The Fall of Silicon Valley

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I remember the fall of Silicon Valley. I was there. People still live in Rome long after the collapse of the Roman Empire, and people continue to live and work in Silicon Valley. But it is not the same. The spirit of innovation is gone. It was there for a while. I saw it. And I saw it get oppressed, and pushed underground, and it eventually left. For years people will talk and wonder what happened, how it fell, and why. For years people will attempt to rebuild it, or to replicate it somewhere else but they should not. The next Silicon Valley will not look like the last.

I am writing this because I am fascinated by the process of innovation. I believe that one day there will be a mathematical theory of innovation. Similar to how Frederick Taylor developed a theory of work, later improved upon by Peter Drucker, and Claude Shannon developed a theory of communication, both previously seen as irreducible processes, there will one day be a science of innovation

itself that will continue to get better over time. And just like any science, a big part of the process is learning what not to do.

I expect historians will record the death of Silicon Valley in the year 2012. Steve Jobs died in 2011. Paul Graham announced he was leaving Y Combinator in 2014, but when I met him in 2012, he was already planning his departure. I would put the precise date as November 7, 2012, the day Dustin Curtis published his infamous blog post “The Best”.

That was it. That was the day the bohemian creativity and acceptance of San Francisco was irrevocably overrun by entitled materialist snobs. When I first read it I thought it was brilliant satire. Then when I realized he was serious, I decided to leave myself. Dustin and his ilk had completely perverted the message of Steve Jobs. Steve Jobs hated oppression. He loved using design and technology to free people from it. And the tech industry had become a powerful weapon of oppression.

Working for the tech industry was not being free. It was not growing your own food or building your own house or finding better ways to nurture skills and relationships. It was not having free time. It was not being creative just for the sake of it. That was for all for hippies. The opposite of technology. The point was to be busy all the time. The point was to write software, nothing but software. They even sent ambassadors to the impoverished dusty corners of Africa. To teach them better ways to grow and preserve food? No! To make them write software.

Most software was written for big businesses. Entrenched enterprises of command and control. That is who we should make products for. They have the money. Why not make products for

people? People that do not live in Silicon Valley? Isn't that where most of the money is? But they forgot how.

Software is great, but it is useless if it does not at some point connect to the physical world. Unlike Rome, which built magnificent structures to last thousands of years, Silicon Valley has nothing left to look at. There will be no ruins. It may even be forgotten.

Silicon Valley fell partially because unlike its early days, it began pushing terrible working and living cultures and useless, irrelevant, at times harmful products on the rest of the world. But mostly, it fell because it was all based on a series of lies. And people gradually began to see the truth.

The first lie was that you had to live in Silicon Valley to be innovative. The truth is, innovation is everywhere. Innovation is within you. Silicon Valley does not have a monopoly on innovation and never did.

The second lie was that all innovation had to look a certain way. Everybody knew innovation was a Delaware C Corporation based in Silicon Valley that sold software, raised Venture Capital, went viral, grew like a cancer, became a unicorn, rented lavish creative office spaces, and got acquired by an advertising company. The truth is, innovation comes in all forms, shapes and sizes. One can be innovative in science. One can be innovative in business. One can be innovative in storytelling. There is innovation in politics and churches and nonprofits and homes and families and communities. The truth is, “unicorns” are not real. Viruses and cancers that grow unchecked are bad things. The truth is, no company grows quickly, linearly, and continually. Every company goes through cycles. If you are focused on innovation, the company will cycle upwards. If you get distracted, it will decline.

The third and final lie, was that Silicon Valley was a great place to start and run a business. Nothing could be farther from the truth. Silicon Valley is one of the most hostile, expensive, oppressive places to run a business in the world.

Let us take a moment to better define innovation. Innovation is the process of taking a thing, or a collection of things, and making it better. There is nothing new under the sun. Everything comes from nature. Do not ask if something is “new”. Ask if it is truly better. Innovation takes something that people use and improves upon it. Innovation comes from someone pure in heart. Innovation stands the test of time.

