URL: https://ecorner.stanford.edu/videos/a-visually-impaired-founders-journey-entire-talk/

Adrian Rodriguez is the co-founder and CEO of Dreamlinks, a startup developing AI-powered building blocks that make creating virtual 3D worlds as fun as playing with LEGO bricks. Prior to founding Dreamlinks, Rodriguez taught game design at StreetCode Academy, created a web design course for blind programmers, and worked as the CTO of AMPAworks, a company that uses computer vision to automate inventory tracking in hospitals. In this presentation, Rodriguez shares his journey as an entrepreneur who is visually impaired, his dreams for helping other blind and visually impaired people with technology, and his lessons for other aspiring innovators.

## Transcript

(cheerful music) - I am so thrilled to introduce to all of you today, 00:00:20,880 Adrian Rodriguez, our first speaker for Winter Quarter 2024. So quick note, Adrian is the co-founder and CEO of Dream Links, a startup developing AI-powered building blocks that make creative virtual 3D worlds as fun as playing with Lego bricks. Prior to founding Dream Links, he taught game design at Street Code Academy, created a web design course for blind programmers, and worked as the CTO of AMPAworks, a company that uses computer vision to automate inventory tracking in hospitals. Adrian's entrepreneurial journey follows from his own experiences with technology and creativity. Born legally blind, he struggled to write legibly, let alone make visual art. Then rapid advancements in computing made it possible for him to learn graphic design, and ultimately work as a UX engineer. This experience inspired Adrian and he resolved to further unlock the blind community's creative potential by developing inclusive design tools. He earned a BS in computer science from Stanford, so he was in this class twice, right? - At least. 00:01:25,260 and engineering at the University of Washington. He has shared his work at such venues as The Atlantic LIVE and TEDx Stanford.

So welcome back, Adrian, the floor is yours. Thank you so much for being here today. - Thank you, Emily. 00:01:35,730 Like Emily mentioned, oh, thank you everyone. (audience applauding) Like Emily mentioned, I loved this class, and this is really a huge honor for me to get to be here today, so thank you so much. I'm curious, has anyone here ever heard of the Ballmer Peak before? It's a bit of a joke that the best programming creativity happens when you have exactly one drink. And I'll admit that I'm totally sober, but my sleep deprivation surely is at the level of a couple drinks, which is good news, 'cause my goal is to be very candid today. I want to give you guys pretty much everything I have because I got a lot out of this class, and so I want to give you at least half as much as I got. And so to begin, I'm gonna talk about some of the main influences that have inspired me as an entrepreneur. And to begin, I want to start with a story about my home country.

I was born in El Salvador, and one of the experiences that was the most formative for me was watching a set of sea turtle hatchlings brave the ocean for the first time. And so my family and I would incubate these hatchlings in a shallow well, and when they were just ready enough to be able to move on their own, we would take a bucket near the water and we would tip the bucket over, and miraculously, the turtles, without hesitation, would just move towards the Pacific Ocean. If you've been to El Salvador, you know you have mavericks not too far from there, you know how rough it is. And I remember seeing this as a kid and being just completely shaken by the experience because I thought, wow, like there are really levels to courage in

nature because they did this incredible feat with just really no, without apprehension. And so that's something that really, really stuck with me. So this is how it might look in the abstract, how this image of these turtles looked. But I wanna give you guys a little bit of perspective on how I see the world. To start, this is how a regular person might look through binoculars. So we're gonna use a bit of an abstraction. So this is how I see, very roughly, with glasses.

And so with best correction, I don't really have detail. I couldn't see any detail on my own fingernails. I can't count my own toes. And my field of vision is constrained. And so when it came to going to school, reading text became a really difficult thing to do because, well, the right represents what it's like to have my vision, with respect to text. And so to be a little bit more precise about my vision, I have no light perception in my left eye, and in my right eye I have what's called a coloboma, which is a hole. It's a literal hole in the right eye that regular optics can't really correct. And so text at your readable scale is basically nothing to me. And this was a couple days ago, my like absolute best effort of writing on lined paper from a reasonable viewing distance, what would definitely be within the range of a normal writing distance. And I just can't do it, I never was able to do it.

