

EPISODE 604**[INTRODUCTION]**

[0:00:00.3] JM: Investing is an infinite game. In a game, a player can formulate a strategy based on the available resources, the apparent variance of the environment and the meta-game of the other actors involved. For an investor, the board game includes companies, currencies and people. A successful game player can model their actions mathematically. They can describe a thesis for an in-game decision with clear language.

Game players who reason through gut feeling do not perform well unless their gut is aligned with correct mathematical heuristics. The same is true for investors. An investor who is going to be successful in the long term will be able to explain their investment thesis crisply. Each investment represents a bet with net positive expected value. The expected value of an investment is the sum of all potential probability weighted future outcomes of a business. Each of these potential expected outcomes is the anticipated outcome times the probability that the investment works out in that anticipated way.

Brian Singerman is a computer scientist and a partner at Founders Fund. He's on the board of a firm, AltSchool Emerald therapeutics and a variety of other companies in disparate areas. He also plays a lot of board games. Brian was fun to talk to because he was willing to field questions from an expansive range of topics and he answered them so quickly and concisely that I started to get nervous that I was going to run out of things to ask him. I was worried that I would have to create some contrived question about whether we're living in a simulation. Luckily I didn't have to. We stayed fairly close to the topics of his investments and gaming.

Many of the businesses that Brian has invested in do not have a well-defined historical precedent. If a venture capital investor was trying to make bets in defined sectors, that investor would probably overlook a business like Forward, which is a vertically integrated healthcare company. They're going to be on the show in the near future, and also Cloud9, which is a collection of e-sports teams. These kinds of investments don't have a precedent.

If an investment does not have a historical precedent, it's harder to reason about it by analogy. You have to judge that investment by fundamental reasoning; the current market, the capability of the founders and the economics of the business model. Those are fundamentals. In many professions, reasoning by analogy will work out perfectly fine. You can pattern match on the past and use that to justify your decisions for the future. But if your professional livelihood depends on reasoning by fundamental principles, you get trained to assess situations that do not have precedent and it often feels like life does not have precedent. It often feels like we are in strange, unique times. Because of that, I found it quite refreshing to talk to Brian.

I hope you enjoy this episode.

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[0:03:15.6] JM: Every team has its own software, and every team has specific questions about that internal software. Stack Overflow for Teams is a private secure home for your team's questions and answers. No more digging through stale wikis and lost emails. Give your team back the time it needs to build better products. Your engineering team already knows and loves Stack Overflow.

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[INTERVIEW]

[0:04:28.6] JM: Brian Singerman, you are a partner at Founders Fund. Welcome to Software Engineering Daily.

[0:04:32.3] BS: Thanks for having me.

[0:04:33.1] JM: You play games. You play board games and card games and fighting games and most tabletop games are synchronous. You have time to think and be deliberate in board games. Fighting games, on the other hand, are asynchronous. You're constantly under assault, but you still have to have an overall strategy. What are the skillsets that you have developed in these two different types of games; the asynchronous games and the synchronous games? What are the types of skillsets that you've developed as an investor through these games?

[0:05:04.2] BS: Sure. In terms of the strategic, more methodical, think through the moves type of games, I mean, to me, I look at venture capital as anytime I look at a company, regardless of stage, regardless of sector, regardless of anything else, I have to answer the following three questions and I don't think any of them is an easy question to answer. Number one; is it a big enough market, right? The fund that we're investing out of now, Founders Fund 6 is a \$1.3 billion fund. We have to understand making investments that are going to move the needle on a fund that size and. So is the market actually big enough to support a very large company?

Question number two; doesn't have some sort of existing mote, right? Not like, "Oh, if they do this and this and this," but just the company have some sort of existing mote and that can be anything. I'm open to that being all sorts of different things, but it has to have a real existing mote. Question three; does it have the founder and management team to take it from that current existing mote all the way through the strategic huge market endpoint?

A lot of that thought is the same as playing the strategy games, right? Whenever you're playing these strategy games or something that your team or your side has that theoretically the other players don't, and how do you exploit that properly?

[0:06:29.8] JM: Now, if I wanted to be the best tabletop gamer in the world, would it be good to cross train in asynchronous fighting games? Is there any value to be gained from those or is my time spent better doubling down on the synchronous tabletop games?

[0:06:44.3] BS: There's the question of what you do for fun and then there's the question of what you're doing professionally. From a professional's standpoint, I've always – Much to the chagrin of my wife, but I always take the time to double down on the thing on my mote, right? On the things that I know that I'm better at than anybody else, and I always protect that and I

always continue to get better at that rather than putting a lot of skill points into other things, which is maybe the right way of doing on the professional side but not necessarily the best answer on the personal side. I think that goes with games too. I mean – Just, you're probably – Let's say you're a professional e-sports player. You may end up being better at the game that you're playing if you just focus on that game. That being said, you still have to have fun and occasionally do other things.

