



## Talking tech with Peter Thiel, investor and philanthropist (Q&A)



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Peter Thiel, speaking at a recent event in Aspen, Colo.

(Credit: Declan McCullagh/CNET)

SAN FRANCISCO--Peter Thiel believes technology will make the world a much better place. He's simply frustrated at how long it's taking.

The billionaire entrepreneur is best known for co-founding PayPal, and, more recently, for his very early investment in Facebook. He founded [Clarium Capital Management](#), a hedge fund, created the philanthropic [Thiel Foundation](#), and co-produced the irreverent 2005 comedy [Thank You for Smoking](#).

In May, the Thiel Foundation announced the first 24 recipients of a fellowship that awards \$100,000 each to youth under 20 years old--essentially encouraging them to drop out of college to become entrepreneurs. The [Founders Fund](#), where Thiel is a managing partner, has invested in aerospace, robotics, and biotechnology, in addition to consumer Internet companies including Slide and Spotify.

Thiel's [unorthodox take](#) on philanthropy, and keen interest in the pace of technological change, led him to organize a "Breakthrough Philanthropy" event last year at San Francisco's Palace of Fine Arts. Just as entrepreneurs pitch venture capitalists, tech-oriented nonprofits were given a few minutes to tell the audience why ideas like artificial intelligence, nanotechnology, life extension, and seasteading deserved financial support.

CNET interviewed Thiel early last month in his offices in San Francisco's Presidio to talk about the pace of technological change, a possible Facebook IPO (he's on the company's board), and the state of tech startups today. Below is the transcribed interview, lightly edited for clarity.

**Q: The stimulus legislation spent something like \$120 billion on clean-energy tech. Google's previous director of climate change, an assistant secretary of energy under Clinton, [called for a new government agency](#) to fund clean-tech companies. Good ideas or corporate welfare?**

Thiel: I think it's a bad idea. There's a looking-backward and looking-forward question. Looking backward over the last decade, the question is how badly clean tech has worked out. I think the [Solyndra failure](#) is--you normally can't read too much into one company failing. It certainly is dramatic. The amount was large. It was fast. The expectations changed pretty quickly.

The worry is that we'd like to see some real successes too. There's a question of whether there's something wrong with government picking winners, or picking winners and losers, but there's definitely something wrong with the government only picking losers.

The question about clean tech is not whether the government is picking winners, but whether the government is only picking losers. That's the worry people have. There would be no issue with Solyndra if we had just a few things that were just working that you could point to. Even in the tens of billions of dollars, if you could get a few winners that would be worth it. It is not clear what they are. It is certainly not clear where they are on the Silicon Valley venture capital side. I think the people who invested in clean technology have a lot of incentives to talk about the winners. There has been a deafening silence.

It's striking how little one hears about clean tech on the venture capital side over the last year or so. I wouldn't say they are always the smart money. They tend to be the less dumb money. And so that seems to me to be a useful indicator. There's a question about what's gone wrong with clean tech and a question about what goes wrong.

It was incredibly conflated with investment and ideology. It's sort of like social entrepreneurship, where people try to do well by doing good and end up doing neither. There's a strong argument that we needed to develop alternatives to oil. There may be a climate change argument. But that becomes a very dangerous point when you start thinking that you don't need to pay attention to the technology because the government will bail you out.

**If I recall your investment portfolio correctly, you stayed away from this.**

Thiel: We have not made any investments in it. One of the other things that's been very strange about the clean tech question--there are all these things about it where I think the thinking hasn't been disciplined, you've heard all these ideological confluences and commitments that confused the thinking.

One of the basic questions about clean tech is: Is it driven by a shortage of conventional energy or is it driven by climate change worries? They are somewhat linked. But they may be very different in nature. You could have a scenario where you have plenty of oil and plenty of coal, and you could just produce the coal but it's too dirty. Or you could have a scenario where you're running out of oil and you need to develop alternatives.