For example, Facebook is not an innovation. Facebook did not make socializing better. It made it worse. Was it at one point a new web site? Yes. Does it make money? Yes. But it is not innovative. Next consider Amazon. Yes Amazon (which is not based in Silicon Valley) made online shopping better. However, it is fundamentally just another middleman, and will not stand the test of time. True innovation, like the silicon chip itself, stands the test of time. Finally, consider Tesla. Tesla (which is leaving California) took the electric car, and made it better. That was innovative. The electric car itself was an innovation, an improvement in many ways over a gasoline powered car, which was itself better in many ways than riding a horse, which, if you are traveling a long distance, sure beats walking.

Most importantly, Tesla continues to innovate. They continue to work to improve their batteries and safety and costs and distribution and all sorts of things. If we continue to innovate in this path, we will one day have flying cars. They may not look like what we expect today, they may not be built by Tesla, but it will eventually happen.

Next let us consider the culture of Silicon Valley. Silicon Valley has pushed long hours, long commutes, short if any vacations, transactional relationships, rampant materialism, and short-sighted, selfish, even at times downright dishonest behavior and reduces human beings and their desires and relationships to numbers. Most people in the world do not want to live like this. How did we get here?

Silicon Valley largely began when one very innovative, very controversial figure, Willian Shockley, left Bell Labs, a hub of true innovation, because he wanted more credit for his work on the solid state transistor. He chose Santa Clara, California for no other reason than the fact that his mother lived there. At the time it was known as the “Valley of Heart’s Delight”, a quiet, agricultural community. Later his oppressive nature alienated his colleagues and the “traitorous eight” left to start Fairchild Semiconductor, and the rest is history. Steve Jobs was similar to Shockley, but also different. Elon Musk is similar to Steve Jobs, but also different. This process will continue. While Silicon Valley fell, it did create a seed for the future.

Note that there is no silicon in Silicon Valley. Most actual silicon is mined in China. Most chips are fabricated in Taiwan. Even “fabless semiconductor companies” outsource most of the design work to India. Silicon Valley is too expensive.

It makes sense for mining companies to be located in Colorado. That is where the metals are. It makes sense for film companies to be located in Los Angeles. That is where the weather is conducive to filming year round. Unlike these cases, there is nothing special about the resources or geography of Silicon Valley that makes it particularly amenable to innovation. In fact, California is a relatively poverty-stricken agricultural economy with among the most oppressive rents, regulations, and taxes in the world. It is a terrible place to do

business. Even the weather is beautiful in California pretty much everywhere except for San Francisco.

Like many others, I had heard the tales of Silicon Valley. As an electrical engineering student at Georgia Tech I was familiar with the legend of Shockley, Fairchild, Intel, HP, etc. It was a place so brimming with opportunity that billionaires were forged in garages. In 2010, the Great Google sent colorful ambassadors to my humble engineering school and regaled us with tales of idyllic Mountain View, California. Where there was wi-fi everywhere. Where engineers were changing the world. Where goats mowed the vast green lawns. Here you could start a company, raise money with ease, and without ever turning a profit sell it to Google for fabulous riches and spend the rest of your days working on 20% time projects and helping Larry Page learn to communicate with dolphins. It sounded wonderful.

More importantly, I noticed most of my peers were graduating and going to work for behemoth defense contractors, where they would quickly get a marriage and a mortgage and spend the rest of their days punching a clock and working on glacially slow projects that would probably never get used by anyone, and if they did it might be to kill someone. I noticed that Lockheed Martin was so big they even had their own newspaper, which every month was filled with numerous stories of otherwise healthy engineers dying shortly after a forced retirement. I wanted an alternative.

That was when I discovered the writing of Paul Graham. I thought he was refreshingly earnest and wise and lucid and I wanted to learn from him. But I needed an innovation. During the Arab Spring of 2011 I learned that the government was able to shut down the internet, an action I thought was oppressive and immoral. I had been building ham radios for fun and this story inspired me to work on a mesh network, a *decentralized* method of communication that could not be

shut down. Note mesh networks were not “new”. But I believed I could make them better. It got me accepted into Y Combinator.