[0:07:34.4] JM: Indeed. So you played enough games that I'm sure you think about game design to some degree. There are games that you prefer over other games and you can probably enumerate design reasons why certain games are preferable. One thing I always wonder about games is why the mechanism of in-game gambling hasn't gotten used much. So, in poker, you can make a real financial bet as an offensive action. Poker is wildly popular, but it still seems to be one of the rare games that actually offers this mechanism of the in-game wager, and I think investing is kind of cool because you actually do get to look at it as a game and you have the action of the in-game wager. But why hasn't this action, the in-game wager game mechanism? Why hasn't that permeated more games than the antiquated games of Las Vegas?

[0:08:28.9] BS: Well, first of all, I think it has, like backgammon, right? You can argue the doubling cube is exactly that, right? I mean, that can be used as an in-game wager, and in-game you can take that several ways. But I think for many of the other games, it kind of just hasn't had to. Poker would be a pretty dull game without that aspect. It's kind of core to it. So I think it would just be an example of finding a game where that part was core to the game rather than on the side, right? Obviously, it's extremely popular on the side of any game, the gambling aspect. It's just not necessarily core to very many games. But I don't think that there's any reason why it couldn't be or why it won't necessarily be in the future.

I think you do find a lot of people, and especially in the e-sports world, especially before e-sports started picking up as a professional venture in the way that it has now who absolutely were doing that and were just betting on their side as part of a core piece of things. People do this in pool all the time, right? You could argue that wagering is a core piece of pool. So I don't know. It's just a matter of like what the game needs.

[0:09:44.2] JM: How are e-sports intersecting with the gambling world?

[0:09:47.6] BS: In numerous ways. So betting on e-sports is extremely popular even within in a e-sport, like you've heard of unbundling or opening packages and kind of like spending some money and seeing if you get back some really, really rare item within the game, and this has been going on for forever. So yeah, both on the betting on the side and the in-game packages.

[0:10:11.3] JM: You've spent some time playing tournaments. I read that you won a Settlers of Catan tournament. Playing tournaments for money is not taboo. Even children are able to enter these tournaments. Why is tournament play more widely sanctioned by society when cash gameplay of various types of games, like the in-game exchange of financial instruments. Why is that not more widespread?

[0:10:39.4] BS: Again, the in-game exchange of financial instruments I think is a matter of like what the core game is. I think in-game exchange of financial instruments happens all the time. Again, I gave pool as an example. You can go to any pool hall in the country and you're going to people wagering on pool. So it's like – It's just a matter of more what is the natural state for that game. I mean, in-game wagering happens on every sport all the time, right?

[0:11:05.9] JM: Yeah.

[0:11:06.4] BS: It's just a matter of like finding players to take the other side of the bet.

[0:11:12.4] JM: So strategies within games differ between finite games and infinite games. So a single iteration of a board game is an example of a finite game. On the other hand, the summation of all your cash game sessions over time within poker, that would be an infinite game. What are the important strategic differences to be aware of when evaluating a decision in the context of a finite game versus an infinite game?

[0:11:36.9] BS: Yeah, that's a great question and that very much relates to fund investing versus individual angel investment. When you're investing out of a fund with a specific set pool of capital, that is a finite system as you're talking about. Whereas if you're just investing your personal money, you're doing personal angel investing. You could argue that that is – I mean,

nobody has infinite amount of money, but you're still only wagering your own money. You're investing your own money. So one could argue that's more of the infinite scenario you're describing. There's no finite end to it.

So the style of investing is very, very, very different I would say on those, right? When you're just investing your own money and there's no finite end to it, you're just kind of investing your own money. You're probably looking for different returns. You're looking to invest in anything that you think will make money, and that's great. Versus a fund, where you do have to think through more what are the actual returns here?

[0:12:36.0] JM: And is there also a notion to thinking about your reputation, for example, versus if you were looking at investing is a finite game in a particular instance, you might be willing to sacrifice long-term reputation versus if you're looking at it as an infinite game, then reputation is much more important.

[0:12:57.2] BS: No. That, I disagree with on. Even if you're doing a finite – Playing a finite game, you assume you're going to be playing another game. So your reputation is just as critical, if not more. If you're playing a finite game with somebody and that you do – You're a jerk during the game and they don't want to play with you anymore. Well, that doesn't sound too good for your prospects of playing that game again.

