Peter Thiel's CS183: Startup - Class 6 Notes Essay

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Here is an essay version of my class notes from Class 6 of CS183: Startup. Errors and omissions are my own. Credit for good stuff is Peter's entirely. This class was kind of a crash course in VC financing. I didn't include all the examples since you can learn more about VC math elsewhere, e.g. here or here. As usual, though, I've tried to include all the key insights from the lecture.

CS183: Startup—Notes Essay—Thiel's Law

I. Origins, Rules, Culture

Every company is different. But there are certain rules that you simply must follow when you start a business. A corollary of this is what some friends have (somewhat grandiosely) called Thiel's law: **A startup messed up at its foundation cannot be fixed**.

Beginnings of things are very important. Beginnings are qualitatively different. Consider the origin of the universe. Different things happened then than what we experience in everyday life. Or think about the origin of a country; it necessarily involves a great many elements that you do not see in the normal course of business. Here in the U.S., the Founders generally got a lot of things right. Some things they got quite wrong. But most of the time they can't really be fixed. Alaska has 2 senators. So does California. So Alaska, despite having something like $1/50^{th}$ of California's population, has equal power in the Senate. Some say that's a feature, not a bug. Whatever it is, we're likely to be stuck with it as long as this country exists.

The insight that foundings are crucial is what is behind the Founders Fund name. Founders and founding moments are very important in determining what comes next for a given business. If you focus on the founding and get it right, you have a chance. If you don't, you'll be lucky at best, and probably not even that.

The importance of foundings is embedded in companies. Where there's a debate or controversial claim at Google, one says, "The Founders have scientifically determined that *x* is true," where *x* is his preferred position. If you think that certain perks should be extended since happy people are the most productive, you say that Larry and Sergey have already settled the matter. The point is that all the science is done at the founding. No new data can interfere with the founding moment.

Foundings are obviously temporal. But how long they last can be a hard question. The typical narrative contemplates a founding, first hires, and a first capital raise. But there's an argument that the founding lasts a lot longer than that. The idea of going from 0 to 1—the idea of *technology*—parallels founding moments. The 1 to *n* of globalization, by contrast, parallels post-founding execution. It may be that the founding lasts so long as a company's technical innovation continues. Founders should arguably stay in charge as long as the paradigm remains 0 to 1. Once the paradigm shifts to 1 to *n*, the founding is over. At that point, executives should execute.

There is, of course, a limit to how much you can do with rules. Things can and will break down even with perfect rules. There is no real chance of setting things up correctly such that the rest unfold easily. But you

should still get the early stuff as right as possible.

Consider a 2 x 2 matrix. On one axis you have good, high trust people and then you have low trust people. On the other axis you have low alignment structure with poorly set rules, and then a high alignment structure where the rules are well set.

Good, high trust people with low alignment structure is basically anarchy. The closest to this that succeeded is Google from 2000 to maybe 2007. Talented people could work on all sorts of different projects and generally operate without a whole lot of constraints.

Sometimes the opposite combination—low trust people and lots of rules—can work too. This is basically totalitarianism. Foxconn might be a representative example. Lots of people work there. People are sort of slaves. The company even installs suicide nets to catch workers when they jump off the buildings. But it's a very productive place, and it sort of works.

The low trust, low alignment model is dog-eat-dog sort of world. People who you might not trust can do a lot of whatever they want. An investment bank might be a good example. It's best to avoid this combination.

The ideal is the combination of high trust people with a structure that provides a high degree of alignment. People trust each other and together create a good culture. But there's good structure to it, too. People are rowing in the same direction, and not by accident.

Equity is one of the key ways to think about alignment in startups. Different groups share in a company's equity. Founders obviously get a stake. First they have to figure out how to allocate the equity amongst themselves. Angel investors also get equity. Early employees and advisors get equity. Later, series A investors will invest for equity too. And then you have your option pool. As this structure is built out and equity division occurs, the key is to think about how to get all the stakeholders aligned so that the company can succeed.

