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PAUL GRAHAM

WHY STARTUPS CONDENSE IN AMERICA

May 2006

(This essay is derived from a keynote at Xtech.)

Startups happen in clusters. There are a lot of them in Silicon Valley and Boston, and few in Chicago or Miami. A country that wants startups will probably also have to reproduce whatever makes these clusters form.

I've claimed that the recipe is a great university near a town smart people like. If you set up those conditions within the US, startups will form as inevitably as water droplets condense on a cold piece of metal. But when I consider what it would take to reproduce Silicon Valley in another country, it's clear the US is a particularly humid environment. Startups condense more easily here.

It is by no means a lost cause to try to create a silicon valley in another country. There's room not merely to equal Silicon Valley, but to surpass it. But if you want to do that, you have to understand the advantages startups get from being in America.

1. The US Allows Immigration.

For example, I doubt it would be possible to reproduce Silicon Valley in Japan, because one of Silicon Valley's most distinctive features is immigration. Half the people there speak with accents. And the Japanese don't like immigration. When they think about how to make a Japanese silicon valley, I suspect they unconsciously frame it as how to make one consisting only of Japanese people. This way of framing the question probably guarantees failure.

A silicon valley has to be a mecca for the smart and the ambitious, and you can't have a mecca if you don't let people into it.

Of course, it's not saying much that America is more open to immigration than Japan. Immigration policy is one area where a competitor could do better.

2. The US Is a Rich Country.

I could see India one day producing a rival to Silicon Valley. Obviously they have the right people: you can tell that by the number of Indians in the current Silicon Valley. The problem with India itself is that it's still so poor.

In poor countries, things we take for granted are missing. A friend of mine visiting India sprained her ankle falling down the

steps in a railway station. When she turned to see what had happened, she found the steps were all different heights. In industrialized countries we walk down steps our whole lives and never think about this, because there's an infrastructure that prevents such a staircase from being built.

The US has never been so poor as some countries are now. There have never been swarms of beggars in the streets of American cities. So we have no data about what it takes to get from the swarms-of-beggars stage to the silicon-valley stage. Could you have both at once, or does there have to be some baseline prosperity before you get a silicon valley?

I suspect there is some speed limit to the evolution of an economy. Economies are made out of people, and attitudes can only change a certain amount per generation. [1]

3. The US Is Not (Yet) a Police State.

Another country I could see wanting to have a silicon valley is China. But I doubt they could do it yet either. China still seems to be a police state, and although present rulers seem enlightened compared to the last, even enlightened despotism can probably only get you part way toward being a great economic power.

It can get you factories for building things designed elsewhere. Can it get you the designers, though? Can imagination flourish where people can't criticize the government? Imagination means having odd ideas, and it's hard to have odd ideas about technology without also having odd ideas about politics. And in any case, many technical ideas do have political implications. So if you squash dissent, the back pressure will propagate into technical fields. [2]

Singapore would face a similar problem. Singapore seems very aware of the importance of encouraging startups. But while energetic government intervention may be able to make a port run efficiently, it can't coax startups into existence. A state that bans chewing gum has a long way to go before it could create a San Francisco.

Do you need a San Francisco? Might there not be an alternate route to innovation that goes through obedience and cooperation instead of individualism? Possibly, but I'd bet not. Most imaginative people seem to share a certain prickly independence, whenever and wherever they lived. You see it in Diogenes telling Alexander to get out of his light and two thousand years later in Feynman breaking into safes at Los Alamos. [3] Imaginative people don't want to follow or lead. They're most productive when everyone gets to do what they want.

Ironically, of all rich countries the US has lost the most civil liberties recently. But I'm not too worried yet. I'm hoping once the present administration is out, the natural openness of American culture will reassert itself.

4. American Universities Are Better.

You need a great university to seed a silicon valley, and so far there are few outside the US. I asked a handful of American computer science professors which universities in Europe were most admired, and they all basically said "Cambridge" followed by a long pause while they tried to think of others. There don't seem to be many universities elsewhere that compare with the best in America, at least in technology.