So if you want to keep – You can look at that, like each fund might be a finite thing, but the profession or doing venture capital or doing whatever profession you're doing, that part would fall more under your infinite category.

[0:13:36.3] JM: Infinite games, they usually have an evolving metagame. How is the metagame changing in venture capital?

[0:13:44.3] BS: I mean, I think it changes all the time. One of our core – One of the core thesis that I've had is don't have a specific thesis. In fact, adapt or die. We don't have pride of the past kind of things. Wherever the game changes, we're going to go. Like, for instance, I remember in 2008 we are very famous for having invested in Facebook and doing a bunch of consumer

internet stuff, right? So people just assume, “Oh! You’re just going to keep going on this consumer internet stuff.”

No. The answer is you go wherever the awesome returns are going to go, which could be from something somewhere completely different than what you were doing before, which then leads to just having a completely sector-agnostic strategy. So, no. We are constantly adapting and we fully believe in adapting or dying.

[0:14:33.7] JM: How does the time horizon of a business’s distance to developing that mote or developing the profitability that it can reap from the mote? How does that the time horizon of a business factor into the financing structure?

[0:14:51.7] BS: It doesn't usually, because if you can't see how something is going to be a big company within – Call it 15 years, then it's too hard to even know what the world is going to look like in 20 years, let alone what a specific company is. So that's not the time horizon on these things, unless it's – Yeah, the time horizon does not often come into my mind. Most of the times you can tell on these businesses within 5, 10 years if they're going to be working, and that's fine within the lifecycle of a fund.

[0:15:24.0] JM: To give a sample for your type of investment that you would make, we can run through some your portfolio companies. So you’re a board director for Emerald Therapeutics, which makes the Emerald Cloud Lab. How will biology change as the barrier to entry for experimentation gets easier and you can delegate experimentation like you would the spinning up of a server?

[0:15:48.9] BS: I mean, hopefully it leads to a ton more cures and a lot more advancement forward of the space. One of the things we’re always concerned with is how do you get the price of drug discovery, drug development, drug sales way down? One of the ways is, well, you speed up the process and significantly lower the cost of innovation. So I'm very supportive of things that lower the cost of innovation, and Emerald Cloud Lab is a perfect example of a company that is lowering the cost of innovation in an otherwise extremely expensive space.

[0:16:28.7] JM: I did a show with a different company that has similar developments to the Emerald cloud lab and it sounded like it's very early days in terms of the machines that you can wire together and that it's often a process of reverse engineering the APIs of whatever large piece of biological machinery you're trying to use. Are the building blocks for building a cloud lab, are they getting more updated, like the PCR machines or whatever biological machines you need to build a cloud lab?

[0:17:05.6] BS: Well, I mean, one of the things that Emerald Cloud Lab does is convert those machines, which are great machines, but those are machines that were not written for engineers, right? So that's one of the core things that Emerald Cloud Lab does, is take those machines, which are great at what they do, and convert them into a form that the masses can absolutely use remotely. So one of the things they do is they have to put modern-day APIs on top of machines that may not have been written for it. But it doesn't really matter if the machines have that themselves, because Emerald does a great job of making those if they don't exist.

[0:17:44.2] JM: You're not a biologist by training. What was your process for developing enough of a competency in the field of biology that you could add value?

[0:17:53.1] BS: I think there's a lot of value to be added in ways that are not necessarily just the core science, right? You're either investing in a team that knows how to do their core business, or the core piece of their business better than anybody or you're making the wrong investment. So my value add to Emerald is not having a lengthy scientific discussion with those guys about machines that I don't really know how they operate or even processes that I don't know how they operate, but probably rather on the business side of things, on the strategic side of things, right? So I'm not necessarily having to add value to the core, especially for the science teams. There's lots of other ways in which it's interesting for me to be working with them.

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[0:18:45.9] JM: Users have come to expect real-time. They crave alerts that their payment is received. They crave little cars zooming around on the map. They crave locking their doors at home when they're not at home. There's no need to reinvent the wheel when it comes to making your app real-time. PubNub makes it simple, enabling you to build immersive and interactive

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[INTERVIEW CONTINUED]

[0:20:27.3] JM: You're on the board of Postmates. This is a crowded market, depending on how you view what market you're in. Assuming you do agree that it's a crowded market, how do you break down and understand the mote for a business when you're in a crowded market?

[0:20:45.5] BS: Yeah, it is definitely a crowded market. Postmates has certain strategic advantages that nobody else has. For instance, Postmates, one could argue, is a top brand, especially in Los Angeles, right? It's actually a verb in lots of places in Los Angeles. Okay. So how do you take that what you have that nobody else has and stretch it from there and win the endgame from there?