In this calculus, one factor dominates all others. That factor is whether the founders are aligned with each other. This is key both in terms of structure and company culture. If the founders are in sync, you can move on to the rest of the equation. But if they aren't, it will blow up the company. Nothing will work. This is why investors should and do focus so much on founding teams. Everything matters. How well the founders know each other matters. How they interact and work with each other matters. Whether they have complimentary skillsets and personalities matters. This set of questions is very important. Any fissures in the founding team will be amplified later on.

One of Peter Thiel's first investments was in a company that Luke Nosek was starting back in 1998. The investment didn't go very well. Luke had met someone at a networking event and they decided to start a business together. The problem was that they had very different perspectives. Luke was this sort of chaotic, brilliant thinker. The other guy was very "by the books"—the kind of guy who had deliverables. It was doomed to fail. In a way choosing co-founders is like getting married. Getting married sometimes makes sense. But getting married to the first person you meet at the slot machines in Vegas probably doesn't. You might hit the jackpot. But chances are you won't. Good relationships amongst founders tend to drive a company's success. The question of the founding team is thus the single most important question in assessing an early startup. There are a couple different versions of it. How do the founders split up equity amongst themselves? How well do they work together?

II. You Should Be a Delaware C-corp.

A very important preliminary question is how you should set up your company. This isn't a hard question.

You should set up as a Delaware C corporation. That is the right answer. You incorporate to achieve separation of your personal affairs and company affairs. You want to create a structure where you can let other people in, sell equity, etc. And incorporating can give you a lot more legitimacy. A business group called "Larry Page and Friends" might work today. It would not have worked in 1997. Give yourself the basic structure you'll need.

There are different kinds of corporations. None is better for startups than C corporations. S corporations are good for tightly held businesses. There can be just one class of shareholders; there is no preferred vs. common stock. You can't have stock options. There are limits to the number of shareholders you can have. And you can't go public. So S corps are only good for companies that won't scale beyond a certain point. LLCs are more similar to C corps. But there can be problems when you want to issue preferred stock, grant options, or go public. In theory you can get specially drafted agreements to do all these things. In practice it doesn't work so well.

The big disadvantage for C corps is double taxation. You pay taxes on corporate income and then personal income too. Suppose your C corporation earns $100. The U.S. corporate tax rate is 39.2%. So $39.20 goes to the government right away. Now you have $60.80 in net income. But the U.S. individual income tax is 35% at the highest tier. That amounts to $21.28. So you end up with $39.52 if you are a sole proprietor. LLCs and some other non-C corporate entities are singly taxed entities. This is why consulting firms and law firms aren't usually C corporations.

The big advantage of C corps is that exits are easier. You can take them public. They are also easier to sell. Chances are anyone that acquires you will also be a C corporation. That means that they're already used to being doubly taxed, and, regardless of your corporate form, they are evaluating your business as if it were already double taxed. So being an LLC doesn't make you a more attractive acquisition target. You might as well just be a C corp.

Over 50% of C corporations get incorporated in Delaware. There are many reasons for this. Delaware business law is clear and well-understood. Its chancery courts are fast and predictable. The judges are pretty good. And there's some signaling too; everybody sort of does it, and most everybody thinks it's a good thing to do. You can just take it on faith that you want to be a Delaware C corporation.

III. Ownership, Possession, Control

As a founder, you must always be thinking about how and why things may get misaligned. Your job is to prevent misalignment from happening and fix it where it does. One framework to help think about misalignment distinguishes between ownership, possession, and control. These are related categories, but the differences are important. Ownership is who actually owns the company. This means who has equity and in what amounts. Possession is who operates the company. That is, who, on a day-to-day basis, is making decisions and doing stuff in company offices. You might think of possession as relating to job titles. Finally, control is who exercises control over the company in a formal sense. Control lies with the various people you put on your board, most of whom really don't know your business that well.