In some countries this is the result of a deliberate policy. The German and Dutch governments, perhaps from fear of elitism, try to ensure that all universities are roughly equal in quality. The downside is that none are especially good. The best professors are spread out, instead of being concentrated as they are in the US. This probably makes them less productive, because they don't have good colleagues to inspire them. It also means no one university will be good enough to act as a mecca, attracting talent from abroad and causing startups to form around it.

The case of Germany is a strange one. The Germans invented the modern university, and up till the 1930s theirs were the best in the world. Now they have none that stand out. As I was mulling this over, I found myself thinking: "I can understand why German universities declined in the 1930s, after they excluded Jews. But surely they should have bounced back by now." Then I realized: maybe not. There are few Jews left in Germany and most Jews I know would not want to move there. And if you took any great American university and removed the Jews, you'd have some pretty big gaps. So maybe it would be a lost cause trying to create a silicon valley in Germany, because you couldn't establish the level of university you'd need as a seed. [4]

It's natural for US universities to compete with one another because so many are private. To reproduce the quality of American universities you probably also have to reproduce this. If universities are controlled by the central government, log-rolling will pull them all toward the mean: the new Institute of X will end up at the university in the district of a powerful politician, instead of where it should be.

5. You Can Fire People in America.

I think one of the biggest obstacles to creating startups in Europe is the attitude toward employment. The famously rigid labor laws hurt every company, but startups especially, because startups have the least time to spare for bureaucratic hassles.

The difficulty of firing people is a particular problem for startups because they have no redundancy. Every person has to do their job well.

But the problem is more than just that some startup might have a problem firing someone they needed to. Across industries and countries, there's a strong inverse correlation between performance and job security. Actors and directors are fired at the end of each film, so they have to deliver every time. Junior professors are fired by default after a few years unless the

university chooses to grant them tenure. Professional athletes know they'll be pulled if they play badly for just a couple games. At the other end of the scale (at least in the US) are auto workers, New York City schoolteachers, and civil servants, who are all nearly impossible to fire. The trend is so clear that you'd have to be willfully blind not to see it.

Performance isn't everything, you say? Well, are auto workers, schoolteachers, and civil servants *happier* than actors, professors, and professional athletes?

European public opinion will apparently tolerate people being fired in industries where they really care about performance. Unfortunately the only industry they care enough about so far is soccer. But that is at least a precedent.

6. In America Work Is Less Identified with Employment.

The problem in more traditional places like Europe and Japan goes deeper than the employment laws. More dangerous is the attitude they reflect: that an employee is a kind of servant, whom the employer has a duty to protect. It used to be that way in America too. In 1970 you were still supposed to get a job with a big company, for whom ideally you'd work your whole career. In return the company would take care of you: they'd try not to fire you, cover your medical expenses, and support you in old age.

Gradually employment has been shedding such paternalistic overtones and becoming simply an economic exchange. But the importance of the new model is not just that it makes it easier for startups to grow. More important, I think, is that it makes it easier for people to *start* startups.

Even in the US most kids graduating from college still think they're supposed to get jobs, as if you couldn't be productive without being someone's employee. But the less you identify work with employment, the easier it becomes to start a startup. When you see your career as a series of different types of work, instead of a lifetime's service to a single employer, there's less risk in starting your own company, because you're only replacing one segment instead of discarding the whole thing.

The old ideas are so powerful that even the most successful startup founders have had to struggle against them. A year after the founding of Apple, Steve Wozniak still hadn't quit HP. He still planned to work there for life. And when Jobs found someone to give Apple serious venture funding, on the condition that Woz quit, he initially refused, arguing that he'd designed both the Apple I and the Apple II while working at HP, and there was no reason he couldn't continue.

7. America Is Not Too Fussy.

If there are any laws regulating businesses, you can assume larval startups will break most of them, because they don't know what the laws are and don't have time to find out.

For example, many startups in America begin in places where it's not really legal to run a business. Hewlett-Packard, Apple, and Google were all run out of garages. Many more startups, including ours, were initially run out of apartments. If the laws against such things were actually enforced, most startups wouldn't happen.

That could be a problem in fussier countries. If Hewlett and Packard tried running an electronics company out of their garage in Switzerland, the old lady next door would report them to the municipal authorities.