One scenario is more economic. One is more environmental in nature. In practice these two things have gotten hopelessly confused and conflated. As the technology and politics have gotten confused, the economics without a concern with the environmental stuff has gotten confused.

The Warren Buffet rhetorical point is his [\\$34 billion investment](#) in late 2009 in a railway, the single biggest investment by Berkshire Hathaway outside of finance. It is an all-out bet against clean tech. It was described as a bet on America, but 40 percent of what gets transported on railroads is coal. You have to look at Buffett's railroad investments as an all-out bet that clean tech is going to fail.

It's a bet that we're going to send coal to ships in Long Beach and send it to China to power Chinese factories to send us stuff. That's not the clean-tech vision of the 21st century.

**Your [speech in Aspen last month](#) argued that technological change was stagnating, especially in energy. What's the solution? Is it that progress in energy is more difficult than progress in, say, chip design, so we have to be more patient?**

Thiel: It goes back to the why-things-have-slowed-down question, which is the one that I've tried to avoid.

**Unfairly tried to avoid?**

Thiel: I'm not sure it's unfair. Because as soon as you get to the "why" question, it gets much more controversial. It makes people lose sight of the what, which is the thing I want people to pay attention to. I think that if we could get people to agree that there's a really big problem in innovation, then we can have a constructive conversation on what to do about it. As soon as we fixate people on why there's been an innovation slowdown,

if you're on the right you can blame environmentalism, if you're on the left you can blame Reagan and financial engineering. And we don't even get to the question of whether a slowdown has happened. That's why I'm somewhat resistant to going straight to the ideological or political question.

That being said, with respect to the energy issue, the "what" is that there has been a remarkable failure as well as a reduction of expectations. It's both a backward-looking failure--if you look back over the last 40 years, there has not been a great deal of progress. You look at real oil prices, today they're greater than they were during the Carter catastrophe of 1979-1980. If you look at oil dependency, energy dependency, it's way above where it was anytime during the '70s in the U.S. You can look at things like the famous Simon Erlich bet. [Ed. Note: a [well-known wager](#) on the falling price of commodities.] Erlich would have probably been winning for the last quarter century, something like 1985 onwards. That's again not just energy but a failure of innovation on a lot of the upstream commodities and resources.

At the same time this has also, and quite naturally, led to a reduced set of expectations about the future. Nixon's [1974 State of the Union speech](#) was, basically, we would make the U.S. 100 percent energy independent by 1980. Obama, 2011, it's one-third oil [independence by 2020](#).

### **You're quoting politicians, though, and their promises...**

Thiel: But they're reading polls. And the polls tell them what people reasonably expect. And the interesting thing is that, I think, Obama captures the zeitgeist today in the same way Nixon did in '74. And people realistically in the U.S. expected full energy independence in six years. Today they might realistically expect 30 percent independence in nine years. There's been a historic failure, and as a result we have dramatically reduced expectations in the future.

The question about a tech innovation slowdown, the remarkable question is really why this question is not at the surface. If you were to take a very simple Socratic method, and start with just what are the common opinions people have, not in Athens but in America, the common opinion is that things are on the wrong track. That their kids, that the next generation, will not be as well off as the current generation. These common opinions, while they may be right or wrong, are completely at odds with the sort of techno-optimism that is so prevalent in these discussions. And it's at least worth asking why are people wrong to think this.

**You once [told The Wall Street Journal](#), referring to President Obama: "I'm not sure I'd describe him as a socialist. I might even say he has a naive and touching faith in capitalism. He believes you can impose all sorts of burdens on the system and it will still work." Is that still true?**

Thiel: Yes. I think there is an incredible faith in capitalism--that you can put any burdens on business, and people will just work. It's like people are hardwired to make money and there's nothing you can do to change that, irrespective of politics. In that sense it is an incredible faith in capitalism that I don't quite share.

I think it's also that the left in the U.S., the Democratic Party, is not socialist in the other sense in that there is actually no plan for the future. What socialism and communism was characterized by were five-year plans, these development plans of what you're actually going to do. What's remarkable is how little of a plan there's going to be.