So there are certain advantages that Postmates has. There're certain advantages that all of the other companies have, whether it's cash, or being a verb and some other places, or being part of a much larger company, you know, a la Uber Eats, and they're all taking their current motes, which Postmates absolutely has one and trying to stretch it from there. So that's what we do.

We do the best of our ability to play with the strengths that we have that nobody else has and exploit those.

[0:21:33.4] JM: Speaking about brand more generally, how do you quantify the value of a brand as a mote? Because a while ago you might have said Duracell batteries, the brand Duracell is high quality. Now I get Amazon Basics Batteries. I mean, is that because the brand was not as valuable or because Amazon has a stronger brand than Duracell?

[0:21:54.9] BS: No, I think Duracell didn't do a job of adapting or dying. They did have a huge mote. I mean, if Duracell had been able to do the distribution strategy that Amazon had done, but with the Duracell brand, I think it would've been a different story, right?

Sometimes the problem is you develop a big enough brand and then you rest on your laurels. Brand is a mote. It's not a guarantee of forever winning. So you have to take that and continue to push on that, right? I look at these things not as game over kind of scenarios, but rather, "Okay. We have this mote. How do we exploit it?" Even for larger companies, for \$50 billion or \$100 billion dollar companies, we have this mote. How do we exploit it? It's not a game of just resting on your laurels just because you have a bigger brand than somebody else.

[0:22:36.5] JM: Founders Fund invested in DeepMind. Many people lauded the victory of AlphaGo from DeepMind, and obviously it was a tremendous achievement. But Go is a game like poker or chess and that it doesn't really evolve. The game pieces are very well defined. They are easily explained and this is not true of a game like Dominion, or Magic the Gathering or other games that have evolving game pieces. How long do you think it will be till we see in AI that can perform well in an environment with the high dimensionality of the game pieces?

[0:23:16.0] BS: Yeah. So I think what you're describing, I would classify it as how often the meta-changes, right? When you got games where developers are always either releasing expansions, or patches, or upgrades, clearly that's going to force change the meta of the game, right? Even in stuff like chess and Go, the meta still changes, right? What AlphaGo did was deploy a strategy that like humans would not have thought about, and that actually changed the meat of the game. What I do think is that it's a lot slower in games where there are fixed pieces and there's no patching and no upgrading versus in games where there is.

I would argue that the meta in League of Legends changes quicker than in basketball, but the meta of the game in basketball still changes even if the rules don't change. So I do think that those games are changing and evolving and not solved, because the meta will change even if it's at a slower pace than something like League of Legends.

[0:24:19.9] JM: So you don't think metagame is just a byproduct of the fact that humans can't evolve – Can't understand the entire decision space and therefore are operating in places of local maxima of the decision space?

[0:24:34.8] BS: It's not just that, because part of figuring out the meta is knowing what the other player is going to do, and if the other player is more or less likely to make a certain move, that factors into the game as well. Not just the ultimate decision tree, right?

[0:24:49.4] JM: I see. So with the AlphaGo, was it the case that the – Was AlphaGo to training on information from Lee Sedol?

[0:24:56.4] BS: I'm not familiar exactly with what AlphaGo was training on, right? I mean, we were involved with DeepMind long before AlphaGo was even – I think they've gotten the Atari simulator to run well when we were working with them. So I'm not sure what it was trained on, but I would be willing to bet that AlphaGo has not solved Go, right? I think it probably did a good job of solving for, if you will, the current meta, but would I say that it solved it and that there is no way that some other, whether it's AI or human could come up with something unique that stems AlphaGo? Of course I would not say that. I think there's definitely room to evolve still.

[0:25:40.8] JM: Interesting. So let's imagine a universe in which you could model all of the moves in –

[0:25:46.4] BS: So, tic-tac-toe. You're asking is it an advanced tic-tac-toe?

[0:25:50.3] JM: Right.

[0:25:51.2] BS: Maybe, but the delta between tic-tac-toe and Go is there's – The amount of moves somebody could make or something could make is still relevant here in terms of – I mean, you obviously could enumerate the set of every move and every possible counter move in Go, but I think that from a game analyzation perspective of where you are at a certain time in a game, I'm not sure if we're done evolving on that game, whereas we're clearly done evolving on tic-tac-toe. I'm just not sure.

[0:26:27.3] JM: Yeah. Yeah, because it seems like tic-tac-toe to me, but just a bigger branching factor.

[0:26:32.7] BS: And you may be right, but would I be willing to bet that AlphaGo has solved it? No. Whereas I hear what you're saying in terms of things like Magic, or League of Legends or whatever of offering an upgrade or a patch. Well, that by definition, changes the game and you've got to reevaluate the set of things. So I mean I hear what you're saying. I don't think we're there yet on Go.

