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Othman Laraki is the co-founder and CEO of Color, a distributed healthcare and clinical testing company. From population genomics programs to high-throughput COVID-19 testing, Color provides the technology and infrastructure to power large-scale health initiatives. In this conversation with Stanford lecturer Toby Corey, Laraki discusses the genesis of Color, the immense challenges and opportunities in the healthcare sector, and Color's race into COVID testing when the pandemic hit.

Transcript

Narrator Who you are defines how you build. 00:00:07,320 - We are delighted to welcome 00:00:11,210 an amazing speaker, Othman Laraki to ETL. His story's so epic, his journey's so incredible, this is going to be a fantastic interview. So quick intro on Othman. He is the co-founder and CEO of "Color," a distributed healthcare and clinical testing company. From population genomics programs to high throughput COVID-19 testing, "Color" provides the technology and infrastructure to power large scale health initiatives. Now, early in his career, Othman spent several formative years at Google where he worked on the performance infrastructure and client-side software. And after leaving Google, he co-founded "Mixer Labs," which was acquired by Twitter in 2008. And at Twitter, Othman was the vice president of product, helping create the company's first revenue products and grew the user base from 50 to 200 million users. Othman holds master's degrees in computer science and management science, and engineering from Stanford University.

He has an MBA from MIT. He's a long time investor and advisor to leading companies, such as Pinterest, AngelList, Slack, Instacart and others. And man, I don't know what he hasn't done. Welcome. Othman, welcome to the show. - Thank you for having me. 00:01:27,100 I'm delighted to be here today. - Yeah, fantastic. Well, we have a lot to cover 00:01:31,230 so let me just dive right into this. We caught up before this conversation and you told a really interesting story about a cross-country flight with your Color co-founder and how you essentially decided to create the SpaceX of genetics testing.

Now, I was so impressed with that story, I'd love for you to share that story and explain how you saw that opportunity that ended up inspiring this current amazing company that you've built. - Sure, I mean, it's... 00:01:59,130 I think it's one of these things where... So actually, it really started, actually, on the roof deck at Twitter. Even pre that, where we... My co-founder that we started the Mixer Labs together and later, we were both at Twitter at the same time, and he has a PhD in genetics but he went into the software world and so on. And he happened to get his genome sequenced and he brought the data, and we started just looking at the data that he had generated from that. And one of the things that really struck us at the time was that it felt like there was this pretty interesting, novel technology that was around genetics that enabled you to have pretty novel and deep insights into people's health but for which the software tool chain was still relatively nonexistent. It was really still the domain of scientists who were using Perl scripts to try to understand what was going on under the hood. And our initial thought process was like, "Well, it'd be interesting to see "what happens if you have "great Silicon Valley-style engineers trying "to make sense of all this data." As we started understanding the space better, and just...

We're like, "Okay, what does the market "currently look like? "What are the applications of genetics "that are out there?" It turns out that genetics had already been, as a field, going on for awhile. And in fact, actually, I had the personal relationship to it because I'm actually a carrier of a mutation in a gene that increases cancer risk, so I had personally experienced it as a patient. And at the time, the experience that people had with genetics was one where it was this huge ordeal. It would cost like $5,000 to get tested, you need to meet with counselors and doctors and go back and forth with your insurance. It was this big endeavor. But we literally... And at the time, there was a lot of attention to SpaceX and so on, and one of the things, we were like, literally, "What does it look like if you put, "into a spreadsheet, "the pieces that it would take "to do these tests with modern technology? "And does it really need to cost $5,000 "or is it just because of the scarcity "in the market and the market dynamics?" And we couldn't make any sense of why it would cost that much. And so, almost from first principles, we were like, "Okay, we think there's a way to do this, "at least an order of magnitude less expensive." And that kicked off, I think, a

bunch of questions in our mind because historically, a lot of the pricing was set from a world where doing any kind of genetics used to cost thousands of dollars. And as the technology evolved down this exponential curve, the market didn't react and the price to consumers, or patients, stayed the same while the underlying costs had completely changed. And so, that's where we're like, "We think there's actually a way to do this "in a very different way, "which might just change "where this building block fits in "the overall health landscape." So that was, a little bit, the starting point.

Obviously, a lot happened after that but that was really one of the first points where we were like thinking that there might be an interesting thing to do there, that we could potentially make a difference. - Yeah, that's funny. 00:05:18,093 It sounds so familiar. I spent some time at SolarCity and at Tesla, and I remember Elon telling the story about how he got SpaceX off the ground and how he really used the first principles kind of thinking. It sounds like you went down a very similar path. - Yeah and I think in some ways, 00:05:33,839 I think in general, we don't tend to encounter a lot of exponential changes in our lives in general. And I think, by default, we tend to underreact very much as a collective to that. Both in the markets, as well as individuals. I mean, the last year around the COVID crisis is a great example of that, right? Everyone, the entire world, was sitting there, seeing an exponential event happening and it took a very long time to get the appropriate reaction. I think that happens both in positive and negative ways.