Consider a political analogue using this framework. Say you have to go to the DMV to get your drivers license. In some sense, you, as a voter, control the government, and the DMV is a part of the government. Voters elect government people. Those people appoint other people. Presumably you had some indirect control on who becomes the head DMV bureaucrat.

But that head bureaucrat isn't who you talk to after you wait in line. You have to talk to the people in possession: the window clerks and managers who actually run the DMV. They are the people who possess the ability to help you or not. You can tell them they suck. You can remind them that, under the theory of representative government, you are their boss. But that may not work very well. There is a misalignment

between control and possession. It may not be a catastrophic one, but it is representative. Misalignment often happens when dealing with bureaucrats in government or, say, senior managers in the business world.

In many parts of the world, it's hard to separate ownership, possession, and control. That makes it really hard to set up viable businesses. If a majority owner also exercises exclusive control, there are no real benefits to being a minority shareholder, so there are no minority shareholders. You end up with all these entities that could have been a lot better had people been able to separate out these elements.

That is not to say that things are easy when you do separate ownership from possession from control. Serious misalignments can happen between these groups, as the DMV example suggested, and even within these groups as well. Things can get messy quickly.

Suppose you start a company. You are the sole founder. You have 100% ownership, possession, and control. Assuming no multiple personality issues, everything is fully aligned. But adding even a single co-founder is possible source of imbalance. That may open you up to serious disagreements about how to exercise ownership, possession, and control. Since now there are only two of you, you are still mostly aligned. But the more people you add, the more complex it gets. Employees tend to have lots of day-to-day possession, small ownership stakes, and very minimal control. But issues arise if they're not happy with their ownership or control pieces. Things are even trickier when you add investors to mix.

IV. Founders and Employees

A. Equity Alignment

Your initial task is to try and achieve alignment between founders, employees, and early investors. In tech startups, equity is the classic alignment tool. Equity is critically important because it is the thing that everybody has in common. Since everyone benefits from an increased share price, everyone tries to increase the share price. It's hard to overstate the importance of equity in forging the long-term perspectives that matter most.

The flipside of that is that bonuses and cash salaries produce opportunities for misalignment. Salary caps are very important. A categorical rule of thumb that Founders Fund has developed is that no CEO should be paid more than $150k per year. Experience has shown that there is great predictive power in a venture-backed CEO's salary: the lower it is, the better the company tends to do. Empirically, if you could reduce all your diligence to one question, you should ask how much the CEO of a prospective portfolio company draws in salary. If the answer is more than $150k, do not invest.

The salary issue is important because when CEOs get low salaries, they believe that their equity will be worth a lot and they try to make it happen. That effect extends to the whole company because capping CEO pay basically means capping everyone's pay. You create an equity-focused culture. Contrast that with the CEO who gets $300k per year. When something goes wrong in that salary-heavy culture, there is no course correction. The CEO's incentive is to keep his well-paying job, not fix things. If the CEO had a much lower salary, issues would get raised very quickly. Low pay is simply good incentive alignment.

B. Get On Board or Don't

Another important insight is that people must either be fully in the company or not in it at all. As Ken Kesey said on his bus tour proselytizing LSD use in the '60s, "Now you're either on the bus or off the bus." Being part-time, holding other jobs, or bringing on consultants or advisors to do important work are big red flags because those arrangements are very misaligning. It's hard to imagine any of those people caring about the equity as much as they need to.

As always, there are exceptions. Peter didn't invest in YouTube in the summer of 2005 because all the guys were working on it part-time. Then things took off quickly and Sequoia wound up getting (or taking, depending on your perspective!) the investment. But the general rule stands. You need to think carefully and then either get on the bus or not. And if you do get on a bus, you should get on the *right* bus.