I don't think most of the economy should be planned. But I think to the extent you're going to have large government, it would be good if the government should be planned rather than unplanned. If you're going to invest in alternate energy, you should have a plan of what kind of alternate energy you should be investing in, and you shouldn't be randomly buying lottery tickets. Planning is preferable to buying random lottery tickets or politically motivated lottery tickets, which is the concern with the clean-tech stuff. That's levels worse than having a rigorously centrally planned economy a la [Krushchev](#).

**You endorsed Ron Paul for president and you've written for the [Cato Institute](#) and have been affiliated with the [Pacific Research Institute](#). Does that make you a libertarian?**

Thiel: I self-identify as a libertarian. I don't know if that makes me a libertarian either. I describe myself as a libertarian politically.

Most of the issues, if you had various libertarian-type questions, I'd tend to come out on the correct side of all of them. You might be smart enough to come up with some where I would not.

But on most of them, I'd come out on the generally less restrictive government, more capitalism, more civil liberties, and so on. You can be pretty libertarian without being a purist. The question is not whether we're going to privatize roads or prisons or the military or things like that. It's directionally, there's a directional question. Is there too much regulation, is there too much government, is there too little freedom?

You can believe that the role of government should be reduced without going anywhere near the extreme point that it should be eliminated altogether. We have so much government in our society that you can reduce it a lot. Hong Kong's not really libertarian in the purist sense but from a 15 or 18 percent marginal tax rate, (going in that direction) that would be a very different country from what the U.S. is today.

**Why have so many prominent figures in Silicon Valley [embraced the Democratic Party](#)? Is it revulsion against the Bush era? Why don't you have more libertarians who are out of the closet?**

Thiel: I'm always nervous about the "why" questions because you're asking me to speculate on people's motivations, why they're doing things.

**You don't have to name names.**

Thiel: I think a lot of the engineers tend to be pretty libertarian in Silicon Valley. A lot of the nonengineering people tend to be more Democratic, if I had to give the cultural split.

That includes company executives, it includes people who are lawyers, it includes people who work in other capacities, for all sorts of complicated reasons. The actual Silicon Valley demographic, the engineering part of it, is actually quite libertarian. The nonengineering part is more demographic. I think there's a pretty big split between the technical or engineering people and everyone else.

**Ron Paul got a very [warm welcome at Google during the 2008 campaign](#), I think especially from the engineers.**

Thiel: I don't know the politics at Google specifically, but I suspect that most of the people on the engineering side would be quite libertarian. They might be Democratic in terms of political party affiliation but ideologically they'd be libertarian. The nonengineering people would mostly be party line Democratic, with all sorts of exceptions.

It's also that a lot of the libertarians tend to be socially liberal, fiscally conservative, and so if you're in that quadrant, which set of issues do you prioritize? If you prioritize social issues, you tend to become Democratic. If you prioritize economic issues, you tend to be Republican.

There is a way in which a lot of libertarian Democrats and libertarian Republicans may not disagree about specific issues, but disagree about how heavily to weight various issues. It's more of a weighting disagreement than an issue-by-issue disagreement. This issue, this civil liberty issue, gets a weighting of 10. The marginal tax issue gets a weighting of 1.

**Even though in theory we might agree on both, we disagree on the weighting?**

Thiel: We disagree on the weighting. You get to very different political outcomes. I think that's what actually happens a great deal: People don't actually disagree that much on the issues. They disagree on how important different issues are, how to weight them.

**There's a [headline](#) in the UK Daily Mail, referring to your [financial support for the Seasteading Institute](#): "PayPal billionaire plans to build a whole new libertarian colony off the coast of San Francisco." OK, so where's this colony? Or did it get a bit mischaracterized along the way?**

Thiel: It's certainly been weirdly exaggerated. I've been a supporter of ([Seasteading Institute founder](#)) Patri Friedman. I knew his grandfather Milton Friedman. His grandson's been very interested in this question about how does one start new communities, where would one start one? Do you look at oceans? Do you look at other parts of the world? How do we get back to this question of the frontier?