And so, I think that was just one among many examples of that. - Yeah, yeah. 00:06:11,940 Well, look, I think, like a lot of entrepreneurs, you ended up disrupting, or starting to disrupt, what was an impenetrable space and sector. So can you talk a little bit about that, but first from like a system that used to cost $5,000 and then down to 250, and then, connected to that, how you built a culture that can change a complex system rather than just deliver a product to the marketplace? - Yeah, what's kind of interesting, 00:06:38,120 one of the things that's struck me over time through our journey here is that the thing that we thought was going to be the most important turned out to actually not be the most important thing. At the beginning, and even today, where people think of Color, especially in the genetic space, most people think of us as being interesting because we're a company that demonstrated that you could actually deliver these products an order of magnitude less expensive, but I think that's actually the second most important thing we did in the space, which is one of the things we realized over time was that across healthcare, the biggest barrier is actually not cost. There's a lot of talk about money and the cost of healthcare as being the big barrier, and one of the things that we realized is that even more painful, more challenging around healthcare access is basic access, is how simple and accessible, the ergonomics of healthcare services. And in general, one of the discoveries that I feel we made progressively over the years at Color, is that it's all about... People think that the challenge of healthcare is science and medicine, like we need to create new therapies and we need to discover new blood tests to find cancers earlier and so on, and those are great. But way more challenging and way more impactful on the real lives of real people in our society is like just basic access. And so, we build this thing that changed the entire math around how you could help prevent disease and catch it earlier, but then we realized, actually, we can't get it to people because there isn't a delivery system that is designed to reach populations in a scalable way.

And I think, actually, that's by far the most valuable thing we built, is actually the access machinery and the mode of delivering very basic things to a lot of people. And in fact, actually, that was at the root of kind of what... And we'll talk about it later, but all the work we've done in the last year has been deeply impacted by that, around the infrastructure of delivery and that last mile of access of care, much more than the super deep scientific work, which I think was very important to change the math, but even with the math change, you need to actually get to people. And to me, that's actually the most disruptive thing we've done and we continue do. - Yeah. 00:08:58,220 Well, that kind of incredible vision and to have to execute like you have, tell me a little bit about your culture and how you built that, and what kind of skill set and what kind of mindset or temperament... How did you go about doing that? - Yeah, to be honest, 00:09:11,030 it's one of these things where better be lucky than smart. I wish I could say that we had very deeply planned it but when we started Color, we did not realize how complex of a company it would be because all of us had been software people before and we only dealt in moving electrons. And when you're dealing with moving atoms, and especially atoms that interacts with people, there's a whole layer of complexity. And especially in healthcare, where there's such a huge challenge of...

People talk a lot about regulation but it's also even just like the burden of doing things that impact people in their health and in their lives. And so, there's a lot of kind of pieces that we needed to build and I think what I meant by "better be lucky than smart" is that we got very lucky with the early set of people that joined us and that got involved with the company, that I think ended up being deeply foundational to our culture and how we approach things. All the way from some of the early scientists that got involved, both internally, full-time, as well as some of our early scientific research partners. Like, for example, the woman who discovered that the BRCA1 gene, Dr. Mary-Claire King, who used to be at Berkeley and now is at University of Washington, one of the top geneticists in the world got very involved with us. And so, we got a lot of these people that made us... Helped us be really good along these very different dimensions. And I think that seed culture across these different dimensions, I think, is really what enabled us to build a good product and, even more importantly, I think, build a team that continues to grow on that basis. I think that was probably the mo... We know.

I think one of the most important things, yeah. - Well, on our prep call, 00:11:07,790 you and I had a fascinating talk and I was really incredibly intrigued as we had this discussion on timing, because the number one reason why startups fail is, it turns out, there's just no need for the product. And that's usually one of three factors. Either the idea just didn't have the loftiness to it for whatever reason or, number two, the idea was good but the execution was bad and the product just didn't deliver a compelling experience for its intended user. And number three, there's this thing called "market timing." And you

obviously had some experience about that but I think the question is, how can entrepreneurs avoid being either too late or too early when they're excited about emerging technology? I know, when I created my company in the mid-90s, had I started that company two years earlier, it would've failed. Had I started that company two years later, it would have been too late. So what sort of knowledge do you think about? There's some data that can come into that and how do you factor that in, how do you work with that piece? - Yeah, a few thoughts on that. 00:12:07,258 I mean, first of all, anyone who tells you they can time the market, I think, is just wrong. I think like... When people have, I think...