Paul Graham is as a remarkably innovative investor. He improved the process of investing itself. Before then investors lived in board rooms reviewing business plans and spreadsheets and gossiping about their crystal balls in which they claimed they could see the future. Paul had the crazy idea to sit down in a room with a founder for 5 minutes and listen to them. He also had the crazy idea to see investing as something personal. To "bet on the jockey not the horse", to support a person not just a business. Very few of the founders that came to him had mature, sustainable businesses on day one. But he knew that many of them would eventually figure out how to build one, often one completely different from the one they started with. This happened to me! He called it "the pivot".

Paul Graham told me things nobody else was willing to admit like the fact that patents were dumb. All that mattered was capturing a market. And that scheduling things was terrible. It made it difficult to focus. It was true. But more importantly, he showed me the spirit of innovation. I saw it when we were walking outside (he loved walking meetings) and he suddenly stopped to marvel at a plane flying overhead. Paul, we have had aviation for a long time and there are lots of planes flying overhead all the time. But wait, that is incredible! It is amazing that humans can safely and affordably fly through the air on a metal bird! The engines and alloys and production process are all incredibly sophisticated and the result of a long story of innovation. Aviation is also the story of people. Howard Hughes loved aviation and for all his flaws was a very creative and persistent innovator. Paul helped me see the things that were right in front of me.

When I initially arrived in Mountain View I was disappointed that the wi-fi didn't work all that well and that I didn't see any goats. But then at the relatively non-descript Y Combinator warehouse in Mountain View I noticed that it was deliciously quiet and peaceful. There were long benches, kind of like a church. More importantly, the community was brimming with innovative energy. It was palpable.

Even then I felt like a bit of a black sheep. I was the only person without an iPhone and a Macbook. I hadn't gone to Stanford. Very few people were doing hardware startups. When the money hit almost everyone rushed to the Apple Store in Palo Alto to get the latest gear. Why did they need more pixels? Because the monitor with more pixels was new. And it was expensive. That meant it was good. Instead of the Apple Store my cofounders and I went to Home Depot to get showerboard, which my cofounder Hunter Scott read on a blog could be used as a cheap alternative to whiteboards. He was right.

In 2012 meme apps were all the rage. 9GAG was the hot startup. Few people understood what a mesh network was or why it was so important to me, but they liked the name of my company "MEOW Global Networks, Inc". It was a joke to make fun of all the ridiculous acronyms the telecom industry liked to use to confuse people, to make their technology seem incredibly sophisticated when they were really just radios. And radios are fundamentally not very complicated. Steve Wozniak always said that jokes were important.

Anyways Hunter also found we could save money by etching our own circuit boards and he turned one of the bathrooms into a darkroom to do so. The rapid heating and cooling kept shattering the glass casserole pans he used, but he kept trying. Hunter complained that real Pyrex would not have this issue. I did not even realize how many different types of "glass" there were until then. Hunter is an innovator.

I remember the dinners well. Once a week we emerged from our darkrooms and LCD illuminated caves of code and gathered for some hot rice and beans. It was delicious. We listened to wisdom from people that had it and asked questions. I remember Michael Bloomberg saying that the press will attack you even when you do the right thing. I remember Peter Thiel saying that the name of a company is very important. I remember Marc Andreessen saying that engineers tend to underappreciate sales and marketing. They were all speaking the truth.

It was all a lot of fun. We were all weirdos and we all accepted each other and we all helped each other when we could and it felt great.

I also remember a man I had never heard of talk about “real” technology. I could tell he was not rich because he wore a suit. One thing I liked about Silicon Valley is that the really rich people wore comfortable, simple clothes. The man said that we should be working on real technology like social apps and local apps and mobile apps and data, big data, the bigger the better. He also told us what not to do. He thought about what the opposite of real technology was and he mentioned toilet paper. Whatever we did. Don’t make toilet paper. That was, he said, not technology.

That for some reason seemed strange to me. I had been watching online lectures on immunology and I remembered the professor talking about how very complicated the immune system was, and how we put so much work into understanding it and making people healthier with sophisticated therapies and vaccines and monoclonal antibodies. And yet, she said, nobody had done more for medicine than Ignaz Semmelweis, who developed (despite enormous pushback and ridicule) the controversial idea that physicians should wash their hands. Sanitation, the professor said, had done more for the human condition than any medical technology.