What attracted me to seasteading is, it's linked to the technology question. We have this question about: Where in the world can one do new things? There's a technological version of that, and there's also a "Where can we build new communities and new societies?" All the critiques of utopianism apply to seasteading, just as they do to a lot of people in the tech industry. At the same time, I think there's also a problem of giving up

on all utopian ideas and having no theories about how things can be different or better. And saying that, "This is how things are, nothing can ever be different or better."

The reason the seasteading question's been so interesting is that a lot of people do think that we can do much better as a society. And if you run the thought experiment, could we be doing things better in our society, people may disagree on the particulars, but an awful lot of people think things can be done dramatically better.

There is a certain lack of freedom that we have. The founders, when they wrote the U.S. Constitution in 1789, had the freedom to set all these basic parameters. They got most things right. There are a few things we might not entirely agree with. In California, we have two senators. Alaska has two senators. Is that really a completely just system? It's not something that can conceivably be changed at this point. There is a certain lack of freedom we have in thinking about our society that's very different from what the founders of the U.S. enjoyed.

It's a very parallel question that comes up when people start companies versus working in large existing companies. In a large existing company there are set ways things have happened. Sometimes there's a sclerotic bureaucracy that's taken things over. You can change things at the margins, but you often cannot change the fundamental fabric. The reason people start new companies is because there's a need to have a certain amount of freedom to explore doing new things. That's why you'd start a new business. There's a question: If you can start a new business, why can you not start a new country?

### **So we need entrepreneurs starting not just companies, but countries?**

Thiel: I think it's at least worth thinking about why the question is different. There may be some differences, but I think there are some very interesting parallels between the two questions. And I think that's what attracted Patri, as an engineer working at Google, with libertarian interests and an interest in technology. He saw the two as very parallel. And I tend to think there are a lot of parallels it raises.

You have these questions about the point of origin. There is a sense where you have a lot of freedom at the point of origin. The point where you start something new you have a great deal of freedom. Once things are set, you have less freedom. Going back to the origin, back to the founding moment, is very, very important. The founding moment of a company is important. The founding moment of a country is important.

Is there a way to somehow recapture this? Even if you don't want to move to a boat or platform, which may or may not get built and may or may not be a pleasant place to live in, it is nevertheless a worthwhile question. Whether there are elements of our society that can be refounded, or whether it's like we're living in a company that was created in 1789 where very little has changed. It would be interesting to look at what companies were started in the late 18th Century, and which ones in that category are still extremely dynamic and entrepreneurial? If they are, they've probably changed radically.



**And of course seasteads may not be libertarian. You can imagine a religious seastead--this is what traditionally has prompted people to move to the frontier. So there may be very nonlibertarian groups as well.**

Thiel: You have certainly a lot of different kinds of communities people would start. They could be socialist. The [kibbutz movement](#) in Israel was people moving to a new place, and it was kind of utopian in a socialist way. It is an indictment of the left in the U.S. that people can no longer imagine any sort of utopianism of the left. And so people do not actually think of joining a kibbutz, as one example. I don't know if there's any analogue of that. There's no reason theoretically it couldn't be any number of things.

**How did you reach your political views?**

Thiel: I think I've had them mostly since I was in high school. It's changed, some pieces (moved) around, some thoughts, some issues. It's an autobiographical version of the "why" question.

**It's really a "how" question...**

Thiel: The how was basically free market, anticommunist. Communism seemed like a bad thing in the '80s. A lot of it was anchored in anticommunism, and the view that it was very bad because there were no free markets and there were no civil liberties. That was probably formative in the late '70s and early '80s. As I became politically aware, the first thing I became aware of was the great evil of totalitarianism, which at the time was primarily totalitarianism of the left.

The most opposed, the opposite pole of left-wing totalitarianism, is libertarianism. That's what naturally attracted me to that position.