And maybe actually, maybe there are some people who can time the market and I'm not one of them. And I feel I don't know many people who would claim that. I think the odds of... If you're approximate... I wonder if maybe one way to break it down is like, "Are you approximately correct "or are you very wrong?" If you're more than five years off, you're just off. And it's hard to tell. My first startup right out of Stanford was a mobile company and it was multiple years even before the iPhone and Android, etc. And it was just incredibly difficult to access the market and that was just like, no matter what level of insights we had (indistinct), we're not going to materialize the market. I think, in general, when there are some new building blocks, new primitives that get introduced into our fabric of society and disruptions and so on, I think those tend to be times when, all of a sudden, the ground becomes more malleable, right? And one way I'd think about it is like, you want to be able to have enough durability to live long enough as a company and a team that you are building value and building your assets until the market really connects. And I think it's like...

And I've either witnessed or been part of a few of these moments where when product market fit hits, things just go very nonlinear very fast. And I think there's no amount of creativity that will conjure it into existence, but I do think there's a... The best way to get the timing right is to survive until the timing is right, I think. And so, that's one way I would think about it. I mean, for Color, I think it's been an interesting example, right? Where we, I think, started very early actually compared to the... And really, I mean, we were starting to grow and so on, but the last year has been the inflection point for us and has completely changed the nature of our company and how we operate, and the scale of what we can do. And that product market fit and our ability to be there for that was very much based on our ability to keep building and survive and keep growing enough to be there for that. And then, I think, maybe the most important thing around the product, that moment is when it connects, it's go time. And it's like, all of a sudden, one year will more intense and more value creating than the last five years, right? And I think that's what we've had. So I don't know if there's an easy way to make it happen.

I think it's really about trying to be around for it. - Yeah, no, I think you've articulated that really well, 00:15:09,247 'cause it's a combination of getting the right data. And you can tell if you're not growing or your product's not resonating, or it's not really breaking through the market clutter, or are you just literally trying to keep cramming a round peg in a square hole, right? And there's some intuition that's baked into there and some forward-thinking, and I've seen it happen with so many great companies. I think you have a really unique perspective on that. - And actually, one other interesting point 00:15:36,160 that I've been thinking about around this too, is like, it's always struck me, especially for these like super scalable aspects of... With technology, I think, when technology really works, it scales at the human scale, right? Great technologies, all the way from fire to the internet, when it's a great building block, the scale of those opportunities and the impact of those primitives oftentimes is way larger than what we think of at the beginning. And so, one thing that's surprised me multiple times is industries and markets that I've thought were completely played out, were just game over, and we were just at the first inning. I mean, actually, like Google was a great example. I mean, I actually knew Larry and Sergei when they were at Stanford doing their PhDs. And I remember actually, I knew the person who helped them write their original business plan that they got their first funding from Andy Bechtolsheim.

And I remember hanging out at a barbecue and being like, "Yahoo's so big, "there's all these search engines. "Search feels like it's just over. "That game has already played out, "why would you go do search? "There's probably so many more interesting, "dynamic things that are out there." But search had not even really started at that time, right? And I feel that happens like again and again, and it's happening even in social, right? It felt like social was over with Facebook and then, "Oh, no, there's Instagram and WhatsApp." And then, "Oh no, there's Tik Tok and Clubhouse." It's just interesting how these primitives and components, how much longevity and ongoing opportunity there is for innovation. And so, that's another thing that's surprised me many, many times. - Yeah, well I think if you're right, 00:17:22,357 if you're just so stuck in like, "Hey, here's my idea "and it has to work" and you just keep, again, cramming that square peg in a round hole. I remember, I did a little sports app, this was before Facebook, and built this big app and did all this great stuff, and it turned out we had this one little widget where folks could communicate during a sporting event. And that was just like a small side thing we did, and it turned out to be the most popular thing. We wouldn't have known that if we didn't get the product out there and start seeing what they were using and collecting all of that data to really understand where we need to migrate our strategy to. So I think your point's really well taken. One of the things that I think our students would love to hear, everyone obviously hears all the good stuff, like this thing was a rocket ship, billion dollar valuation out of the gate.

Things were great, super smooth sailing. We both know that that's not really how companies are built, but could you want me to talk about one or two of your most challenging times? Pivotal times when you had to make some really tough to decisions and resiliency, and some of those things that really made an impression on you when it got really tough. - Yeah, totally. 00:18:34,330 I think, especially for founders or people who are in leadership or CEOs or whatever of early stage companies, I think one of the most challenging patterns, I think, are things that involve either expansion or contraction of the identity of what you are doing. And what I mean by that is like, to build something, especially when you don't have full

product market fit yet and so on, you need a lot of faith and you're selling the dream to people, whether it's investors, people who you want to join you to help build it and so on, and so you, obviously, need to have a lot of optimism and conviction around like, "Okay, now this is the picture of the future." And you rally people around that. And in order to build a great product, we together have to believe in that kind of definition of the future that we're all kind of gunning for. But we're getting feedback and data and the world is changing under us. And I feel like, over time, there've been... Both times when we wanted to narrow our definition, where we were shedding part of our identity and part where we wanted to expand it, that I think were some of the hardest moments because it feels like you need... Some people will feel that you break a promise that you made to them.