[0:26:52.8] JM: Right. You're involved with both Oscar Health and Forward. These are both fully integrated – Well, I don't know about fully integrated, but vertically integrated healthcare providers. How do you see the market of vertically integrated healthcare providers evolving?

[0:27:07.3] BS: Well, I would call Oscar less a vertically integrated healthcare provider, and I would call Oscar much more on the payer side, but a very consumer-focused payer. Whereas Forward is clearly a vertically integrated provider. Oscar offers a lot of some services as well to its customers, but those are to its customers and I do see Forward as a more vertically integrated provider versus Oscar, which is a full-on consumer-focused payer.

[0:27:36.2] JM: I was asking just about how you see vertically integrated healthcare providers evolving more generally.

[0:27:40.7] BS: I see there's a lot of technological benefits that Forward can bring to the table even if it's as simple as if they've figured out a way that trigger behavior change, if they can figure out a way to have a relationship with the patient such the patient does acts in more healthy ways, then great. That can play a huge role, and a lot of times being a full stack

vertically integrated company is very helpful there, because then the patient doesn't have to use 20,000 different things, right? They can kind of go to one place for whether it's seeing a doctor, or getting reminders about taking their medicines, or reminders about checking their blood pressure or getting their genetic scan, right? It's kind of in one place.

So you can see the consumer having a relation – Or the consumer, the patient having a relationship with one company that takes care of all of that for you. So you don't have to have a hundred different relationships, and that is a huge advantage of a company like that.

[0:28:37.9] JM: There's a lot of obvious low-hanging fruit that we would love to have in a healthcare provider that we can think about, things like – It'd be great to get genome sequenced if you went to the doctor's office or have the doctor take your genome sequencing seriously. It would be great to have a doctor not have to manually enter in healthcare notes when they're diagnosing you. These are things that get talked about a lot. Are there any more subtle elements of the healthcare system that your time with Oscar or Forward or somewhere else, any axioms that the healthcare system has adopted that you think will be disproven or will change in the future?

[0:29:22.6] BS: Well, I don't know about disproven, but those company, both Oscar and Forward in their respective domains are extremely focused on the design, right? And this is something that I think has been taken – Not taken seriously definitely not by payers in the past and probably not by most providers, but in the same way that having your doctor take your genetics seriously, to not having to entered data. The design of the place is extremely important to a company like Forward, and that's a perfect example of something that's maybe a little bit more subtle that make people feel better about going to the doctor.

[0:29:57.7] JM: Amazon was underestimated for a very long time and we now can see how big its notes are. Why did people underestimate Amazon for such a long period of time?

[0:30:10.8] BS: They thought it was just a low-margin business and that wasn't exciting. Like most software people are focused on these like huge high-margin bits over atoms kind of businesses. So something like Amazon was less sexy because you're dealing with just a huge volume, very low-margin business. It's hard.

[0:30:30.8] JM: Yeah. Are there any low-margin high-volume businesses that you've found yourself investing in recently?

[0:30:37.2] BS: Absolutely, but I'm not going to discuss them.

[0:30:39.4] JM: Okay.

[0:30:39.5] BS: But, yes. It's certainly – It's part of adapt or die. You absolutely might be looking for – If everybody else in Silicon Valley is looking for, "Oh! What's that next ridiculously high-margin, high-growth? Well, who knows what the business model is?" but we'll figure it out later kind of company. You probably go somewhere else. Certainly, one place one could look is in lower margins, maybe higher profitability, maybe slower growth, but real business kind of ways.

[0:31:09.8] JM: Over a 10 year time horizon, how impactful do you expect cryptocurrencies to be?

[0:31:14.8] BS: I don't know. Probably very, but I'm a very long-term believer in Bitcoin, specifically. If you ask me about any of the umpteen others, I'm going to have no opinion on them yet. I think Bitcoin has done extremely well as a stored value, a trusted stored value platform that is extremely hard to hack the Bitcoin blockchain, right? So I think there's a huge value from that. So, yeah, I'm long-term believer I that. I'm not going to make any comments on any of other cryptocurrencies.

[0:31:47.5] JM: How much of that faith in Bitcoin that you have is due to the brand of Bitcoin?

[0:31:53.4] BS: Oh! Two things here. I think it's both the volume, right? It's very difficult to hack the Bitcoin block chain when so many players are bought in and so many people are mining. It's just really hard to take over more than half of that. So part of it is functional, but absolutely a lot of it is brand, right? It's kind of the one that people have realized, "Oh! I've heard of that. Oh! I've succeeded," and that's a huge win versus some new crypto that people are not sure if they can trust.