I also thought about Joseph Gayetty, an American inventor that was the first to commercialize modern toilet paper. The Romans had used a sponge on a stick kept in a pot of vinegar. Toilet paper was an improvement on this, an innovation. Despite initially being attacked as a “quack” by the medical industry and facing numerous lawsuits, his paper became very popular and he built a huge company and became fabulously wealthy. Clearly this suited man would never have invested in Gayetty.

I remember angel investor Ron Conway telling heroic stories of saving AirBnB from the oppressive regulators of San Francisco, a battle that rages to this day. The guy looked like a literal angel. There are a lot of people who make a lot of money by making sure the world does not change. If you start to become successful they will attack you. You need allies. You need angels.

I remember Mark Zuckerberg was scheduled to speak, but he flaked on his commitment. I had really been looking forward to it. Later I learned that a lot of people in Silicon Valley treated commitments as a matter of convenience. If someone does not do what they say then that is their loss. Do not get upset with them. Just move on.

After dinner Garry Tan would take us to the one bar in town and buy us shots. It was a lot of fun. But in the bathroom I noticed a lot of “F–k Facebook” graffiti on the walls, with lots of drawings of thumbs pointed down. Something bad was brewing.

Paul Graham, Sam Altman, and the other partners took us all and improved us. One by one they mentored us. They did not give us a lot of money, but they gave us a lot of help. The message was simple. Build products. Talk to customers. But people did not listen. They were obsessed with raising money. Obsessed with figuring out not what customers wanted, but with what VCs wanted. They were

convinced there was some “hack”, some “trick” to raising money. Surely the point of YC was to reveal to them this ancient secret. The truth is there was no secret. There was no trick. You did not even have to be in YC to raise money. The way to raise money was not to trick people, though some tried by engineering the coveted “hockey stick” growth charts. The trick was simply to build a good company. But they did not listen. They did not want to believe it.

They wanted so much for the VCs to use and like their products. But most people are not VCs. Why try to make products for them? I remember raising money and most VCs were almost offended at the product I had brought them. They would never use it themselves. They were not interested in being my customer. But it was not for them. It was for people different from them. They did not understand.

One of the most foolish mistakes I would see founders make is to not treat their customers well. They would not listen to them. They would not be willing to adapt. Sales is about understanding the needs of your customers. Many founders simply wanted to push their product on others. They would waste vast sums of money on Facebook ads to "market" when they should have just listened. Marketing should be a collaboration.

Let's say a company starts making red helmets. Sales are not great. Then a customer comes to them and asks to buy green helmets. Oh no, the founder would say. We do not sell green helmets. We sell red helmets. Oh well. Bye bye. Worse, they would turn down deals because they thought they were not getting enough money or some other deal term was not to their liking. Oh no, we cannot sign this low price deal. Then everyone will expect low prices and we will never make money and the company will die. Wrong. The company will die if you do not get customers in the first place. Take the deal. Make the next one better and the one after that better. Do not turn away

customers because you had a different idea of what your product or service was or how much it should cost. Make them happy. They made the same mistake with investors, at one point I did too. Wanting to negotiate and "shop" and try to get a better deal, a higher price. Are you insane? It doesn't matter. Take the money. Get back to work.

Founders asked questions about obscure deal terms and quested for term sheets at all costs, talking about getting good at the fundraising process, like sales mattered more than the product. PG patiently explained over and over that the point of a company was not necessarily to raise money. It was to sell a good product. It was to build a good team. Most of us, including myself, had technical capabilities but difficulty understanding what a product or a customer really was. But we did not give up. I did eventually found an honest, intelligent VC named Chris Dixon to invest in me, a person whose help I am very grateful for to this day.