Where people feel like, "You told me that we were going to build "a company in this box "and that was the thing that was going to change the world. "And now you changed, "I didn't know it's a triangle, "and that's not what you promised me." And I think that's one of the... It's something that's always a challenge as a founder, as someone who's trying to... Really, the promise or really, the real goal is to build a company that is going to... Like I want to build the most important healthcare company of our generation, right? That is really the goal. And the path that might take might change a lot. And so, I think two examples of where I feel like those are that... I'll give you one contraction one, one expansion one, both of which were interesting and challenging. I think one was that we built this great genetics product that was, I think, probably, and probably still is, the best clinical genetics product on the market in terms of the simplicity of access, to quality of the genetics and so on. And we were trying to find, how do you get it into the market in a way that scales to create a great business and a growing business and so on? And there are many paths to that, right? We were like, there's one path which was like more direct-to-consumer where people just buy it out of their own pocket.

One which is the traditional clinical channel, which is like you convince doctors to order for people and then you bill insurance and it goes through the traditional, "just be better at the old way of doing it." Or there's going into a new market or new way to access the market through employers and other sponsors, other people who care about large populations of people. And about three years ago, we had this hedged approach where we had more of a consumer side, more of a clinical side that was more of a traditional diagnostics company. And one that was more like these large, institutional programs. And the first two were existing markets but one that we decided were not great markets. They were not the way in which you were going to change the world. And there's this other one that we're like, "We think this is the pattern "that aligns with the future, "but it's still very speculative." And so, we decided, and I decided, that we were going to cut that third of the company that was, actually, trying to go after those kinds of legacy markets that were clearly not going to be the future for us. And that we were convinced were not going to be our future. And so, that was, I think, one of the most challenging things I've ever done in my career, which was to decide... And a lot of these people were like... So A, I had to let some people go.

I had to restructure a big part of the company, inject a lot of uncertainty, basically. There was a lot of safety and feeling like, "Okay, well there's this old crank that exists "that at least there's survival in saying, you know what..." Actually, I remember standing in front of the company and being like, "We're letting go of the raft "and we're swimming. "There's no more rafts "and we're going." And that was very scary but probably, maybe, one of the most important and impactful choices I've ever made. And obviously, it was very challenging to do it also with compassion. These are all people... Impacted people that I cared a lot about, that were close friends and so on. And so, we wanted to do it the right way but really, there was about, what is the right path for the company? And it was a contraction of our definition where it's like, we were, letting go part of who we were to try to be who we wanted to be, right? And the other one that I think is almost the opposite is what we did with COVID last year. And maybe we'll talk more about it but I felt like there's a very similar thing that happens when you redefine the canvas in a way that, to people, feels like, "Oh, this is de-focusing "and it's letting go off our identity." For a lot of people, because we were doing amazing work in genetics, saying, "Oh, now we're also going to do things "in infectious disease," felt like, "Oh, are we letting go off who we are?" And it's like, "No, actually. "What we want to be is "the best healthcare company in the world "and that touches a lot of things, "and there's a whole new definition "of our identity that's much more broad," that I think that was the right time to do that. And so, I feel like those are the two types of patterns that I think are both challenging.

But, I think, sometimes the most impactful ones that we can make (indistinct) living this experience. - That's fascinating. 00:24:50,310 Well, look, you teed this up so well, so let's pivot to COVID. You created a super high throughput, automated COVID testing laboratory. And I think what was interesting is that you figured out a way to integrate that with public health tools. I know your testing facility's in Burlingame, but I think the last number that I saw, you're processing clinical samples at capacity for tens of thousands of samples per day, but your initial business was focused on genetic testing, right? We talked about that. Not virus testing, and then along comes this asymmetric event called the pandemic. So talk us through a little bit about that asymmetric event coming in, how you made that decision to attack COVID rather just stay on your initial thinking, and how all of those vectors came together and got you where you're at, 'cause that's fascinating. - Yeah, it's kind of interesting trying 00:25:43,689 to think back because those were so... Sometimes, you go through these very intense times where time and events get a bit mixed and compressed.