And I think the real downside to being disabled in this way is that this sloppiness comes off as incompetence. And this is something that a lot of people with disabilities face is that if you do certain things clumsily, it really counts against you in society. My next major influence actually is my father. And so my father is a prosthetist. I grew up with a garage full of arms and legs and signs about renewing human potential. And watching him work with patients every day and creating, through his hands, these molds, and then pouring plaster into these molds, and then ultimately making people walk again is something that really stuck with me and I think inspired me to try and renew or maximize my own potential. And fortunately, there were a range of visual prosthetics that really exploded during my lifetime, during my childhood. And I got to be a Guinea pig for these. My family and I, when we came to America, we found a public school that was willing to fund some of these experimental technologies and let me give public school my best shot. But as you can see, it took a lot.

And I felt often really over encumbered by having to carry around all these things. And actually eventually, I had to carry so many different things that the school recommended I maybe go to a school for the blind because it just was difficult to, for example, accommodate one of these devices. They would take up a desk and a half. I'd have to leave class early, get to the next class a little late. And it just, as a teenager, I wasn't really willing to put up with this at a certain point. And I eventually started to kind of resign from school. And the other thing is that these technologies are great, but in actuality, this is what I see when I look through these technologies. I can only see a couple characters at a time. But then this renaissance happened in consumer electronics where everything became miniaturized, and the most valuable company in the world happened to ultimately kind of become a camera company. And thanks to that innovation, thanks to this consumeristic coincidence that benefited me, I was able to get rid of all these devices and use these really incredibly engineered cameras to see more at once.

You had better displays. But not just that, these devices were extremely engineered to be fluid. If you've ever used a track pad on the MacBook, you know what I'm talking about. It took a very long time for other laptops to catch up. And for me, the combination of the fluid responsiveness with the fluid rendering of MacOS made it so that, sure, I may only be able to see a finite number of characters at one time, but I can move through the other characters adjacent to them so quickly that it's almost as if I have a larger field of view. And it's really unlocked me. And before I knew it, I was here at Stanford, which was really, really a plot twist, to be honest with you. And then this happened right as I entered Stanford. (relaxed music) (yawning) (electronic booping) (coffee pouring) Glass Wearer Hmm. 00:07:56,940 (bell dinging) Adrian You might remember Google Glass.

00:08:00,060 - Yeah. 00:08:24,063 to deliver on this promise anytime soon. However, I think that the premise, I think that the prompt, the vision of having situational computing that is aware of where you are and can basically annotate your environment for you is an unquestionable theoretical breakthrough for the blind and visually-impaired community. And so I saw this video and I thought, wow, if I can just help push that movement, even two degrees in the right direction, people who see maybe a little bit less than I do might end up at Stanford, or might end up to go on and fulfill whatever it is that they want to fulfill. Because for me, genuinely, I would not have been able to come here, which was my dream, without these technologies, it just would not have happened. And so I am now going to tell you a story of how I have gone from being inspired by this video and grappled through all the hardship of realizing that this technology is not gonna come tomorrow to where we are today. Before we get started on this journey, this game, so to speak, I want to talk a little bit about the move set. What are the capabilities that we have at our disposal? And this gets actually at one of the first lessons I wanna share with you that I learned from ETL. I believe it was the founder of Polyvore who said to us, "Do the hard thing." And so what do we mean by the hard thing? Well, I actually was more of a humanities kid growing up. I liked writing short stories and reading poetry.

But again, I couldn't deny this love of technology. And so when I arrived here, I was sort of torn. I was like, should I go SymSys? Should I go STS? And these are all like really tremendous majors. We didn't really have an art discipline per se. And time and time again, I got so much cultural backlash. This is a very technocratic place. And I don't think that's necessarily a bad thing, especially for undergraduates where, when you're 18, 19, 20, it's really such a great time to immerse yourself in technical field. And so these question marks are what I would call kind of your secondary skills. So you are here now, you have unquestionably proven that you can learn and you can express your knowledge, you can listen, and you can speak at an

incredible level. These are your primary skills, you already have them.