Today Y Combinator is a large, complicated mess with unclear focus. All the things PG warned us against. But the spirit is still alive. To this day Paul Graham writes wisdom on his blog and to this day Sam Altman is experimenting with new and better ways of management, entrepreneurship, innovation, and investing. To this day Sam, though he is extremely busy, takes time to listen to me and help me and encourage me. One of his prospective investors, a large, obscure financial institution, called me to ask about investing in a fund managed by Sam. They were concerned that he may try to do things differently than other investors. They were afraid of anything new and different. What a silly question. Of course they should invest. Maybe they should only invest in creative people.

They were also considering investing in a large, reputable, “blue chip” investment fund, but I knew the manager had developed a reputation

of flaking on his commitments. I told them this. Reputation matters. More than money.

Before I knew it YC was over. Demo day came and went and reality began to set in. One of the first things I remember was how difficult it was to find a place to sleep. No landlord wanted to rent to us, especially given how much we could afford to pay. I lived with my cofounder for months in a Motel 6 and slept on floors and couches. Next door to us at the Motel 6 a man in a nice car would arrive every Thursday afternoon like clockwork and have very loud sex with a woman that was probably not his wife. It would disrupt our whole day. Sex is fun. But it can be a huge distraction.

Everything was so expensive. Brokers and agents would show us lavish apartment complexes with duck ponds and tennis courts owned by faraway landlords. There were gleaming office parks that cost more per square foot to rent than I had in my checking account. Not only that, we needed 3 years of tax returns and a huge deposit and credit checks and several years worth of rent in the bank. The Landed Lords did not accept us. So we worked from Starbucks.

The next thing I began to notice was that relationships could be very transactional. Even in social settings people would very bluntly ask questions like how much money we had, how much we made per year, what did we want from them, how many followers did we have, how much did we pay in rent. In Georgia my rent was low, my friends cared about me as a person, and most people were perfectly content with a good conversation that did not lead to lawyers leading deals or money changing hands.

I learned that you had to be careful who you trusted. After demo day a Venture Capitalist spent a good amount of time learning about our business and eventually promised to invest, and we shook hands on

it. I was elated. He later changed his mind and ghosted me, which hurt my feelings a lot. Paul Graham came to my defense, sent them an email chastising them, and made a note of their behavior in the YC investor database. He had my back. While Paul Graham certainly made a lot of money, it is his wisdom, his care, his creativity, and his philosophy that will stand the test of time.

After YC I moved from Sunnyvale to San Francisco and started to branch out. I started to meet some very interesting and innovative people. But I could not help but notice, all the true innovators were having a very difficult time. They were all oppressed.

Before long, I met a very bright founder that had worked for years to build a company and successfully exited it. Unfortunately, he had raised and burned a lot of money so he, even though it was his idea and he did most of the work to build it, was left with a pittance. When he first raised money he did not fully understand what “preferred” stock was, or that it might actually matter.

Much of the money his company spent had gone to high rents and high taxes, and it had gone to high salaries so that employees could pay their own high rents and high taxes. There are numerous landlords that made more money renting office space in Silicon Valley than Steve Jobs made from Apple stock. All the money was being taken by landlords and governments.

I felt sorry for him, but I also knew that he had brought it on himself. He lacked discernment. He had listened to the wrong people and done the wrong things, raising too much money, hiring too many people, putting too much pressure on himself to “grow”, never taking vacations, letting his company become a large ball of anxiety that trapped him. Do not let this happen to you.

The truth is, the ideal size for an organization is 8 people. Anyone who has interacted with Silicon Valley or Wall Street may think this is puzzling. But it is true. Sure you can have more or less, but that is a great number for an organization. Keep your organization very focused. Find what you are best at and focus and innovate on that. Everything else should be outsourced. Stay away from politics and bureaucracy. Catch them early and destroy them. To an organization, bureaucracy is a virus and politics is an auto-immune disease. If you or one of your associates is interested in policy that's great. Do it on your own time. Do not get the organization involved.

Try it. Run an experiment. Find someone that works at a company of 8 people or less and ask them how happy and productive they are. Ask them how innovative they believe their company is today. Then ask the same to someone that works for a company with many more people. This small size is a huge reason “startups” have such an advantage and opportunity to be innovative. Companies stop innovating when they become political and bureaucratic and having lots of people makes it very easy for these things to happen.