But what really happened at that point was, so because we're in this space, in general, in the healthcare space, I think we're very attuned. For example, we shut down our office way before all the other companies and so on were... Initially, actually, we shut down our office to protect our lab team because we were like, "Okay, just the density of humans increase "the likelihood we'll have an outbreak." And "who are the people that have "to be here to do their work? "We want to keep

them safe." And so, initially... But we got deep into the, "What's going on with COVID?" and trying to understand it, just to protect our own people. Progressively, as that was happening, I think one of the things that kept being really striking is... And one thing that struck me, I feel, at the time, was we feel when the world is running, you always think that there are people behind the curtain that make stuff work like. And I think a lot of us were convinced that, we see all the movies and we think like, okay, something like this happens, someone in DC is going to press a button and people in hazmat suits descend, and they're going to solve everything in a few days and it's fine. But you realize there's no one behind the curtain and it's... It's just us. It's people like us.

And one of the things, for us, that really started ticking for us was like, A, this is increasingly seeming like a singular event, probably the biggest health crisis of our generation and it was increasingly being clear. Early March that was very clear that was probably where we're heading. And B, we felt like we were one derivative away, one degree away, from being able to have a very big impact. The question we're asking ourselves is like, "Okay, clearly no one has a clue "what's going on right now. "And so, if not us, who? "If it's not people like us "who can make a difference, "then who will? " We couldn't come up with a better answer at some level. And so, we just started... There was initially a very small group of people, literally, it was four people, where we were spending about 18 hours a day calling everyone we knew who was somewhere in the space just to get their perspectives and to understand their hypothesis on where things were going. And after a couple of weeks, we came up with a few conclusions. One was we felt on the testing capacity side, there was a big dearth of just basic testing capacity. And we felt we could actually, we had built...

We run an incredible lab in Burlingame, because of all the work we do in genetics, which is actually much more involved than COVID testing, we're like, "We actually are running "one of the most interesting high complexity labs "in the country, "we think we can take a relatively unique approach "to actually running COVID testing." And then, equally importantly, was, from our genetic experience, like what I was talking about earlier was like, you can make all the beautiful technology you want but you can't get it to people in the US because we don't have a public health system. And that, to us, was actually a much bigger blind spot that we felt was very generalized and we felt we had a better answer for. And I think that ended up transforming the company in a very deep way, where, right now, we're running some of the biggest COVID testing programs in the country, we're running some of the biggest vaccine programs in the country, where it's all about that simple last mile. How do you disseminate very basic healthcare building blocks deep into people's lives? And to us, that felt like, actually, there was going to be a repeated version of that as we all evolved through the crisis. But initially, it started off as four people. We then started working on building our lab site and then working on the software side. Again, a small grassroots effort. I mean, at the initial, we went from four people to maybe about 20 people that were involved in the core thing. And then it kind of like spiraled from there. And it just kept growing.

- That's fascinating. 00:30:07,245 And what an incredible insight. Well, so as you're seeing that opportunity emerge out of nowhere, what was it like to get your team to shift? 'Cause they didn't join an infectious disease company specializing in this pandemic, right? So what was that process like and how did you get everyone aligned and execute this enormous program? - It's one of these things, 00:30:34,500 honestly, I don't know if... I don't even know if I've done a good job at that, to be honest. I think it's just a generally... It's kind of like what I was referring to earlier, about, I think, one of those challenges of those expansions and contractions of identity and mission and I think, I guess, I feel pretty good about how we've weathered it, but I think it is really interesting too, as a collective, right? Especially as the company, we're about 500 people now and in a highly dynamic environment, I think one of the most interesting challenges and opportunities for people in leadership is, how do you effectively communicate and bring people along for an evolving mission and vision? And I think that's very much something that's an iterative process, right? (stammering) Because I say I'm not sure, because that's something I'm still trying to do a better job at as a CEO of the company, where things are still changing very, very rapidly and one of the things that... I'm a big fan of the antifragile, Nassim Taleb book from the mindset of, even for an organization, how do we make ourselves embrace entropy? As a team, I think one of the biggest assets we can have is to be a team in an organization that is able to effectively ingest and react to the dynamic nature of the world. I think that is, I think, how startups really get an edge and have an advantage because that's not something that a 50,000 person organization can do but for us, it's hard but we can still do it. And so, I think that's one of the... Actually, one other comment on this is I think it's also been...

Another interesting challenge, I think, for people, for all companies of all sizes in this last year is, all of a sudden, this move to a virtual work setting where we used to get all of this communication for free, obviously, we had the communication for meetings when we all show to a conference room and stuff, but we used to have, I think, all this ambient... From between teams, people seeing each other in conference rooms or while they're having lunch and so on. And by moving to Zoom and Slack primary communication channel, all the communication and interactions have become highly intentional and transactional. And I think one of the things that will be interesting for us collectively, not just Color, is how do we build and have teams that cohere and work together well, and so on, in this world, that's increasingly virtualized and where the communication channels, I think, are... Where you lose a lot of that human randomness of communication, and I think there's interesting opportunity around that, like how to create that in a digital world. And so, I think that's just something that we're definitely thinking a lot about as a growing company. - Yeah, I think that's a super insightful trend. 00:33:39,550 All right, couple more of the topics and then we're going to open it up for some Q&A. I see a whole bunch of questions are popping in there and people are voting them. So keep adding your questions, keep voting.