**You were right about the dot-com bubble becoming a housing bubble, and maybe a financial bubble as well. Where's the current bubble? It can't be gold. It's not high enough yet.**

Thiel: It's pretty high! There aren't very many bubbles. Because I think to get a bubble, you need to have something that's overvalued and that's believed with incredible deep intensity by a lot of people. I don't think there's a bubble in Web 2.0. It's possible that companies are somewhat overvalued, I'm not sure they're much overvalued--I don't want to speculate too much on valuations here.

But the public at large is not really involved in this. There aren't hundreds of IPOs like in the 1990s. If you're a dentist in New Mexico, you can't just call up your broker and buy a portfolio of 50 different Web 2.0 stocks. There's no sense in which the public is involved.

In fact, we have a very cynical public at this point. People don't believe in very many things. If you think one of the necessary ingredients for a public is to have an intense belief, the question would be: What do people believe in as intensely today as they believed in housing in 2005 or technology stocks in 1999? Maybe not technology, but technology stocks.



My top, my only candidate in the U.S. is education as the be-all and end all. It has become the solution to all of our problems. And so my candidate is that there is a higher-education bubble. If you look at the costs, they've gone up a factor of four in real terms, over 10 in nominal terms. The quality's probably about the same. And so there is a very interesting question about whether it's overvalued, and the intensity of belief about it is very, very high.

My sense is that it's very overvalued if you take into account that most of it isn't about learning. It's about credentialing. If you take into account that people are amassing this massive amount of debt, which destroys a lot of future optionality in terms of what they can do with their careers and their lives. Parenthetically, it's very hard to get out of debt. It's worse than housing in the sense that a house you can always walk away from. Debt is typically nonrecourse.

**Although [federal student loans...](#)**

Thiel: Education loans are fully recourse. And they typically, post-2005 with the bankruptcy law changes, [even survive bankruptcy](#). So the education bubble is the one that strikes me as very serious. And I think it's close to the point of breaking with the sort of long recession that this country is in, where if people are graduating from college and they're not getting the really good jobs--the high paying jobs that were the implicit quid pro quo for the ridiculously high costs--that's starting to call the whole thing into question.

**Is this why you created the [20 Under 20 Thiel Fellowship](#), which gives \$100,000 grants from the Thiel Foundation? Did you intend this to be a bit of a poke in the eye to the education establishment?**

Thiel: It was not actually intended as that. We didn't even think it would...

**The people you're giving grants to are under 20 years old--you're essentially trying to convince them to drop out of college!**

Thiel: It was 20 people. It was just 20 people. You have something on the order of 6 million people a year in the U.S. who graduate from high school. If you're saying that of the top 60,000, the top 1 percent let's say, are there 20 of those 60,000 who should perhaps not go to college--that does not seem like a terribly controversial statement. That the more talented you are, the more narrow the set of choices you should make? And that if you're a really smart person, the only thing in the world you can do is to go to Harvard? That certainly is an odd state for the world to be in, even though it's surprisingly close to the state we find ourselves in today.

We focused on inventor-engineering people, who had passions about specific ideas and wanted to build them out. What struck me when pulling this together is how widespread the anxiety around education is. Which is why I think there is a bubble and it's also close to breaking. It is like housing in '05 and tech in '99. We're very late in this bubble.

The specific failures is that there are all these great expectations people have at all these levels. It's people who went to subprime diploma factories and didn't learn a thing. It's people who went to second or third tier colleges and got a diploma but worried that it's

kind of a dunce hat in disguise because they're asked for the rest of their lives, "Why didn't you get into a better school?" We have this brutal great chain of being that's known as the US News & World Report university ranking system. Which ranks with brutal precision where you fall on the great chain of being. It sets you for life. It's something like a feudal caste system.

Even the people at the very top who get into the best colleges--there is sort of the great expectation that this will set them up for life. I'm not sure that's correct. When you're 17 or 18 and if you get into a very good university, it's important to have the perspective that you're still at the very beginning of your life and you're just getting started. The idea that you have burned out from all the piano lessons and school sports and community service and SAT prep classes that you had to take from grades K through 12, that's probably not even healthy.