The above founder was also the first to explain to me, much to my surprise, that VCs, despite appearing wealthy, did not invest their own money. They raised money themselves from mysterious “LPs”. Who were these LPs, the Limited Partners? They did not have flashy web sites and podcasts and blog posts and twitter accounts broadcasting their unsolicited opinions. But that was where the money actually came from. And that was where it actually went. Not to the founder, not even to the investor, but to the LP.

I remember the first time I met one of these LPs. He was very nice. Unlike the founders, and many of the VCs I knew, he did not look like he worked very hard. I asked him how much he knew about the companies his VCs were investing in. I put a lot of time and effort into

exhaustive board decks and reports and innovation plans and motivated people about the company's mission. Was he getting these reports?

Of course not, he said, he simply got a spreadsheet once a year that contained the name of the company, its valuation, and how many employees it had. That was it. I wonder if that was why VCs were so eager to help with "recruiting". It made it appear that the companies that did not have revenue were growing. And it also ensured that they would need to raise more money. I also learned that the biggest LPs were pension funds. The money was going to the government!

Many of the Venture "Capitalists" were actually agents of the socialist pension funds. Do pension funds care about innovation? Of course not. They represent governments and employees. Didn't these parties care about innovation? Maybe indirectly, must mostly they wanted to make sure the money was not put at risk. Private Equity is a vanishingly small part of their investment, Venture Capital smaller still, even though according to pioneering institutional investor David Swensen, small, private companies reliably produce the best returns. Most of their money goes to bonds, strengthening governments who just pass more regulations, public markets, enriching brokers and middlemen, and real estate, raising rents. Every successful exit only went to feed the engine of oppression strangling innovation. Some of the money created by this founder's hard work had undoubtedly ended up directly in Nancy Pelosi's checking account.

This LP was not a bad person. He seemed like a good person. And he was doing a good job. He had invested in skilled fund managers with many growing businesses. But his job was not to support innovation, it was to preserve his fund's capital, to grow it barely above inflation.

During one of my first trips to San Francisco I witnessed a homeless man urinating in front of a Porsche dealership while I was getting on a city bus. Note he was not facing the building. He was facing the public. I saw everything. While I was meditating on this I noticed a woman get on the bus that had light in her eyes. I don't remember who spoke first but we began talking, and she told me that, like me, she had a startup. Also like me, she was making hardware. She loved electronics and she loved teaching people about them so she had invented small, affordable, safe circuit boards that could be pieced together to make all kinds of interesting combinations. It made learning electronics accessible and fun. And, unlike 9GAG, people paid money for the product. I thought she was brilliant.

She said she lived in New York, which she preferred to Silicon Valley, but she had to come here to raise money. And yet, VCs told her over and over again that "hardware was hard". That they did not see how it could "scale". I had been hearing the same rhetoric. I learned that in addition to her company she had contributed to many art projects, and helped support communities of makers and "hackerspaces". I had always wanted to go to a real live hackerspace, so she took me.

She had lived in various "hacker houses" too, since rent was so expensive. Tell me about it! But that the landlords kept trying to evict them. Who were these Lords? Why were they so mean? She took me to Hacker Dojo, an experience I will never forget. It was beautiful and fun and the people were nice and helpful and smart. I loved it. Unfortunately, they said the city of Mountain View was prosecuting them for zoning code violations. That did not make a lot of sense to me. Wasn't this the global hub of innovation? Why wouldn't the city just let these people write code in peace? If you want to start a community space, try not to choose one that will require construction and permits.

She also spoke excitedly of a wonderful gathering called Maker Faire where creative people got together and celebrated the joy of building things. I learned so much from her. This woman's name was Ayah Bdeir. She successfully exited her company in 2019, the same year Maker Faire went bankrupt. I never got to go. To this day Ayah continues to contribute to technology, art, and communities. She is a true innovator. Learn from her and follow in her footsteps.