The question is, what will your secondary skills be? What will you do with your time at Stanford, or your time at college? Well, I chose to learn design and engineering, primarily engineering at first. And I am just so grateful that I did those things because, in my opinion, there's no greater advantage you can have in this game of starting technology ventures and being a technologist. It seems kind of obvious, and it's not always the most fun to eat all those vegetables, but it is absolutely worth it. And I would very much encourage all of you to take the hardest path that makes sense for you, with respect to how much technological growth you get out of your Stanford experience. You're just in this incredible buffet. And don't leave a crumb if you can help it. All right, so what is this game, right? One way to think about this game of entrepreneurship is sort of the unfortunate way of appraising one's value, which is quote, "The game." Which is what's the shortest path to a Forbes list? How much money can I get? How can I further myself, not just from everyone I went to high school with, but now how do I further myself from my peers at Stanford? And it is obviously a sick game, and it's a game that's also generally marked by arbitrary deadlines. Oh, what am I gonna say at my five year reunion? What am I gonna accomplish by the time I'm 30? You don't wanna be in this mindset, but there are so many driving forces that push you in this direction. There's peer-reviewed science that suggests that all scientists publish their breakthroughs, or the majority of scientists publish their breakthroughs by the age of 30. We have the Forbes 30 under 30, et cetera, et cetera.

And so you almost have to fight against this mentality, but as you'll find out as a technology entrepreneur, you cannot move the pace of technological innovation past a certain point. I'm gonna tell you about three startups that have formed me and that I would say I could plot on this traditional curve of success. The first one is called QRist, which I founded as a, well co-founded as a freshman here at Stanford, actually. Fast forward actually to sophomore year. It was something that began freshman year, and we'll return to that origin. But I worked with a student named Matt Mistele, and a student named Natty Jumreornvong, two brilliant people. And we all were really fascinated by what Google Glass could do for healthcare. In particular, Natty, who is now an MD, she went to Cedars-Sinai, is now a practicing doctor. She came to me with this idea. She said, "Hey look, we are just having some really basic problems where I'm from." She's from Thailand, and she had traveled around rural Thailand and seen, for example, so much medical malpractice happening just because paper records would get lost and people would die.

And it seemed like, as young engineers, we could at least put together a basic CRUD application to like manage some patient records, hit a HIPAA-compliant database. It didn't seem like rocket science, it seemed like something we wanted to try, next. And so we did just that. We went out to Thailand, thanks to Natty, and we found some sponsors. We actually went through Cardinal Ventures, believe it or not, where I got to meet Konstantine Buhler, Olivia, Justine Moore before they went and became hyper successful VCs. And anyways, when we were in rural Thailand, we brought Google Glass and we would experiment. We wanted see, okay, is this just, are we just sipping our own sauce here, or like is this hands-free paradigm actually gonna be good for healthcare? And so we brought some mobile applications, next. We brought some mobile applications, we built some web applications. And what actually happened is that while we were there, trying to demo our fancy futuristic technology, a team of nurses accosted us and said, "Hey look, like we literally are struggling so hard to use our electronic health record system. We have an on-prem database, we have a schema.

Can you help us clean it, do some migrations, and then build a nice front end over it?" And this was around 2013, 2014 when web applications weren't quite that pretty. And so this was actually just a huge unlock for them. And to us, it wasn't the biggest lift in the world, but it was the first lesson in the reality of creating value versus promoting technology. And believe it or not, this system that we built went on to, has gone on to serve thousands of patients in really remote clinics. And we actually even gave a convocation address at Chiang Mai Business School, believe it or not. And we had some sponsors, they took some cool Google Glass photos. And it was kind of funny to feel like I was famous in Thailand for a summer. And then I came back to my junior year and realized, actually I don't know that I want to run a like electronic health record company serving emerging markets. I hadn't done a Silicon Valley internship yet. I still wanted to be a kid.

And so I came back and eventually did my Stanford career, interned at Palantir, and then was out on my own. So fast forward, AMPAworks. So I went from a team of three, core team, and I actually also do wanna shout out Alina Luke and Sarah Park who contributed to QRist as well. But I'm about 25 now, been out of school for a little bit, have learned a couple hard lessons about what it's like to not succeed as an entrepreneur. And fortunately, I find this team of doctors. John, who is just to the left of me, and Bianca, who is a PhD in neuroscience and a practicing nurse. Anyways, they had realized this inefficiency in basically inventory management. They thought seems like computer vision has come a long way. Can we set up some cameras, automate inventory? And they were totally right. The technology was actually pretty ripe.

There was some some workflow challenges around it. But we ended up building this system, trained a bunch of ops detectors. A lot of it was building pipeline, to be honest with you. And then training a bunch of models on vaccine boxes. And it looked like things were going well. They raised from 500 Startups. I joined right as they raised from 500 Startups. And so it was one of the, I was the first full-time CTO, but they had a classmate from Wharton who had helped them prior. Anyways, this was looking good, and then COVID hit. And we had funding from Cedars-Sinai, and so we were actually at Cedars-Sinai, and we had to pack up all of our stuff.