[0:32:22.2] JM: Cryptocurrencies have several innovative features. There is the potential for decentralization. There's more fine-grained asset ownership. There's the digitization of contracts. There's the open sourcing of the securities markets. What are the underrated and overrated aspects of cryptocurrencies?

[0:32:39.6] BS: I mean, I think an underrated – You didn't even say the stored value aspect of Bitcoin, which I think is extremely underrated, versus having it be high-transactional, ease of transaction, cheaper, anything, right? I think that the stored value aspect of that is probably still the most underrated aspect of Bitcoin, and in terms of other innovations one could do with decentralized crypto-based blockchain technology, I leave that to the entrepreneurs.

[0:33:07.7] JM: Do you have any forecast for how the traditional financial industry will adapt to the growing use of crypto currencies?

[0:33:20.0] BS: No forecast. I think some of them will adapt to the modern days and then go with it and will thrive and some will – And there'll be some room for traditional – Lots of room for the traditional financiers, lots of room for adopting crypto into your strategy. I don't think there's going to be one right way to do things, and I don't think this one right prediction of what's going to happen for each of these companies.

[0:33:43.8] JM: As a venture investor, you're making large long-term bets, and that's the nature of a venture capital. As an individual investor, you could make smaller rational bets on shorter-term time horizons. For example, when the cryptocurrency market was getting bid up for no reason, do you spend any of your time playing in the bubble markets or do you just avoid them?

[0:34:08.0] BS: I don't. I don't trust myself as a short-term investor. I see no reason that it's not a fine strategy for some people, but I know what I'm good. You seem to be a poker guy. So I know when I'm the fish at the table and I know when I know something, right? When it comes to short-term daily trading, bubble betting, news getting, I'm the fish at the table. What I know is long term strategic value creation. So that is all that I focus on.

[0:34:36.7] JM: Is that long-term strategic value creation particularly at the earlier stages of a company? Because, I mean, long-term strategic value creation does take place after a company has gone public.

[0:34:48.9] BS: Sure, or when a company is bigger than most public companies? I spent a ton of time with Airbnb. No. It's not just for the early-stage companies. Again, I think the best companies and the ones that don't just sit on their current notes and think they're going to last forever, but ones that use that to take the next step strategically. So that goes for any stage. This is why we are totally stage-agnostic. We do not just do early-stage investing here.

[0:35:13.7] JM: Now, Airbnb is a company that could spend a lot of time and is spending a lot of time doubling down on its core competency. Eventually, it will have that core competency so ironed out that it will expand creatively into other areas. I know it's expanding creatively into other areas right now, but it's such a green field that there is a question of the proportion of time and resources that should be spent on greenfield opportunities versus doubling down the core competency. We don't have to speak about Airbnb specifically, but if you take it a company that's in Airbnb's position. You could even take a Stripe, for example. A company that has so much greenfield but also so much core competency to double down on. How do you allocate resources?

[0:35:57.9] BS: I mean, this is what the best founders and the best management teams know how to do, right? You can't sit on your laurels on your existing notes, but you have to expand. So you have to do two things, right? You have to use your existing notes and you have to use your existing stack, if you will, to both keep pushing on that existing front, but also taking on new businesses. The best companies are the ones that can leverage their strengths to do both, not just start something brand-new, but leverage their strengths to do both.

So for instance, Airbnb, I'm happy to talk specifically about this one, has very extreme notes in certain places and they need to use that to leverage both dominance in the homes market as well as start to focus on new businesses, like experiences that are using the notes that they've established from the homes business to trigger a start to the experiences business, and they're doing extremely well at balancing that.

[0:36:58.1] JM: I mean, you're in that position where you have the greenfield as well as the core competency doubling down options. You probably are in a position where you could raise additional financing. You could get debt. You could raise a series F however late it is. How does the question of financing factor into that?

[0:37:17.2] BS: I mean, it's totally idiosyncratic and based on the company basis, right? It's totally a matter of what the company needs, and I'm not going to get into Airbnb financials here, but if Airbnb chose to raise money, I'm sure that they would be successful at doing so if that's what the company needed. But this is completely company by company base. There is no general strategy for this.

[0:37:37.4] JM: And when considering the option between private financing and going public in the later stages of a company, why has there been a shift to emphasis on further later stage financing as opposed to going public?

[0:37:54.4] BS: Well, I mean, I think that if you can raise money in private financing, oftentimes it can both be easier. There's advantages to being a private company, right? You're not judged on a quarterly basis. One of the biggest problems with the market today, it's full of short-termism, right? So as a private company, you certainly can avoid a lot of that because you're not re-priced every millisecond and you're not re-priced based on other people's quarterly estimates of what you should be doing, and probably that is the biggest advantage of being a private company, right? So if you can raise the money privately, it's attractive to do so.