In addition to all this amazing work that you've done, you're also an angel investor. So tell these budding entrepreneurs on

today's Zoom call, what does a breakthrough idea look like? What does an entrepreneur look like that you would be willing to write a check for? What do you look for as an investor? - That's a good... 00:34:12,300 It's one of those things where it's like, for example, if I look back, frankly, my initial guess about which things were going to do better or not etc have, in general, not actually been that accurate. In many ways, I think it is the... It seems to me like one of the dominance affects is which spaces are undergoing a high phase of entropy or high kind of like.... It feels like each subindustry goes through a window of time when it's ingesting or metabolizing all the new building blocks we have. And it happens at different industries at different times. Sometimes for structural reasons and sometimes, I think , there's like a randomness of like things that create that catalyst. But I think, probably, I'm guessing when you look back at this 30 or 50 year window of time that we're living through right now, it's going to be one of those Cambrian explosion events of humanity's productivity and creativity because, all of a sudden, we've brought in all these building blocks at such a rate that dramatically increase the liquidity from like ideas to reality, and the ability for those ideas to achieve scale. And I think that's just like fascinating to try to understand or try and make a guess about when that's going to happen for different slices of our lives, right? And so, I think we're all part of this one very big arc of the kind of software and communication technology and so on.

And that has a bunch of like sub-S curves of these individual industry explosions, and I think that ends up being, actually, one of the dominant factors, is trying to be involved with that at different phases. And I think, for example, healthcare right now is, I think, going through that incredibly, highly malleable, intensive, iterative process where, all of a sudden, the industry is like able to ingest a huge amount of change and innovation that wasn't even possible a year ago. And so, I think that's one way I think about it. It feels to me like, right now, probably healthcare is a huge one. I mean, obviously, I think the digital currencies is clearly going through... Actually, that's another example of ones where you thought it was played out, we all thought it was played out a few years ago, but I think this is now when it's actually happening. And so, I think that's one way I think about it is, when are the most dynamic phases? And then beyond that, it's just trying to bet on good people. And in general, your past experience with someone that you've seen people do good work with high integrity, that's probably the best bet you can make. - Yeah, yeah. Are there are any other attributes you look? 00:37:17,883 'Cause obviously, as an early stage angel investor, lots of times either the product's not done (indistinct) certain amount of revenue or they're not scaling in any way, so there's not a lot of data to evaluate the performance of those founders, so in addition to their past work, which I think is interesting, we actually had a talk about that in 178.

We can expand upon that when you join our class. But is there anything else that you look for or any other clues or patterns? You mentioned integrity, which goes without saying, but any other insights? - I think, it's probably like integrity, 00:37:48,820 creativity and grit. I think grit is just to survive long enough that if you have the opportunity to have product market fit, you'll go for it. I think those are probably the key ones. - Yeah, I would agree with that too. 00:38:09,389 All right, before we open up for questions, I want to actually finish with something completely unrelated to everything we've been talking about here. But when you were at Stanford, that was in the late 90s, and you actually helped produce some of the very first ETL talks. It's now more than 20 years later and here you are as a founder rather than a student. Can you tell us what you remember about how ETL got started and were there any pieces of the original vision of the series that you see to have carried through to today? So I'd be fascinated to understand your perspective. - Yeah, I mean, it was like...

00:38:41,100 You know sometimes how, again, just randomness changes the course of your life in a very deep way? And literally, my involvement with BASES as an undergrad was probably the single most important thing that happened to me while I was at Stanford. So where it started, literally, I was a CS undergrad, I was sitting in my dorm room one night and I was getting a bit tired of programming, so I just went to the Stanford homepage, so stanford.edu, and I was like, "What am I interested in?" And I'm like, "I don't know, "business and engineering." And so, at the time, BASES actually was called the Business Association of Stanford Engineering Students, not entrepreneurial. That was a renaming that happened later. And this pastel blue page with a rainbow came up that was kind of like just someone who just took half an hour and wrote some HTML. I think it was a student called Mendell, if I remember correctly, who was one of the very first STDP fellows. And it had just started, just this summer, about three months before. It was like five initial grad students who'd started it. And so I just emailed them. I was like, "Hey, what are you guys up to? "Can I join you guys?" And so, I showed up and it was them, and I think I was one of the first people who showed up and I was the only undergrad. It was all these PhD students that at the time, to me, looked like God's on earth and wondering how they existed.