There were no more vendors. And it just, it kind of dawned on me that my salary, I was the only full-time engineer at the

time, and I was just gonna probably run out our runway, and we needed, I needed to pivot. And so it was a hard lesson. A little bit of time goes by, a little bit of time goes by, and I finally find my next gig, which is a company called Convictional, which was funded by Y Combinator. And when I joined Convictional, they were already grooving a little bit. They didn't, like the product wasn't really there yet, but they were creating value for people. And now they're, I believe, the number one dropship platform in the world for retailers, if not everybody. And it's become an incredible platform where they've automated away a lot of the difficulties in businesses trading with each other. So if Shopify makes it easy for you to sell your stuff to anyone, Convictional makes it easy for you to sell anybody else's stuff. And I won't lie, I wasn't like enthralled by pivoting from Google Glass, let's make the world come to life and be magical and accessible to making B2B trade software.

But I got to get a lot of reps in, and I finally got to see a company grow. We raised a series A, then they raised a series B from YC Continuity. And I would say this company is definitely going to be a unicorn. And it was just so cool to see, from the founders, what they were doing, what things actually looked like as we evolved from 15 to 50. But of course this wasn't my journey that I had been on. These, on some level, were concessions. All of these startups, all of these ventures were actually concessions. And like I mentioned, my journey has been to try and continue this tradition of technology trickling down and helping people with visual impairments. Because again, that just was, that's my way of saying thanks for the good fortune that those things have brought me. And so I'm gonna talk about the seeds behind each of these ventures that actually led me to join them.

This is how much space it tastes to label something in what's considered large font. And this is how much space it takes to label something in braille. Currently, if you're blind or visually impaired, these are your only two options, and they're both static and inefficient. There's no way you could ever represent all the information on this jar in either of these two formats. However, using reprogrammable QR labels, such as this one, and my labeling software, users could use their smartphones, and by simply looking could create and read these labels by speaking what they wanted them to contain into their smartphones. And so the video goes on a little bit. And then the punchline, as I eventually say, "And this would be amazing for Google Glass, because flailing your smartphone around isn't exactly good UX." And I was fortunate that Google had a competition called If I Had Glass. It was basically just an open competition to the public where you had to tweet out ideas for what to do with Glass. I just spammed it until they finally took me, excuse me. And I was able to, ultimately got four pairs for Glass between my co-founders and I, and we started messing around with the software.

And we found that the Glass platform, at the time, had basically become just kind of Android on your face and didn't really have augmented reality capabilities. It didn't have lidar, which Google would eventually make Project Tango, which was a tablet that had infrared, and we experienced it with that as well. That was my kind of senior project here. But the reason I got into QRist was, which was the EHR application, is because I wanted to make these labels for blind people. And it just opened up this door because Natty saw this opportunity to take that framework we were developing and use it for EHR. I never would've, never would've occurred to me. And it was funny because like the deal was that, okay, we'll go and we'll write this software for these hospitals, but I wanna test this app with at least one blind student in Thailand. And so this was a blind student in Bangkok who was trying out our labeling software, and it was really great. And I think it was kind of the first step to my PhD, which I, in retrospect now seems, sounds obvious that I would've enjoyed doing that kind of work. And so from there, I want to talk about Group Theory.

So Group Theory, as you can see, I have it really high up on this kind of sort of personal actualization journey. And that's because Group Theory is like literally an abstract theory. It's like as ideal of a thing as you could name something. And in retrospect, I sort of realized that that's exactly where my head was. In some level it was all flower power, but at the same time, it was the essence of what I'm still trying to do. Blindness is a puzzle, like most things in life. And I differentiate a puzzle from a problem with the notion that a puzzle has all the pieces you need to solve it. It's a matter of performing the right operations in the right order. And in fact, that is the landscape of disability in 2018. Given the technology that we have, given the connectedness that we all share, we are uniquely equipped, right now, this generation, to solve entire classes of problems that previous generations considered to be completely immutable, things that would not change, things that would always be bad things.