But the worst problem in other countries is probably the effort required just to start a company. A friend of mine started a company in Germany in the early 90s, and was shocked to discover, among many other regulations, that you needed \$20,000 in capital to incorporate. That's one reason I'm not typing this on an Apfel laptop. Jobs and Wozniak couldn't have come up with that kind of money in a company financed by selling a VW bus and an HP calculator. We couldn't have started Viaweb either. [5]

Here's a tip for governments that want to encourage startups: read the stories of existing startups, and then try to simulate what would have happened in your country. When you hit something that would have killed Apple, prune it off.

Startups are marginal. They're started by the poor and the timid; they begin in marginal space and spare time; they're started by people who are supposed to be doing something else; and though businesses, their founders often know nothing about business. Young startups are fragile. A society that trims its margins sharply will kill them all.

8. America Has a Large Domestic Market.

What sustains a startup in the beginning is the prospect of getting their initial product out. The successful ones therefore make the first version as simple as possible. In the US they usually begin by making something just for the local market.

This works in America, because the local market is 300 million people. It wouldn't work so well in Sweden. In a small country, a startup has a harder task: they have to sell internationally from the start.

The EU was designed partly to simulate a single, large domestic market. The problem is that the inhabitants still speak many different languages. So a software startup in Sweden is still at a disadvantage relative to one in the US, because they have to deal with internationalization from the beginning. It's significant that the most famous recent startup in Europe, Skype, worked on a problem that was intrinsically international.

However, for better or worse it looks as if Europe will in a few decades speak a single language. When I was a student in Italy in 1990, few Italians spoke English. Now all educated people seem to be expected to-- and Europeans do not like to seem

uneducated. This is presumably a taboo subject, but if present trends continue, French and German will eventually go the way of Irish and Luxembourgish: they'll be spoken in homes and by eccentric nationalists.

9. America Has Venture Funding.

Startups are easier to start in America because funding is easier to get. There are now a few VC firms outside the US, but startup funding doesn't only come from VC firms. A more important source, because it's more personal and comes earlier in the process, is money from individual angel investors. Google might never have got to the point where they could raise millions from VC funds if they hadn't first raised a hundred thousand from Andy Bechtolsheim. And he could help them because he was one of the founders of Sun. This pattern is repeated constantly in startup hubs. It's this pattern that *makes* them startup hubs.

The good news is, all you have to do to get the process rolling is get those first few startups successfully launched. If they stick around after they get rich, startup founders will almost automatically fund and encourage new startups.

The bad news is that the cycle is slow. It probably takes five years, on average, before a startup founder can make angel investments. And while governments *might* be able to set up local VC funds by supplying the money themselves and recruiting people from existing firms to run them, only organic growth can produce angel investors.

Incidentally, America's private universities are one reason there's so much venture capital. A lot of the money in VC funds comes from their endowments. So another advantage of private universities is that a good chunk of the country's wealth is managed by enlightened investors.

10. America Has Dynamic Typing for Careers.

Compared to other industrialized countries the US is disorganized about routing people into careers. For example, in America people often don't decide to go to medical school till they've finished college. In Europe they generally decide in high school.

The European approach reflects the old idea that each person has a single, definite occupation-- which is not far from the idea that each person has a natural "station" in life. If this were true, the most efficient plan would be to discover each person's station as early as possible, so they could receive the training appropriate to it.

In the US things are more haphazard. But that turns out to be an advantage as an economy gets more liquid, just as dynamic typing turns out to work better than static for ill-defined problems. This is particularly true with startups. "Startup founder" is not the sort of career a high school student would choose. If you ask at that age, people will choose conservatively. They'll choose well-understood occupations like engineer, or

doctor, or lawyer.

Startups are the kind of thing people don't plan, so you're more likely to get them in a society where it's ok to make career decisions on the fly.

For example, in theory the purpose of a PhD program is to train you to do research. But fortunately in the US this is another rule that isn't very strictly enforced. In the US most people in CS PhD programs are there simply because they wanted to learn more. They haven't decided what they'll do afterward. So American grad schools spawn a lot of startups, because students don't feel they're failing if they don't go into research.