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[0:38:42.1] JM: We are running an experiment to find out if Software Engineering Dailydaily listeners are above average engineers. At triplebyte.com/sedaily, you can take a quiz to help us gather data. I took the quiz and it covered a wide range of topics; general programming ability, a little security, a little system design. It was a nice short test to measure how my practical engineering skills have changed since I started this podcast. I will admit that though I've gotten better at talking about software engineering, I have definitely gotten worse at actually writing code and doing software engineering myself.

But if you want to check out that quiz yourself, you can help us gather data and take that quiz at triplebyte.com/sedaily. We have been running this experiment for a few weeks and I'm happy to report that Software Engineering Daily listeners are absolutely crushing it so far. Triplebyte has told me that everyone who has taken the test on average is three times more likely to be in their top bracket of quiz course.

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[INTERVIEW CONTINUED]

[0:40:40.5] JM: There's that great letter that Elon wrote to the employees of – I think it was of SpaceX about the merits of not going public, because you don't have to be subject to the vicissitudes of the public opinion. But there are obviously companies where there's been the suggestion that, "Oh! If this company would've gone public, then they might've avoided certain miscreant behavior." So there's a there's a trade-off there between maybe that the public-facing behavior that you would have as a company and how that could be a valuable check on company behavior. Do you agree with that sentiment that it can be a valuable check on behavior within the company?

[0:41:22.9] BS: Maybe, but I rely on companies that have that internally no matter what, right. I think that the times where it's a company behaving badly because it's private and not public, I think that's like the extreme minority of companies. So, no. I don't think it's like, "Oh! If companies all went public, that they would be behaving better, and if they're private, they don't behave well." No. I think it's an extreme minority of companies that would not be trying to hold themselves in the highest regard just because they're private.

[0:41:49.4] JM: Do you sense that that is an issue that when a company goes public, the vicissitudes of the market are at a serious distraction internally?

[0:41:57.9] BS: Yeah. When you're having employees watching a stock price and when your stock price is going up and down based on maybe nothing having to do with the long-term health of your company, but maybe some decision that you made actually to benefit the long term, but cost you a little bit in the short term, yeah, that can be extremely detrimental.

[0:42:15.5] JM: When you play board games or card games, table presence is a relevant factor. So some people have a poker face. Other people are more emotive, they're consciously emotive. I noticed that investors have their own forms of body language and facial expressions and sometimes it seems to consciously affect certain body language and facial expressions, like in meetings with people. Is this an inevitable aspect of the game of venture investing, or can you just be yourself in a meeting?

[0:42:50.1] BS: I don't know how to answer that. I think it's probably best to ask that question to a bunch of the entrepreneurs that have talked to me or to others. I am just myself and these meetings. That being said, I have no idea if I have a tell to put it back into poker terminology in these meetings, and I just try and be myself in all of these meetings. But this is probably a question better for the entrepreneur than for me.

[0:43:16.5] JM: Understood.

[0:43:17.2] BS: I don't talk to very many venture capitalists.

[0:43:19.6] JM: Okay. One edge that Founders Fund is, I think at least, an ability to ignore taboos when it can be profitable, or maybe taboo is not the right word, herd mentality. Why is it important to be able to see past taboos or herd mentality?

[0:43:38.6] BS: Best investments are the ones that turn out to be good that other people didn't think were going to be good. But if everybody thinks that something is amazing and it's the greatest thing, then that price is going to get bit up like crazy. It's going to be super competitive. Your returns are not going to come from that. Your returns are going to come almost entirely

from the investments that you make where most people do not think it's a good investment and it turns out to be really good, because that's where your huge multiples are going to come from in venture.

[0:44:04.2] JM: Have you ever passed on a profitable opportunity because you thought it would be too taboo?

[0:44:09.8] BS: Have I passed on a profitable opportunity because I thought it would be too taboo? Too taboo or too against my own personal taboo, right? I don't really –

[0:44:19.4] JM: Take it how you want.

[0:44:20.0] BS: Sure. I've passed on things because it didn't fit with me personally, but I've not passed on anything because I thought the echo chamber would thought it would be too taboo.

[0:44:31.6] JM: I've read Zero to One a number of times and I've found the book pretty influential. It kind of changed my thinking in a lot of ways, and one of the things that I found valuable about it was it talks about certain herd mentality's in society and reflects how to invest based off of the existence of those herd mentalities. There are certain herd mentality's that are important though. How do you identify the herd mentalities in society that are important versus the ones that are just legacy code that we're running as humans?