And so this picture represents me teaching one of my students, thanks to the help of a teacher assistant of mine named Denny Lucas. She and I co-designed this Rubik. And so this is the punchline. So like I was talking about in the video, there's a lot of stigma around disability. Blindness especially comes off as incompetence. And there's a long legacy of people interpreting blindness as karma, as you paying off something terrible you did in a past life. And some of these attitudes still persist, and they persist in parts of Southeast Asia, as they do everywhere. And so the first time we went to Thailand to do EHR record, we stopped by a school for the blind in Pattaya. And years later, a friend of mine who had helped create a inclusive design class at Stanford was gonna go back to do volunteer work, and she said, "Hey, like, we should maybe collaborate on something." And so I thought, whoa, like I'm not really, Google Glass is, AR is not happening tomorrow. So it looks like where I can maybe create value is in transferring these skills.

Maybe we can computationally design things. But then I realized that there was this social barrier of why invest in this population. And there have been a lot of governmental programs in the US that have excluded the blind, specifically because it seemed as if it wasn't worth the investment. It's tough, but when you're so outta sync with the environment, there are hard truths around how the government needs to make decisions. But again, technology has just radically changed the outlook for

this community. And to start, we needed to make a social statement. We needed a symbolic outcome. And so what we did is we taught the solutions to Rubik's Cube as just an exercise in control structures. Here's an if statement, here's a for loop. We weren't trying to speed cube, we were literally just trying to demonstrate that a blind person could use control structures.

And of course they can. And all we did is we took a hot glue gun to this Rubik's cube. We later found out Rubik's actually sells a tactile Rubik's cube, but it's how it goes. And so we got this student named Man to solve it. And then I joined a new team. And so I wanna shout out my freshman year roommate Ken Chan. And I also wanna shout out a special guy named Trevor Fried who banded together with me, and his family backed us as well. And they were just really, really remarkable allies. And so we ultimately got an opportunity to go back to Thailand and scale up this work. So initially, I had gone with Danny and Steadman, whom I will mention in a second, to do this first course, but I then went solo and pitched a Senator, a Royal Legislator named Dr.

Monthian, and basically he helped me raise funds to scale up this class at a national level. And so I got the band together and we set sail. And so you saw me teach a blind person Rubik's Cube, and now you're going to see two low-vision people to help each other with a Rubik's cube. These are two of my students who are both blind, one's blind, one's low vision. - Okay. (student laughing) Thank you very much. - And so before I knew it, 00:26:27,480 the best day of the class was when the students came in with their own Rubik's cubes that were better designed than mine and they were selling them in class. (audience laughing) Yeah, these kids are awesome. And we didn't just teach them this exercise in control structures. We actually taught them Git and the command line, and we made websites, and at the end, they got into teams and they deployed a website on GitHub pages using Jekyll, which Steadman actually taught me.

And it was just so remarkable to see the entrepreneurial spirit. I don't want to mythologize disability, but I do think there's a reality that when you are just not with the mold, when you are the peg that doesn't fit, you kind of have to be in an entrepreneurial mode, in a problem solving mode. And it kind of seemed like no surprise that all these kids had these entrepreneurial ideas, and it was just so cool to get them to express it. And to me, this is the height of my personal success in my life thus far, is getting to be a part of this course. And this is Dr. Monthian, the Royal Legislator, who is blind, who's, again, basically a Senator, a Royal Legislator in Thailand, who came to the class and gave this brief address. - Them be lazy and we will be crazy. 00:27:44,460 Let them stay still and take good rest and we will create the path for them to walk. Adrian We will create the path for them to walk. 00:27:52,380 - Because we create the environment.

00:27:54,720 Some of you may be beginner, some of you may be in the intermediate level, and some of you are already in the advanced level hopefully. But I think you already know what it means to be a creator. Adrian I think you already know 00:28:11,023 what it means to be a creator. - Designer. 00:28:13,590 (Dr. Monthian speaking in foreign language) - A simple message but a universal one, 00:28:20,580 that this community is hungry to participate in the creation of the future because the present is not working for us. And so of all the people in the world, we are definitely at the forefront of wanting to make the future as good as possible, and have a hand in making the future as good as possible. Again, I was extremely idealistic through Group Theory, and my dream actually was to basically have a consulting company that would have an internal tool for designing websites, very, basically like an internal IDE that would use tactile pieces and make it possible for people to go beyond templates and turn out hyper-accessible websites, 'cause there was a big demand in the market. It hadn't really been as operationalized yet. Now I think that making, there's a lot of services for making accessible websites.