C. Vesting and Time

How the equity you give people vests over time is key. You don't want to grant it all at once, since then they could just get it and leave. The standard is to have it vest over 4 years, with 25% vesting at a 1 year cliff, and then with 1/48th vesting each month for the 3 years after that. This means that if people don't work out before putting in a whole year, they get no equity. Often you still give them the fraction they earned, so long as they didn't cause a bunch of trouble. But once they're there a year, they have their 25% and the rest accrues gradually.

Founders need vesting schedules too. It's not ideal to have founders who are fully vested from the outset. One founder might decide to quit. If he's fully vested, the co-founder would be stuck working for 2 people. In practice, things are structured so that part of founders' equity vests immediately. They might have 20-25% vest as credit for the work they've done up to the first round of financing. But the rest should vest over time.

Consultants either get cash or equity that vests right away. But you should never hire any consultants. The equity reason is that immediate vesting produces bad incentives. The non-equity reason is that consultants break the bus metaphor. Everyone needs to be on board, rowing really hard in the same direction.

V. Equity

There are several different forms of equity. There is common stock, which is basically a simple fraction of ownership in a firm. It is typically expressed in number of shares. But that number itself is meaningless. Number of shares is just the numerator. You also need to know the number of shares outstanding, which is the denominator. Only the percentage of firm ownership matters. 200k/10m is the same as 20m/2bn. 2% is 2%.

A stock option is the right to buy a share of a company's stock for a set price at some point in the future. Its exercise price is its purchase price, set at the time the option is granted. The exercise price is typically set at or greater than FMV at the time of the grant to avoid an immediate tax event; if FMV is $20 and you price an option at $10, the $10 in value that you're giving is taxable compensation. Pricing options at FMV ensures that they are worth zero on day one.

Options also have an expiration date, after which they expire. The idea is that the options become more valuable if the company goes up in value between the grant and the expiration date. If that happens, the option holder gets to buy at the exercise price, and realizes a gain of the FMV at expiration minus that exercise price. In theory, this is super aligning, since the options could be quite valuable if the company has done well in the interim.

There are two different types of options. Incentive Stock Options, also called ISOs or qualified options, must expire 10 years after being granted or 3 months after employees leave the company. This has the effect of locking employees in. If they leave, they have to decide whether to exercise soon. ISOs are also good for individuals because they have favorable tax characteristics. Any option that's not an ISO is an NSO. With NSOs, all gains up until exercise are treated as ordinary income.

Finally, there is restricted stock, which is basically stock sold to an employee at a very heavy discount. The company has the right to buy back that stock at the discounted price. It is sort of the mirror image of an

option grant in that there is a reverse vest on the restricted stock. The company has the right to buy less and less back as time goes on.

The crucial takeaway is that most measures of equity are irrelevant. The number of shares is irrelevant. Share price is irrelevant. The share of the option pool is irrelevant. Your share relative to other employees' share should be irrelevant, at least ideally. *What matters is your share of the company*. This is 3rd grade arithmetic. You have to do some division. Lots of ostensibly smart technical people fail to do this. Why people can't or don't do the basic arithmetic when they join tech companies is curious indeed. It may be that psychological anchoring effects just fool people into thinking that 1m/1bn is better than 1k/1m.

In practice, equity shares goes down quite a bit as you add more people. The surest way to blow up a company is to circulate a spreadsheet listing everyone's equity stake. Secrecy can be so important here because timing really matters. Some of your people will have very unique skills. Others will be more commodity employees with fungible skills. But the incentives are keyed to when you join, not just what you can do. Key people who arrive later get different stakes than less key people who were early. At eBay, secretaries might have made 100x what their Stanford MBA bosses because they joined three years earlier. You can say that's fair since early employees took more risk. But the later and possibly more important employees don't always see it that way. So in practice, even if you calibrate everything correctly, things are imperfect. You won't be able to please everyone.

VI. The Fundraising Process

Angel investors are the first significant outside investors in a startup. Ideally they add experience, connections, and credibility. They need to be accredited, which means a net worth over $1m or an annual income of over $200k. The angel market is pretty saturated, and the recent passage of the JOBS Act should induce even more angel investing activity.