There are all these great expectations that people have around education. They're very different for different people. But they're united in that the expectations are impossible to meet across the board. And that's why I think we have this broad disappointment with it. It's all the way up from the subprime diploma mills to the Ivy League schools.

### **What are you investing in now? What are you investing in next?**

Thiel: On the technology side, the question is always: What are the breakthrough technologies that will take our civilization to the next level? And that is the question I keep coming back to. There are certain types of things that are very underinvested in. I think people find it hard to invest in anything that takes more than a year. Anything with a long time horizon is very hard to invest in. We try to find things that represent somewhat of a quantum leap and that are a somewhat longer time horizon and have some sort of reality check against the sanity of some of the people involved in it. And how well the team dynamics work, and if the technology works, and if the market works, and things like that.

Probably the area that I'm most confident of that this will happen--it's worth exploring many different areas and we've looked at everything from space to robotics to bioinformatics--is the next generation of computing and where the information age gradually gets applied to more and more different disciplines. We've looked at a lot of medical IT companies. It's very screwed up. It's been screwed up for a long time. It doesn't mean that it's going to get fixed now. But there's an argument that this is a good time for this to start shifting. Maybe medical records will finally go online, doctors will move from the 19th to the 21st century, something like that. We've looked at applying computers to education, applying computers to health care, applying computers to X where you fill in the blank for the field.

Law would probably be an interesting one to look at. Look at what fields are still stuck in the 19th century, and could they be automated in powerful dramatic ways.

### **How worried are you about the economy? It seems like we never got out of the recession--can we call it a small-D depression yet?**

Thiel: It's certainly at least a Great Recession with a capital G and a capital R. I think it's a depression even if it's not the Great Depression. The '30s was the Great Depression--it wasn't just a depression. I think it definitely puts the lie to the notion that there are no economic cycles left and we were in a world of the [Great Moderation](#). That was sort of the 2005 optimistic view that people had. It turns out that it's more like a Great Stagnation.

I like [Tyler Cowen's idea](#) that we're in this prolonged period of very slow growth. One of the ways to ask the economic question--you can always have opinions about what's going on in the economy that are independent of the markets--but you could just start with what the markets are saying. Today the markets are saying there's a 91 percent chance that Greece defaults in the next five years. The spreads on many European banks are uncomfortably high. Italian, Spanish sovereign, uncomfortably high. The gold price of \$1,850 an ounce is probably telling you something about people having no good ideas of what to do with their money. These are all these very straightforward stories about these various prices.

The one that I think is a very good market price that people aren't paying attention to are 10-year TIPS yields. This is a market that's bigger than Greek bonds or European bank credit or gold. It is the Treasury inflation protected securities. It's hundreds of billions of dollars. It's basically the yield you're guaranteed to get after inflation. As of today, the yield on 10-year TIPS is zero.

**It's gone negative in the last few years.**

Thiel: It's gone negative in the last few months. The five year is at something like minus 90 basis points. The 10 year is zero. What the TIPS curve is telling you on a risk-free investment, you can expect zero percent return after inflation for the next decade. There's not a lot of inflation that's being predicted. The 10 year bonds are at 2 percent. We're basically predicting an average inflation rate of 2 percent for the next decade. So it's not clear that there's a worrisome buildup in inflation happening.

But the thing that's worrisome is not that we have deflation or inflation. Two percent expected inflation is actually very good. It's that we have no growth at all. The real yield after inflation is often, I think, a pretty good proxy for the expected growth rate in the economy.

If you were earning 4 percent after inflation, that's roughly like the economy is growing 4 percent a year. If you're expecting to earn zero percent after inflation, to a first approximation that reflects an implicit view that there's going to be zero percent economic growth in the U.S. for the next decade. That strikes me as a shocking market fact that people should make much more of. The thing that strikes me as different from the '30s is that in the '30s, the collapse was much more cataclysmic. There was no social safety net. You had much crazier political ideologies that came to the fore.