And I came back to Stanford and I pitched a group of investors called the Farmers. You guys may not have heard of them, but there is a group here of faculty and staff that together invest in very early stage companies. And so I came and I pitched them, and they sat me down, and they said, "What you are, the business model of what you're pitching is a consultancy, and in order for those economics to work out, here is how much you will need to build." And I realized I really had a lot to learn, and they were absolutely right that I was not talking about venture scale business whatsoever. And so I sort of just had to make peace and realize that this vision was not compatible with the economics of startups. And this was my first lesson, I think, in balance, in that you ultimately really do need to find the midpoint between your personal journey and the reality of the world, of the systems that actually drive us. And before we move on, I do want to take a second to highlight Steadman, who's actually here, Steadman, yeah. So Steadman is basically the person who trained me as a designer. He designed the Group Theory logo, and he was with me in Thailand. He and I lived together in a one room. So I didn't tell you how broke I was through all this.

(audience laughing) But at one point, Steadman and I were living in Little Tokyo in Los Angeles in a boarding house. I don't know how to describe it. It was like worse than the dorms here. And we were sharing a bathroom with like who knows how many people. And yeah, I think we had like a cot, and it was like, we had like his cot was a pull, like a mattress that was under the bed. And it was hard times for sure. But that's one of the greatest things about this journey is that you can really strike extremely deep friendships with people who are just similarly crazy. And so I'm so grateful to have him still be around. And so I wanna talk about this left side here. So we talk about your basic operations.

And I would say that these lessons are your kind, your special abilities, your special abilities. And maybe you don't use them all the time, but when need be, you know, when that extra bad boss comes, you have up your sleeve. And so this next journey is extremely personal, but as personal journeys tend to be, it gave me a number of special abilities. So I met in Los Angeles, when I was working at AMPAworks, a woman named Molly Burke, who is a sensational YouTuber, and is totally blind

and she really just turned my world upside down. I had never met someone like her. She was just beautiful, smart, and had created this community to help people through bullying and mental health, the things that she had overcome in her life. And she would have this Patreon where she would go live and in a sense like facilitate for people. And I just saw her use this platform she had built of four million subscribers across Instagram, and YouTube, et cetera, to do really good things. And obviously I fell in love with her and we moved in together, and if you wanna see it on the internet, I would encourage you to watch her videos, they're great. I think she's really educating people.

And so I could do a whole talk on just how great of an entrepreneur she is and the lessons I learned from her. But suffice to say that I took away two really important things. The first is the notion of stewardship. And one of the most important lessons I learned at ETL was this, work with the people who are staying after the party to clean up. Those are the people you want on your team. And I'm sure like someone's parents is like rolling their eye right now, but it's true. It's that, like, there's just not, starting a company is not glamorous most of the time. You have to be willing to take out the trash. You have to be willing to write code. You have to be willing to go into Illustrator, or just do whatever needs to be done.

And I think that for me, entering a very serious relationship with another person with a disability, and who had service animals, and a lot of, for me it was this huge opportunity to kind of understand what it means to care for another person every day, no breaks. My first breath would revolve around doing something for us. And that was something that I think has carried with me as I look at my companies now, et cetera. And of course, if you have watched the videos, you know that Molly and I are no longer together. Again, I would encourage you to watch her videos. I stand by the way she has portrayed our relationship. And it brings me to another lesson that I heard from Melinda Gates at ETL. And it was a lesson she was promoting broadly, which is this idea of let your heart break. And no one wants a broken heart, no one wants to be in that mode, and it's not a good mode to be in, it's not a productive mode to be in. But what you want is the heart that comes back afterwards.

And for me, going through such a profound experience with this person and me realizing what it, my limitations about being the right person for everyone, you ultimately realize that there is such a thing as fit, et cetera. Ultimately, I think it has made me more willing to accept my path in the world. And you will have to do that as entrepreneur, right? We can call it pivoting, but it's deeper than pivoting. 'Cause we get attached to the things that we make, we love the things that we make, but we need to let that heart break sometimes so it can continue to grow back. And so we're rounding out, we're rounding out our special abilities, which brings me to the culmination of Group Theory, brought slightly down to Earth. And before we go further, I want to highlight some more people. Gabe Alvarez was my freshman dorm, bailed me out of at least a couple of computer science assignments. He was the guy, no doubt. And I'm just so lucky that he was willing to work with me. And so again, freshman in Roble Hall 3C, and he is head of software for what we're building.