There are typically two classes of shares: common, which goes to founders and employees, and preferred, which investors investors get. Preferred shares come with various sorts of rights that allow investors to protect their money. A standard rule of thumb is that common is price around 10% of preferred in a Series A raise. If FMV of one share of preferred is $1, a common share would be worth $0.10.

A. Simple Angel Math

Suppose you have 2 founders, each with 1m shares bought at a price of $0.001 per share (each founder put in $1k). The company has 2m shares and is valued at $2k.

An angel might come along and invest 200k at $1/share. So you issue 200k new shares to angel. Now you have 2.2m shares outstanding.

Then say you hire some people. You bring on 6 employees, and, because you weren't listening earlier, 2 consultants. Each of these 8 people gets 100k shares. So you grant 800k shares at $0.10/share.

Now you have 3m shares outstanding. The company valuation is $3m, since the deal price was $1/share. The angel owns 200k shares, which is 6.7%. Consultants and employees own 3.33% each, or 26.7% together. The two founders each have 1m shares, or 1/3 of the company.

B. Why Debt May Be Better

An alternative to this model is to do a convertible debt deal. There are two standard ways that debt gets structured. First, you can cap and discount. This means that valuation is capped, say at $4m. The noteholder gets a discount of, say, 20% for the next round. Second, you can do no cap, no discount, and just have

warrants/options accumulate for each round.

Convertible notes are often better than equity rounds. One of the main benefits is that they allow you to avoid determining a valuation for the company. Angel investors may have no clue how to do valuations. Convertible notes allow you to postpone the valuation question for Series A investors to tackle.

Other benefits include mathematically eliminating the possibility of having a down round. This can be a problem where angels systemically overvalue companies, as they might with, say, hot Y Combinator companies. Additionally, debt loans are much cheaper and faster than equity rounds, which typically cost between $30k and $40k in Silicon Valley.

C. Series A

After you meet with a VC who wants to invest, you put together a term sheet outlining the deal. After about a month of final due diligence, where the VC takes a thorough look at the people as well as the financial and technical prospects, the deal closes and money is wired.

You have to set up an option pool for future employees. 5% is a small pool. 15% is a large one. Larger options pools dilute current shareholders more, but in a sense they can be more honest too. You may have to give up considerable equity to attract good employees later down the road. The size of the pool is classic fear vs. greed tradeoff. If you're too greedy, you keep more, but it may be worth zero. If you're too fearful, you give away too much. You have to strike the right balance. Investors want option pools created before a round of financing so they don't suffer immediate dilution. You want to make the option pool after you raise. So this is something you negotiate with your VC.

VII. Investor Protection

There are a bunch of terms and devices that help VCs protect their money when they invest in you. One thing VCs tend to care a lot about is liquidation preference. A 1x preference basically means that investors get their money back before anyone else does. You can also have an *N*x liquidation preference where investors get their investment repaid *n* times before you make any money.

You need liquidation preferences because they align incentives. Without any preference term, you could just take an investment, close up shop, and distribute the cash amongst your team. That's obviously a bad deal for investors. They need some guarantee that you won't take the money and run. So by providing that, upon winding down, they get all their money back before you get any, you are realigned and your incentive is to grow the business so that everyone makes money.

VCs often try to get an even higher preference. A 2x preference would mean that if a VC puts in $5m, he'd get $10m back before founders and employees get anything. But the big problem with participating preferred or multiple preferred arrangements are that they skew incentives in intermediate exits. If a company sells for a billion dollars, these things don't matter so much and everything works. But in an intermediate exit, investors may want to sell because they'll double their money, whereas founders won't want to because they won't make anything. So the best arrangement tends to be 1x preference, non-participating.