Those worried about America's "competitiveness" often suggest spending more on public schools. But perhaps America's lousy public schools have a hidden advantage. Because they're so bad, the kids adopt an attitude of waiting for college. I did; I knew I was learning so little that I wasn't even learning what the choices were, let alone which to choose. This is demoralizing, but it does at least make you keep an open mind.

Certainly if I had to choose between bad high schools and good universities, like the US, and good high schools and bad universities, like most other industrialized countries, I'd take the US system. Better to make everyone feel like a late bloomer than a failed child prodigy.

Attitudes

There's one item conspicuously missing from this list: American attitudes. Americans are said to be more entrepreneurial, and less afraid of risk. But America has no monopoly on this. Indians and Chinese seem plenty entrepreneurial, perhaps more than Americans.

Some say Europeans are less energetic, but I don't believe it. I think the problem with Europe is not that they lack balls, but that they lack examples.

Even in the US, the most successful startup founders are often technical people who are quite timid, initially, about the idea of starting their own company. Few are the sort of backslapping extroverts one thinks of as typically American. They can usually only summon up the activation energy to start a startup when they meet people who've done it and realize they could too.

I think what holds back European hackers is simply that they don't meet so many people who've done it. You see that variation even within the US. Stanford students are more entrepreneurial than Yale students, but not because of some difference in their characters; the Yale students just have fewer examples.

I admit there seem to be different attitudes toward ambition in Europe and the US. In the US it's ok to be overtly ambitious, and in most of Europe it's not. But this can't be an intrinsically European quality; previous generations of Europeans were as

ambitious as Americans. What happened? My hypothesis is that ambition was discredited by the terrible things ambitious people did in the first half of the twentieth century. Now swagger is out. (Even now the image of a very ambitious German presses a button or two, doesn't it?)

It would be surprising if European attitudes weren't affected by the disasters of the twentieth century. It takes a while to be optimistic after events like that. But ambition is human nature. Gradually it will re-emerge. [6]

How To Do Better

I don't mean to suggest by this list that America is the perfect place for startups. It's the best place so far, but the sample size is small, and "so far" is not very long. On historical time scales, what we have now is just a prototype.

So let's look at Silicon Valley the way you'd look at a product made by a competitor. What weaknesses could you exploit? How could you make something users would like better? The users in this case are those critical few thousand people you'd like to move to your silicon valley.

To start with, Silicon Valley is too far from San Francisco. Palo Alto, the original ground zero, is about thirty miles away, and the present center more like forty. So people who come to work in Silicon Valley face an unpleasant choice: either live in the boring sprawl of the valley proper, or live in San Francisco and endure an hour commute each way.

The best thing would be if the silicon valley were not merely closer to the interesting city, but interesting itself. And there is a lot of room for improvement here. Palo Alto is not so bad, but everything built since is the worst sort of strip development. You can measure how demoralizing it is by the number of people who will sacrifice two hours a day commuting rather than live there.

Another area in which you could easily surpass Silicon Valley is public transportation. There is a train running the length of it, and by American standards it's not bad. Which is to say that to Japanese or Europeans it would seem like something out of the third world.

The kind of people you want to attract to your silicon valley like to get around by train, bicycle, and on foot. So if you want to beat America, design a town that puts cars last. It will be a while before any American city can bring itself to do that.

Capital Gains

There are also a couple things you could do to beat America at the national level. One would be to have lower capital gains taxes. It doesn't seem critical to have the lowest *income* taxes, because to take advantage of those, people have to move. [7] But if capital gains rates vary, you move assets, not yourself, so changes are reflected at market speeds. The lower the rate, the

cheaper it is to buy stock in growing companies as opposed to real estate, or bonds, or stocks bought for the dividends they pay.

So if you want to encourage startups you should have a low rate on capital gains. Politicians are caught between a rock and a hard place here, however: make the capital gains rate low and be accused of creating "tax breaks for the rich," or make it high and starve growing companies of investment capital. As Galbraith said, politics is a matter of choosing between the unpalatable and the disastrous. A lot of governments experimented with the disastrous in the twentieth century; now the trend seems to be toward the merely unpalatable.

Oddly enough, the leaders now are European countries like Belgium, which has a capital gains tax rate of zero.