He's just an extraordinary person, one of my best friends in the whole world. And then Elliot Mueller, he was really the leader, on-the-floor leader of the Seattle makerspace. And I was, went to him in a pinch, trying to 3D print some stuff. And I just, I talked to this guy for 10 minutes and I could totally tell he was just absolutely brilliant. And one thing he told me that perked my ears, he said, "Oh man, I was trying to get a job as a janitor at the University of Washington so I could work the makerspace." And of course I immediately thought, well here's a real steward, here's someone who knows what it takes. And I will say, having worked with Elliot for months now, I am so fortunate to have his talent and his perspective. And so I'm gonna run things back a little bit. So Group Theory created some technology, and it's technology we never brought to market. But my goal was how do we get blind people to go beyond the template. So the problem with interpreting a computer through synthetic speech is it does not tell you the relative size and position of elements on screen.

The only way around that is tactility. It's just a different form of media. And so at the time, I was working at IOT Systems. AMPAworks with IOT cameras, there's a whole 'nother, guys, there's startups that I just didn't even put up here that were like arcs in themself. But suffice to say, I spent a lot of time working with web sockets and I knew what could be done. I knew what could be done with QR codes. I knew what could be done with web sockets. And I thought you can pretty much entangle anything with a browser. Why not just make websites? And so we did this. And then I went to Street Code, and I started teaching Roblox, and I saw the value of 3D.

And I thought, okay, how do I get my kids to make 3D worlds? Because this is a phenomenon, right? Over half of kids four to 12 play Minecraft. It's really, right, like a cultural phenomenon, crucial for development. Parents believe that it helps with spatial reasoning, something that's key for blind people, collaborative problem solving, et cetera. Minecraft is great. Kids love to build things. But how do we get blind kids to create 3D worlds when even creating 2D layouts is really prohibitive, given the current paradigm of synthetic speech. (blocks rattling) So what you're seeing here is my co-founder Gabe built a simple 3D platformer. This is actually the official Roblox curriculum that we teach as Free Code Academy. Game Design One is you basically build Super Mario 64 an obstacle course with a spawn point, a checkpoint, some hazards, and a wind point. And even in Roblox Studio, which is a hyper simple way to do it, you still need to dive into a file directory.

You still need to move assets around to do such simple, such simple things. And I find that most kids just end up fighting with Roblox Studio, and they spend just a fraction of time actually designing a fun game, trying to think about what would be a fun jump. And we have not tuned the physics, so pardon us for not being good at our own game. So the reality is that you can actually just map these move sets. And so it is augmented reality. It works with your phone as well. And so again, simple

move set emerges to a really wide range of creations. And so that's what these are, they're called, we call them Dream Links and they're quite strong. We've been working on 'em for a long time. They have these magical magnets that attach in any direction.

And guys, people always talk about startups. What is a truth that you believe that everyone else disagrees with? I think Legos suck, for real. Like I struggled so hard with Legos as a kid. They're small. If you put a bunch of two by fours, you can't add anything to the side. I know they have cubes. I'm actually currently running a study, interviewing a lot of blind kids on creativity, and we all struggle with Lego. And so next. So this is Dream Links and we are launching later this year. We're basically have a variety of fundings in store.

We're excited to show you more when we can. But I wanna bring things home, 'cause this isn't a talk about my latest scheme. It's a talk about how to create value for you guys as you go on in your journeys. And I wanted to highlight a professor here named Clyde Wilson, who actually teaches nutrition, and he also teaches a class called Analysis of Human Movement, at least he used to. He was just one of the most profound people I've met. And he is going to share something about nature and how you have to sort of obey your own nature, in the context of nutrition. But I want you to keep in mind what I've said about going with the flow of the world, as you start your companies. - Changing how we eat is really hard 00:40:52,020 because what motivates us to make any decisions comes from part of the brain near our brainstem, our limbic system, that almost decides for us what's important to us from moment to moment. And depending on what's happening in your day, like if somebody yells at you, or you're upset about something, then eating a donut, or having some cake can compensate for that. The reason is because all of the dopamine signals that drive us to do things go into this one part of the brain that is where we decide what matters to us.