Anti-dilution provisions are also an important form of investor protection. They basically retroactively reprice past investment if and when there is a later down round. The basic math is that the revised share count equals the original investment amount divided by the new conversion price.

There are a few different types of anti-dilution provisions. The most aggressive is the full ratchet. It sounds like a form of medieval torture because, in a way, it is. It reprices a past investment as if the investor had just

invested in the down round. That's great for investors, and quite bad for everyone else. More common is what's called the broad-based weighted average, which considers the down round size relative to the company's total equity. Investors end up getting somewhat more shares. Sometimes a similar provision called a narrow-based weighted average is used instead.

If there is one categorical rule, it's that you should never ever have a down round. With few exceptions, down rounds are disastrous. If there are tough anti-dilution provisions, down rounds will wipe out founders and employees. They also make the company less appealing to other investors. The practical problem is that down rounds make everybody really mad. Owners might blame controllers, who in turn might blame possessors. Everybody blames everybody else. Companies are essentially broken the day they have a down round.

If you must have a down round, it's probably best that it be a really catastrophic one. That way a lot of the mad people will be completely wiped out and thus won't show up to cause more problems while you start the hard task of rebuilding. But to repeat, you should *never* have a down round. If you found a company and every round you raise is an up round, you'll make at least some money. But if you have a single down round, you probably won't.

VIII. More Investor Protection

There are lots of other important terms in financings. The overarching goal is to get everybody's incentives aligned. So you should always be thinking about how different combinations of terms do or don't accomplish that goal.

Pro rata rights are pretty standard terms whereby existing preferred investors are guaranteed the right to invest in subsequent rounds at same terms as new investors. This is good for VCs, since it gives them a free option to participate in next round. But one problem is that if previous investors don't participate later on, that can signal a red flag to prospective new investors.

Restrictions on sales are commonly used. Some forms provide that common shareholders can't sell their shares at all. Other times sales are allowed only if 100% of the proposed sale is offered to the company and existing investors. These terms severely limit early employees' ability to cash out. The upside is that this aligns founders and VCs around the growth of the company's equity. But misalignment may persist because of relative wealth differences among the parties. VCs tend to be fairly wealthy already, and can wait for the payoff. Early employees may want to cash out a bit to get some security when they can.

Then there are co-sale agreements, dividends on preferred stock, no-shop agreements, redemption terms, and conversion terms. All of these can be important. They're all worth learning about, understanding, and possibly negotiating. But they tend not to be the most crucial terms in a financing agreement.

IX. The Board

Your board of directors is responsible for corporate governance. Another way of saying that is that the board is in charge. Preferred shareholders typically have voting rights that allow them to approve actions, waive protective provisions, etc. But the importance of the board of directors cannot be overstated.

Every single person on your board matters. Each person must be a really good person. The typical board is two VCs, one "independent" director, and two founders. Five people is a pretty large board. More than five is suboptimal, and should only be done where absolutely necessary. With boards, less is often more. The ideal board is probably three people: one VC and two founders. It's easier to keep board members aligned if they are all great people and if there are just a few of them.

X. Planing For The Future

Building a valuable company is a long journey. A key question to keep your eye on as a founder is dilution. The Google founders had 15.6% of the company at IPO. Steve Jobs had 13.5% of Apple when it went public in the early '80s. Mark Pincus had 16% of Zynga at IPO. If you have north of 10% after many rounds of financing, that's generally a very good outcome. Dilution is relentless.

The alternative is that you don't let anyone else in. We tend to give this approach the short shift. It's worth remembering that many successful businesses are built like this. Craigslist would be worth something like $5bn if it were run more like a company than a commune. GoDaddy never took funding. Trilogy in the late 1990s had no outside investors. Microsoft very nearly joined this club; it took one small venture investment just before its IPO. When Microsoft went public, Bill Gates still owned an astounding 49.2% of the company.

So the question to think about with VCs isn't all that different than questions about co-founders and employees. Who are the best people? Who do you want—or need—on board?