Immigration

The other place you could beat the US would be with smarter immigration policy. There are huge gains to be made here. Silicon valleys are made of people, remember.

Like a company whose software runs on Windows, those in the current Silicon Valley are all too aware of the shortcomings of the INS, but there's little they can do about it. They're hostages of the platform.

America's immigration system has never been well run, and since 2001 there has been an additional admixture of paranoia. What fraction of the smart people who want to come to America can even get in? I doubt even half. Which means if you made a competing technology hub that let in all smart people, you'd immediately get more than half the world's top talent, for free.

US immigration policy is particularly ill-suited to startups, because it reflects a model of work from the 1970s. It assumes good technical people have college degrees, and that work means working for a big company.

If you don't have a college degree you can't get an H1B visa, the type usually issued to programmers. But a test that excludes Steve Jobs, Bill Gates, and Michael Dell can't be a good one. Plus you can't get a visa for working on your own company, only for working as an employee of someone else's. And if you want to apply for citizenship you daren't work for a startup at all, because if your sponsor goes out of business, you have to start over.

American immigration policy keeps out most smart people, and channels the rest into unproductive jobs. It would be easy to do better. Imagine if, instead, you treated immigration like recruiting-- if you made a conscious effort to seek out the smartest people and get them to come to your country.

A country that got immigration right would have a huge advantage. At this point you could become a mecca for smart people simply by having an immigration system that let them in.

A Good Vector

If you look at the kinds of things you have to do to create an environment where startups condense, none are great sacrifices. Great universities? Livable towns? Civil liberties? Flexible employment laws? Immigration policies that let in smart people? Tax laws that encourage growth? It's not as if you have to risk destroying your country to get a silicon valley; these are all good things in their own right.

And then of course there's the question, can you afford not to? I can imagine a future in which the default choice of ambitious young people is to start their own company rather than work for someone else's. I'm not sure that will happen, but it's where the trend points now. And if that is the future, places that don't have startups will be a whole step behind, like those that missed the Industrial Revolution.

Notes

[1] On the verge of the Industrial Revolution, England was already the richest country in the world. As far as such things can be compared, per capita income in England in 1750 was higher than India's in 1960.

Deane, Phyllis, *The First Industrial Revolution*, Cambridge University Press, 1965.

[2] This has already happened once in China, during the Ming Dynasty, when the country turned its back on industrialization at the command of the court. One of Europe's advantages was that it had no government powerful enough to do that.

[3] Of course, Feynman and Diogenes were from adjacent traditions, but Confucius, though more polite, was no more willing to be told what to think.

[4] For similar reasons it might be a lost cause to try to establish a silicon valley in Israel. Instead of no Jews moving there, only Jews would move there, and I don't think you could build a silicon valley out of just Jews any more than you could out of just Japanese.

(This is not a remark about the qualities of these groups, just their sizes. Japanese are only about 2% of the world population, and Jews about .2%.)

[5] According to the World Bank, the initial capital requirement for German companies is 47.6% of the per capita income. Doh.

World Bank, *Doing Business in 2006*, <http://doingbusiness.org>

[6] For most of the twentieth century, Europeans looked back on

the summer of 1914 as if they'd been living in a dream world. It seems more accurate (or at least, as accurate) to call the years after 1914 a nightmare than to call those before a dream. A lot of the optimism Europeans consider distinctly American is simply what they too were feeling in 1914.

[7] The point where things start to go wrong seems to be about 50%. Above that people get serious about tax avoidance. The reason is that the payoff for avoiding tax grows hyperexponentially ($x/(1-x)$ for $0 < x < 1$). If your income tax rate is 10%, moving to Monaco would only give you 11% more income, which wouldn't even cover the extra cost. If it's 90%, you'd get ten times as much income. And at 98%, as it was briefly in Britain in the 70s, moving to Monaco would give you fifty times as much income. It seems quite likely that European governments of the 70s never drew this curve.

Thanks to Trevor Blackwell, Matthias Felleisen, Jessica Livingston, Robert Morris, Neil Rimer, Hugues Steinier, Brad Templeton, Fred Wilson, and Stephen Wolfram for reading drafts of this, and to Ed Dumbill for inviting me to speak.

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