And whenever we respond to a dopamine drive, like for sugar, or for reaching out to someone for love, or doing a good job at work, there's an opioid release that rewards us for doing that. So when sugar hits our tongue, oh boy, chai cappuccino, when some sugar hits your tongue, there's an opioid release. So that's your brain basically patting you on the shoulder, saying, "Good job, you did something I wanted you to do." You followed your survival instinct of physical contact, emotional love, sugar, fat, satiety, all these things that we're rewarded for. So it's kind of like we're surfers on a wave. The wave is 90% of our brain that's pushing us to do things to help us to survive and to be happy. And the prefrontal cortex, the conscious part of our minds, is the surfer on that wave that can dance, and be artistic, and change paths a little bit along the surface, but cannot change the direction of the wave. Trying to just decide I don't want sugar is like saying to the wave, "I want you to change directions." The wave will drown you, it will kill you. And the way that that manifests itself in the real world is obesity, suicide, depression. That is the wave saying to the surfer, "You can't decide what the underpinnings of survival instinct and the core primal version of instinct for happiness is." All you can do is be artistic on the surface and ride that wave. - All you can do is be artistic.

00:43:03,180 That's not a bad deal if you really think about it. And that's my last lesson here, is that there will be times when you want your company to scale fast, but there's just no market, when you wanna make a breakthrough product, but the technology just isn't there yet. And you can hustle, you can ship something that isn't good, you can try and make a market, but the reality is that you're going against the wave, and you can only do that for so long until it catches up to you. And so with that, we have our four lessons, and if I could sum them all up into how I want you to pursue your entrepreneurial dreams, it would be this next image. (audience laughing) I believe you should be a technical turtle with a fast broom hand and a metal heart. Because the only thing that's certain is that there's a wave coming, and it's gonna be a mess when it hits. Thank you so much. (audience applauding) Audience Member Hi. Thank you for your presentation. 00:44:15,300 Can you share your experience of how do you monetize your projects? How did you do with your, the startups? Is it like a, can you earn money from this? Or it's just like a, let's say, like a charity thing? - Right, right, right.

00:44:40,350 So it's almost like asking like, the common thing people say is like, "Oh, you have a product but you don't have a business." And so like, what's the business model behind a toy? And so, I mean, I do, you know, we could look at Lego, you could look at Roblox. I very much believe that Dream Links in particular, has a lot of potential as a great toy for kids. And so that's a consumer market that follows consumer business modeling, et cetera. It's not B2B enterprise. You're not gonna get a nice SaaS business with hyper-predictable margins. It's almost like releasing music. And I like concede that that is the case. However, if I were to make a business case for Dream Links, it would actually follow the adage of you start with a niche, schools for the blind. And then you build a technology. You have to imagine there will be next gen Legos.

At some point, someone will make a next gen Lego. Lego does $2 billion a year. Yes, much of that is on licensing other recognizable brands. They're not really making better Legos as much as they are just slapping brands on them. And I understand that's a moat in itself. And so I don't mean to trivialize what they have done, but I do believe that there is a market for toys, a big market for toys. - Thank you. 00:45:56,280 Audience Member So when it comes to project ideas 00:45:59,073 that can turn to a startup, I wanted to ask whether this was merely because you felt like this is something that would change the people life who experienced the same thing that you're doing. I mean, we often think of ideas to that should be prospering and it's very difficult to get one. How did you have the courage to start, to pick this idea, and you know yourself that the target audience are not really, there's not a lot, like huge numbers of them to justify the journey to bring up your product itself.

- Right, no, it's a great question. 00:46:54,630 And one thing I didn't touch upon too much is that along this like social inclination, there is like this technical understanding, of knowing technology for a very long time, or relatively long time, and being able to make reasonable bets. So it's like, as much as I believe in a social cause, I believe in a technology and where I believe it can go, and the kinds of products that will come out of that trajectory. And so for instance, I've been working on AR since Google Glass, and I am optimistic that in the next five years there will be a real market for it, and it'll enable like all these crazy new mixed reality experiences that are just, kids are gonna go crazy for them. I think something like, we will see like Minecraft meets Lego, that will happen, and I just believe that because I know the technology will be there, and I work with kids. I do like a structured research with kids through my PhD. And I feel like I'm still one of those kids. I really want it. And so it's part of this social inclination, but then also just this fascination and dedication to the technology itself. Emily All right, I know we are very much over time.

00:48:05,100 Thank you so much, Adrian. Everybody give him a huge round of applause. Thank you. (audience applauding) - Thank you, guys. (audience member cheering) (gentle music)..