At Hacker Dojo I learned of another place called TechShop in Menlo Park. Now this was a cool place. For a hardware engineer like me it was heaven. There were tools and machines and smart creative people everywhere! A lot of people would come after work to make stuff. People paid for the ability to come and build things, and get better at building them. There were classes and talks and training. I couldn't get enough. I even witnessed a man blacksmithing, yes actually blacksmithing in the outdoor area. It was incredible. TechShop filed for bankruptcy in 2017. The founders told me despite high membership fees they could not afford their astronomical rent and insurance bills.

If you want to start a makerspace, try to find a place that already has the space and the tools. For example, there were many well equipped prototyping shops in Menlo Park that already had all the tools and insurance and a sustainable business. It would have been better to just partner with them to use their tools after hours. Most people were coming after work anyways. When computers were new and expensive Richard Feynman and his friends would use the mainframes late at night and on weekends. When the "official work" was not being done they would play and learn. The innovator is a master of finding partners and resources that are underutilized.

Another wonderful place I got to visit was NoiseBridge. I remember just walking in and a whole world of cool and interesting projects lay

before me. Also, nobody talked to me. Nobody made me sign anything. Nobody tried to sell me anything. I simply walked in, explored the robots and mushrooms and vintage circuitry, wrote code on the couch for a while, and left. It was amazing. Later I came back for an event where people presented the projects they were working on. One enterprising engineer, who worked for a tech company, but did not think much of their product, spent his personal time writing an app to track the SF city buses, so he would know whether or not he had time for another beer after work and before heading to the bus stop. It was not a huge problem, but he had solved his own problem. I thought he was brilliant. Innovators solve their own problems.

NoiseBridge, after multiple rent hikes by their landlord, lost their lease in 2017. If you want a community space, see if you can get one without signing a lease. There is a lot of empty office and workshop space. Try to find a partner that already has some and is willing to share.

Then one night in 2012 my life changed forever. I was invited to an event at Biocurious, the first “biohacker” space of its kind. Here people were applying the principles of electrical and software engineering to biology. I was hooked. For months I had a growing suspicion that most of the interesting work in hardware and software had already been done. Here was the next big thing. Here in this nondescript office park in a lab space started with $30,000 from Kickstarter. It made sense. People in Silicon Valley loved telling legends of the garage where Hewlett and Packard built the first oscilloscope. But they were looking for innovation at government run universities and lavish creative offices. Biocurious was the new homebrew computer club. It was similar to the last, but also different. Unfortunately, people that had made money off of computers and software simply wanted more computers and software. They could not see what was right in front of them. Whenever I tried to speak

about it people were quick to declare that they “did not understand” biology. End of conversation. They would invest in things that they knew, things that were innovative 10 years prior. Why were they not interested to learn?

Hewlett Packard executives once sat at a desk and stared directly at the personal computer and stared directly at Steve Wozniak. It was literally sitting right in front of them. They could have taken the entire personal computer industry with one fell swoop right then for free. But they decided it did not look like innovation. They did not recognize it. Computers looked like mainframes. The same thing was happening with biology. Oh yes there were pharmaceutical companies, huge enterprises making pills prescribed by doctors. It already exists. Biology did not look like the innovation they were looking for. They ignored it, or they looked for companies that looked like pharmaceutical companies.

At Biocurious I listened with rapt attention to a brilliant young man, Austen Heinz, an electrical engineer like me, talk about how he was applying principles from semiconductor manufacturing to DNA. He loved semiconductors and he loved biology. Why not combine them? I finally realized DNA contained information much like computers did. Only this information was alive. This information was within me. This information had power. I was smitten. I thought he was right about everything. Imagine ideas becoming life. Imagine instead of pushing advertisements on everyone we started making whole new kinds of products and medicines for them, extending our own lives, engineering our own brains? That was the future. But it was also not new. Far from it. DNA had not been inspired by computers, computers had been inspired by DNA. The technology of life was far more advanced than the technology of silicon.

When speaking to Austen I learned what a challenge it was to build a lab, which fundamentally was not much different than a kitchen. It is also not easy to build a kitchen in Silicon Valley, but a “lab” is harder still. He spoke of all the permits and approvals and certificates and the costs and the endless waiting for inspectors and the many other frustrations. All for a table and a sink. He looked a little worn out, but he persisted.