And from there, I ended up meeting Tom Kosnik, who waS the spiritual leader of that generation. And then, actually, I'm not sure if my memory is correct here but I think, literally, the f... I think it was the first ETL but Tom gave me the email address of this entrepreneur who I'd never heard of. This guy, Masa from a company called SoftBank. I just emailed him, I'm like, "Hey dude, do you wanna come do a talk at Stanford?" Which, obviously, he was very excited about. And so he showed up and gave a talk. I think that was literally my... If I'm not misremembering, I think that might've been the first person I invited. - Wow, wow, that's fantastic. 00:40:51,722 What an amazing story.

All right, let's see, about 05:15. We've got some really great questions in here. A number of them have been voted up, so let me start with the number one voted question. So it goes like this, "The pandemic has allowed some businesses, "like Color, to prosper. "How are you trying to plan for "the post-pandemic world "in your new business strategy?" - Yeah, it's a great question. 00:41:15,380 I mean, so the way I think about it is like I think when you think about the pandemic, with COVID, right? It's something that's going to be... It's an arc of a challenge that we collectively have to face. I mean, you can think of it almost as a global war or something like that, where it's a very highly disruptive event that we're all collectively, societally

dealing with and it's creating an arc of disruption. But I think what's going to happen is that the post-pandemic world is not the pre-pandemic world. I think what has happened and what is happening is creating a permanent change in how we live our lives in certain respects.

And for the way we think about our strategy and what Color is about, it is about building the public health infrastructure of the United States. That's literally how we think about, "what are we trying to do?" It's like if you wanted to build the largest health system in the world, that is reachable in every school, in every church, every community center, every place of employment, to do basic healthcare services for people which we do not have in the United States, what would that look like? And I think what the COVID crisis has done is that it has forced, in some ways, and catalyzed the creation of that infrastructure. So when I think about what is our long-term goal and opportunity, I think that's what it's all about. And so, the need to be able to do basic things for people's health as part of their lives instead of waiting for them to get sick so that they come to you in the hospital, I think that is the thing that was needed before, but we didn't have the activation energy. One example, one analogy I use for this is like, it's almost like how the highway system of the United States was created as a side effect of the World Wars to transport troops and equipment across the country. And obviously, that's a piece of infrastructure that has completely changed how we live our daily lives, right? How we think about commuting, how we think about access to work and food and healthcare, and so on. And I think that pushed us up past this activation energy for something that we have needed for a long time. And now, I think it's finally happening in a really real way. And that's really how we think about what we're doing at Color. - Yeah, I think your opportunity is huge.

00:43:31,120 You're a 100% right. I think that COVID's changed the world in ways that we can barely imagine right now. And I remember, I was involved in internet 1.0 and creating a company at that time. And I remember sitting down with some CEOs and talking about this thing called the internet and they were like, "Well, "is that like the fax machine? "It's going to go out of style "in three or four years." But this pandemic really, I think, shifted, and you used the word "lifestyle." And I can see that just in healthcare alone, where prior to this, you couldn't do a meeting with your doctor over a Zoom call. Now, it's standard operating procedure. And the value of that is so extraordinary and you're right, it's to get some preemptive work done because it's too hard, it's too complex and there's just too much friction and cost. I think your opportunity is massive. - And especially for people that are 00:44:22,200 the most underprivileged members of society, and I think the COVID crisis brought that into focus where you realize it's not because we don't have labs that run tests or we don't have medications. When vaccines showed up, we all saw how long it took to start getting them to people and we still have to face the real hurdle, I think, that's going to be the most important (indistinct) challenges is, how do you get it to... Not the people like us who, white collar, can use the internet, can take time off work and so on, but like farm workers or undocumented migrants or people who are skeptical about big business, the government and the healthcare system.

Those are the people that we need to reach to really have a public health impact. And I think that's what this cycle of healthcare infrastructure really needs to be able to do. And so, I think it's really gonna be a very deep and permanent change in how we think about just basic public health. - You're 100% right. 00:45:23,520 It's really all about a complete shift in the infrastructure. And I know what... What Tesla really did, all those cars were really ordered online. When did you order cars online and pick out what you wanted, right? And the same thing with solar. All of that infrastructure to take this grid that's expensive and 100 years old and transform it into something that's modern, 21st century that can focus on this massive climate change issue that we have. Okay, let's see here.