But there's something this time along that it feels like it's going to go on for a very long time. And there's no obvious way out of it.

### **Would you agree?**

Thiel: If you want to segue back to the political economy of it, it's that people are too focused on the economics question and not enough on the technology question. So we have lots of debates in the U.S. about what's going to happen to the economy in 6 months, 12 months: Are we going to have a double dip recession? Are we going to have a recovery in 2012? Is there not going to be? But not very much about what's going to happen over the next decade, which is more of a tech question.

There's a question of how important is macroeconomics as a category independent of everything else. What's very different today from the '30s is we believe in macroeconomics as an unbelievably important independent category. And it's not clear that's true.

All the [Keynesian kind of thinking](#) suggests that macroeconomics is important independent of the micro stuff. So it doesn't matter what the regulations are--it matters what's necessary to get the animal spirits back. It matters to print the right amount of money for the monetary policy. Get the fiscal stimulus right.

I think this is also true on the right, where most of the thinking is around the economy, and it is about reducing marginal tax rates, and things of that sort. And much less on, say, the micro, on all the regulatory issues, which are perhaps much more serious, and will have much more of a tech impact over the next decade.

### **I wrote a [retrospective](#) piece for CNET recently about how significant the post-9/11 regulatory shift was, especially when it comes to privacy.**

Thiel: It's not exactly clear to me whether Paypal could be built as a business today. That may be too strong.... As a startup, these kinds of regulations are much more onerous. Paypal was able to be built at a time that was pre-9/11 on a regulatory basis. Post-9/11 it would be much more difficult to build. It makes the franchise more valuable. I think no competitors will ever be built.

### **What regulations will screw over the tech industry? Things like data retention...**

Thiel: ...It depends on how you define the tech industry. So if we define it as just the Internet, the amount of regulation has been relatively modest to date. We can be hopeful that it will remain modest. We can have different views on that. But I'd flip the whole causation around, and say the reason the Internet has been the one area of technological growth is because it's been the one unregulated area.

There are all these other areas that we don't even think about as technological areas because there's not been a lot of progress. And that's because regulations have badly stalled it out. Energy is probably the most dramatic. There probably are versions of this that extend--I believe there is a big set of issues in biotechnology, where it could be moving fast if it's less heavily regulated.

I think that probably the worrisome versions deal with things like food production. The green revolution of the '50s and '60s and '70s increased food crop yields by about 125

percent from 1950 to 1980. They've only gone up by 46 percent since 1980, slower than population growth in the last 31 years.

Is improving agriculture a subject that's fit for technology? Is that a technological area? If you were to look at the Middle East issues, you could give an interpretation that's bullish on technology. It's the [Arab spring](#), a [happy byproduct of the information age](#).

Or you could say we have a political green revolution that is the result of the failure of the true green revolution, which is agriculture. As the true green revolution has failed, we have a lot of people in that part of the world, a lot of desperate people who have become more hungry than scared. And that's basically been triggered by food price increases on the order of 30 to 50 percent in the last year. It's really not a story of technological success but technological failure. There are obviously political and social dimensions to this. But if you want to look at it through the prism of technology, it's interesting that we always look at this through a prism of technology success, and never technological failure.

And that's because I think that we've defined technology as being just the Internet.

**It's also easier to say: Look! People are [organizing on Facebook](#), [or Twitter](#).**

Thiel: I think it's very easy to tell the other story: It started with a [vegetable dealer in Tunisia](#). It was a food problem. People couldn't buy and sell food at the right prices. And so we could very easily tell the food story too. That's not the right paradigm.

**You're saying that journalists might be economically illiterate?**

Thiel: No, I don't think it's a problem specific to journalists. The economic illiteracy question isn't specific to journalists.

