product is one whose core functionality encourages users to invite their friends to join too – such as messaging apps. Whoever is the first to dominate the most important segment of a market with viral potential will typically be the last mover in the market. There is no catching up after that.

One of the above sales or distribution methods will turn out to be the most critical of all (distribution methods follow a power law too). Founders need to be aware that kitchen sink approaches won't work. If you can get just one distribution method to work perfectly, you will have a great business.

Companies need to sell more than just the product. They have to sell themselves to investors, to potential employees, and to media.

Chapter 12 – Man and Machine

In this chapter Thiel asserts that many people see technology as substituting people. In fact, he says it is best to see tech as a complementarity. It is also the path to building a great business, as he quotes examples from PayPal, LinkedIn, Palantir etc who have used tech to augment human efforts and intelligence. He states – the most valuable companies in the future wont ask what problems can be solved with computers alone. They will instead ask how can computers help humans solve hard problems.

Chapter 13 – Seeing Green

In this chapter, Thiel uses the failure of the cleantech industry to examine 7 key questions that every business should answer if they are to succeed. He contrasts the failure of most Cleantech companies with the success of Tesla, amongst the few cleantech companies to become a success. These 7 questions are

1. The Engineering Question – Can you create breakthrough technology instead of marginal improvements?
   A great tech co should have proprietary tech that is at least 10x better than its nearest substitute because merely incremental improvements aren't enough to overcome switching costs and convincing costs (people generally don't believe claims and incremental claims rarely).
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?
   Thiel has an interesting thumb rule he applies (he came upon this from his cleantech investing experience) to all tech companies – never invest in a tech co whose founders dress up for pitch meetings. Why? Because the best sales is hidden. There is nothing wrong with a CEO who can sell, but if he looks like a salesman, then his sales is likely poor, and his tech worse.
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 or 20 years into the future?
7. The Secret Question – Have you identified a unique opportunity that others don't see?

Chapter 14 – The Founder's Paradox

Thiel uses this chapter to look at the personality of founders, from Sean Parker to Richard Branson, from Zuckerberg to Bill Gates. Founders are at the extremes of human personalities, and they inspire strong reactions. Rarely will you have a loved, humble founder.

Thiel concludes by stating that a unique founder (a la Steve Jobs) can make authoritative decisions, inspire strong personal loyalty, and plan ahead for decades. Paradoxically, he says, bureaucracies can last longer than founders do, but they act with shorter horizons.

Thiel states that business needs founders. He asks us to be "more tolerant of founders who seems strange or extreme: we need unusual individuals to lead companies beyond mere incrementalism."