"Can you elaborate on your career path "and how that led to where you are today?" I think that's a fascinating question. Starting out writing code. You're obviously very intellectually curious and had a very growth mindset, but how'd that happen? - Good question. 00:46:06,420 I guess I've kind of like swung between larger companies and smaller ones. But I think I've... I think, frankly actually, one of the patterns... Actually, I've never thought of it this way but a very consistent thing that's happened with every one of those has been connected to people that I just thought were great people and I thought were impressive or smart, and high integrity that I really wanted to work with. And at least, for me, that's been actually one of the drivers, where each one of these steps, I think... so much of our life experience is doing work. And so, trying to optimize for things that are intellectually interesting with people that you really want to spend time with and you enjoy going through challenging times with.

So I think that's been, for me, I think the big driver. And actually, one other pattern that I thought has interesting is, I think, oftentimes I noticed that people can be very self-limiting because they think they're specialists in something or not specialist in something, and think that there's this really big hurdle to enter a space. For example, people don't enter healthcare because they're like, "Well, I'm not a doctor." In reality, the people that we think are specialists, that was an investment of one or two years. You can actually get very high up the specialization curve relatively quickly. And so, I think that's... I mean, your examples, Toby, with someone like Elon Musk who is across these industries that, on the surface, have nothing to do with each other. - (indistinct) 00:47:48,420 - And I think not all of us can... 00:47:51,810 I don't think I could be deep in all those things in that same way but I think all of us can be relatively quickly deep in at least one thing every few years. And so. I think that's something where it's like, if something is interesting, it's actually probably not that big of a hurdle to at least pick it up.

- Well, I think your career trajectory is just fascinating 00:48:11,164 and I think that, one, you've had this incredible intellectual curiosity and then you've actually gone out and experimented and tried a lot of things. You've seen a number of

things, and I think that's just such an important... If you want to be a successful entrepreneur is how you've got to really be thinking going forward. So I think your path of getting... Working for some mainstream companies was really valuable and those things just led to this process of where you got through today. So this is a pretty quick question, I think, and I think it's a really important question in the age of big brother and data hacking that were going on. So how does Color protect patient data and is it ever shared with third parties? - Yeah, that's super important. 00:48:52,930 And so, I think it's one of those things that's I think one of those examples of, as a broad society, part of the thing that we're metabolizing together is how do we deal with a world where our ability to generate, store, transmit information has grown to orders of magnitude than it ever has before? And I think that creates a huge amount of value creating power and opportunity, right? The same reason we can listen to music or why we can make all scientific discoveries and all these things that like are incredibly valuable. But then they can also be misused. And I think that's like one of those things where, I think, in some ways, technology has no ethics, right? Technology just is, right? It's just kind of...

And the ethics come along with the frameworks and how people utilize it. For us in healthcare, we are dealing with some of the most sensitive personal datasets in people's lives, in our envelope of data for each one of us. And so, the way we think about it is, historically, the framework around health data had been that it's housed in the filing cabinet of a doctor. And it's sensitive but it's in one filing cabinet. Then they put the filing cabinet into this EMR, so it's like in a hospital. In general, hospitals are actually really bad at securing health data. It's just like, we don't have that impression just because they're distributed but they're getting hacked all the time. But the question is for the future, what is the right way to manage health? One conviction that we have as a company is that the best way to do that it treating it as you being the primary custodian of that data and operating with the principles of representing you, the individual, and treating the data as belonging to you. Because I think, from our perspective, there are times where actually there's a lot of value to sh... That you have in the data being shared.

And so, we want to make that as easy as possible but also we want to ensure that there's no use of the data that we make that would be counter your expectations. And so, the way we think about it is like, "Is this going to surprise someone "in the negative way if data is used "in any way?" And so, we try to go to very extreme lengths to ensure that we stick within the contract of expectations that people have of us. And again, it's not a perfect framework, but I think, for us, that's been, in general, a directionally very valuable way to think about it is it's your data and our job is to use it in the way that you expect us to, and to change your expectations as well. If we think there's a use that's important, we can help you modify your expectations but that's the burden that we have to carry. - Yeah, well I know we're just about out of time 00:51:41,720 and I have some quick closing remarks. I do want to get one quick question out there, because I think it's... I'm going to concatenate a few questions out here and I get this question all the time. But students are always asking, do I go right into entrepreneurship or do I work for a large established company? Looking back on yourself, is there a right or wrong answer? Or what advice would you give? Do you be a product manager at an established company or do I set off on my own? - I mean, I don't think there's a single path. 00:52:08,677 I mean, I think that the main thing is you're never ready and you're always ready, I think. From that perspective, if you want to do it, you should, right? The most precious asset we all have is our time.

And so, I think the thing I would not recommend people doing is if they really want to go start something to let people talk them into being like, "Okay, well, I have to bide my time "and build my experience for 20 years "in a big tech company before I can do it," I think that's actually the wrong reasoning. If you want to do it, you should go do it. But don't wait to be ready because you never will be. Or you already are... (electronic music)..