As a society, to come back to where we started, we don't think of most things as being technological. We think of technology as being areas where there's a lot of innovation happening. In most areas of our society there hasn't been a lot of innovation. We don't think of airplanes as technological anymore, even though in the '50s or '60s, people did, because you went from propeller planes to jet planes to the Concorde in the course of 20, 25 years. At this point there's been no meaningful change in air travel. It's gotten slower since the Concorde's been decommissioned and because of the nightmarishly low-tech airport security measures that we have post-9/11. You can think of travel as a very specific example of technological failure.

**And air traffic control, which is still using 1950s-era technology.**

Thiel: You have all these areas where we don't think of problems as being technological. This is where I want to quibble with the economic illiteracy point. We think of the problem as economic and not technological. So the people we have solving all of our problems are economists. This is the dominant paradigm.

I do think if you get the economics wrong, you can screw things up very badly. So it's not like you can do without (an economy). But at the same time, there is a way in which this focus on economics has distracted us from these technological and regulatory-type

questions, which are microeconomic in character but I think are best thought of as technological in nature.

### **Should Facebook go public and when?**

Thiel: I can't answer that.

But it has generally been the correct strategy for companies to defer IPOs for as long as possible. This has certainly been an area where there's been a lot of regulation, [Sarbanes-Oxley](#) stuff. But way more than Sarbanes-Oxley, there's simply a degree to which public companies are given a scrutiny that is much greater and much more heavily regulated than private companies.

I think Google did a very good job by staying private as long as they did. It was a critical piece in Google's winning the search wars in 2002 to 2004. Nobody paid attention. The regulators didn't pay attention. Competitors paid no attention. There are all these issues that happen once companies become public companies that are difficult. There's an argument that this is what companies should ultimately do. The correct decision that people have made in the last decade in Silicon Valley has been to try to defer the IPO process as long as possible.

### **You said "should." If investors and founders can get cash when they want it, including offering on the nonpublic markets, then delaying makes sense for them.**

Thiel: It's all a little bit complicated because it all involves these counterfactual debates about what would happen if companies were public and if they were private, and in practice you can't do the experiment both ways.

I would say the way the counterfactual narrative was made in the 1990s, however, is very different. People would say that there was tremendous value in having liquidity. The back of the envelope estimates I remember hearing in 1998, 1999 is that it roughly doubled the value of your company.

Yes, there was a private equity illiquid secondary market. But if you had a liquid public market, there were far more investors. You'd be more comfortable buying a share in a company if you knew you could sell it the next day than if you knew you might not be able to sell it for a few years. There was a liquidity premium attached to having a company be public. And in the late '90s the ballpark numbers that one heard was that the liquidity premium was 100 percent.

That's not the view we have anymore. The LinkedIn IPO, which was a reasonably high profile company that people were pretty aware of, two months pre-IPO the secondary valuation was \$2.5 billion. It went public at \$5 billion. It's worth quite a bit more since its IPO. You could certainly use LinkedIn as a data point for the '90s version of this rather than the 2011 conventional wisdom. The liquidity issue is a very big issue for going public. There are all these other reasons that militate against it.

### **Could you rate the IPO market for tech startups?**

Thiel: The threshold for IPOs has gone way up. Amazon.com [went public in 1997](#) at a market cap of \$460 million. LinkedIn is more paradigmatic. There are some companies that do it, but now you go public when you have a valuation of something on the order of \$5 billion. That's what people are expecting around the big [Groupon](#), [Zynga](#) IPOs, assuming those happen.

As a first ballpark, it's Amazon to LinkedIn. The valuations for IPOs have gone up by a factor of 10. You need to have a company that was 10 times as valuable as it was in the '90s, maybe 7 times after inflation, for it to go public.

It's a whole complicated combination of regulatory, cultural shifts--people don't want to go public. It's not necessary to go public when you're not competing with other public companies. There aren't companies people want to acquire. The M&A model has failed. Tech IPOs have a higher threshold. Tech M&A is even, it feels, more stalled out--it's so difficult to get these things to work. Most of these companies do make sense as a standalone business.

The threshold's gone way up. What that means as a venture capitalist is that you have to invest in these companies and assume you're going to be holding these for a very long time. And that has both good and bad things to it.

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