The next time I saw him he revealed that he was going through a terribly difficult time. He had become involved with a company that was investigating the vaginal microbiome. The press had picked up the story and began hounding him to no end with snarky pieces that had misquoted, misattributed, and misrepresented him and his friends. He was devastated. He looked even worse than before, but it was a company event and he put on a brave face and continued to inspire people, including myself, about the future of engineering biology.

Austen committed suicide in 2015. He was 31. I wish he was still with us. He would have been very successful. Many companies, a whole industry in fact, ended up making the very things he was talking about, and became quite large and profitable and continue to innovate to this day. If you are feeling stressed, take a vacation. Make sure you have people you can confide in. Innovation can be a heavy burden and you cannot do it alone. Every entrepreneur I know knows the darkness. It is only temporary. It is always darkest before the dawn. You must persist.

Vacations are not a distraction from innovation, they are part of it. Fun and recreation help you recreate yourself. Anyone who has tried to build muscle knows that the act of “working” out actually destroys the muscle. It is built during periods of rest. The mind, your skills, and

your relationships are all the same. You work. And you rest. Imbalance with atrophy you.

The last influence I will talk about is unfortunately also a story of heartbreak. Aaron Swartz had the most important quality for an innovator. He was pure in heart. And he loved the web. He was eager to improve himself, the internet, and to share the beautiful treasure trove of science with the world. He personally invented many important technologies for the web and he shared them. He wrote earnestly about innovation and he lived it. He recognized that it was wrong for the forces of greed and materialism to squat on scientific papers, especially those funded by tax dollars, as most research is. Like a true innovator, he stood up for what he believed in, and he did something about it. He released the information to the world. This did not sit well with the Lords of Darkness. They came down on him with the full force of their oppression. They pressured him. And they tormented him, and it ultimately killed him. Aaron Swartz committed suicide in 2013. He was 26. Aaron's writings today are more relevant than ever. So are his inventions. Like a true innovator, the things he made will stand the test of time.

You must remember that nobody can truly hurt you. When you do the right thing, you may be deceived that you are powerless and weak before a giant unstoppable machine, but that is a lie. The truth is, right makes might. When you do the right thing, especially when nobody else has the courage to do so, you will find allies. You will find help. And you will eventually win.

Now that people are gradually admitting to the death of Silicon Valley, there are cries to build a new one. Where should we put the next Silicon Valley? Who is the next Elon Musk?

Maybe the next Elon Musk is not a single person. Maybe the next Silicon Valley is not a single place. Maybe there will be a lot of innovators of all different kinds. Maybe there will be beautiful places of creativity and ingenuity all over the world. But these places will likely need to be far away from Nancy Pelosi and the Lords of Darkness.

In Peter Drucker's last book, written in 1994, "The Post-Capitalist Society", he predicts that pension funds will overtake the economy, taking capital out of the hands of capitalists. Excessive government regulation, both federal and local, would strangle free enterprise, and the future lay in "decentralization". This was remarkably prescient for the time.

The philosophy of decentralization is much bigger than a blockchain. What it really means is that innovation would no longer be locked away in universities and government research labs and expensive office parks. The truth is, innovation is within you. It is in your community. You do not need to be a CEO or a Venture Capitalist to be innovative. Innovative ideas do not necessarily lead to billion dollar companies. You probably already know somebody who has good ideas, and you probably have some yourself. Why not invest in them? Why not invest in yourself? Investment does not have to be a term sheet with preferred stock and expensive lawyers and complicated taxes. The first person that invested in me gave me $1200. No questions asked. We didn't sign anything. They didn't even understand what I was building. They simply saw I believed in it. I later made that person a lot of money.

Investment does not have to be money at all. It could just be an encouraging word. Or a few minutes of active listening. Perhaps some honest feedback. Ask yourself. Ask your friends. What ideas do you have? What is the product exactly? Who are you going to sell it

to? What is the next step? Then go and do it. It may be the best investment you ever made.

True innovation is the product of love and truth. True investment is being helpful and enduring. And if you want to be wealthy, you must first learn to be wise.

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