[0:45:10.5] BS: I mean, you have to examine this on a case-by-case basis. Just because something is contrary and does not make it right, right? The key thing in investing is to be both contrarian and right. I mean, there're often cases where the echo chamber is going to be right and there's a lot of cases where the echo chamber is going to be wrong. The goal is not to just always go against the echo chamber. The idea is to just focus on where, "Wow! I just believe this thing is going to work even though it flies in the face of what other people believe," and that is a hard skill, right? You have to be able to – First of all, you have to be willing to be unpopular, which not everybody is willing to do.

In fact, one of the questions that I often ask candidates is like, "Are you willing to do something that you may be – That may put you in an uncomfortable position with your friends because they

don't agree with you on something, and you've got to be willing to make those kinds of decisions." That being said, the most important thing is to be right and venturing it. Whether it's consensus or contrary, and the most important thing is to be right.

[0:46:13.2] JM: Has that happened to you where you've made investments or been at situations where you've been judged by personal friends based off your professional activity?

[0:46:23.0] BS: Oh sure, but I even just mean professionally, right? I remember when we initially made the SpaceX investment in 2008, we had some potential LPs who are looking at our fund and had passed on our fund at the time wrote us a letter saying, "Oh! This is why we passed on you guys. That SpaceX investment will never work. It's ridiculous. You guys just literally took your whole institutional capital and threw it all away." So we framed that letter.

[0:46:54.0] JM: If you look at SpaceX today, it would seem like a more reasonable or grounded in reality investment than some of the more crazy or far-flung ideas that might get funded today. So in other words, I think like deep tech or frontier tech has become more fashionable or maybe more people are feeling comfortable to start companies within that "frontier" type of sector. Can you talk about – Like what is at the fringes of the frontier? What is the stuff that's like just on the edge of like what you're willing to invest in today, the crazier stuff?

[0:47:32.5] BS: I don't know. But if everybody is trying to do the frontier tech thing, then either A, don't do that, or B, you have to be better. Unfortunately, on the frontier tech stuff, it's actually not easy. So we still do a lot of actual therapeutic biotechnology. I still don't think a lot of Silicon Valley event, non-healthcare venture is doing that. People do – Frankly, stuff like Emerald Cloud Lab, which I'm also extremely bullish on, but that's more of a consensus thing than actual therapeutic biotech that requires years and years and years of studies, and FDA process and all that. That being said, if everybody is doing frontier tech and that's the sexy thing, you'll probably see us doing other stuff.

[0:48:15.7] JM: What have you learned about investing in biotech companies that you wish you would have known at the beginning of your investments in biotech?

[0:48:22.6] BS: Well, I haven't done very much biotech investing, and the way that I look at biotech investing is identically to how I look at tech investing, which is what I just described to you. Is it a big market? Often, in biotech, that part is a given, right? If you're going for, "Oh! We're going to cure cancer." I mean, this is a big market. Often, in biotech, they don't fail that checkmark, that checkbox. Does it have an existing moat? And that can be because they have some sort of tech. That can be because they have some sort of business relationship. Who knows? But that's an interesting question in biotech, but I think that the thing that most biotechs fail on or that they fail my investment criteria on is doesn't have a team that can actually take them from that moat to the big market, and we've seen very, very few of those. We've seen one big one that could, and we backed the truck into that company.

[0:49:10.3] JM: I think in Zero to One, Peter Thiel writes about the fact that the biotech companies are often times led by people who come from a lot of time in academia, and it leads to some hedged thinking that is less valuable in the startup space than it might be in the well-defined academic space. What are the criticisms of the teams that you have generally speaking?

[0:49:38.6] BS: Again, it's all idiosyncratic. It's got to be a holistic question for this given team, like do I think this team can take it from whatever existing moat they have to the strategic endpoints? A lot of times, maybe it's because they're going to move to methodically, but a lot of times that's important in biotech to move methodically, right? It's hard to describe what that is. We've tried to put into words what a Founder's Fund founder is several times and we failed every single time. So it's just more along the lines of we know when we see it.

[0:50:11.1] JM: There is this notion of diversification that is emphasized. It feels like if you're growing up as a kid, you get drilled into that diversification is the key to investing, but it seems like doubling down more aggressively in the bets that matter is a more important aspect of investing. Why is it that we've developed this notion that diversification is more important than emphasis on a specific core competency?

[0:50:39.0] BS: When you don't know things or when you're just kind of throwing at dart boards, diversification probably is your best strategy. If you're just looking to take something that you think you know that other people don't, then that's the – It's very much not the right strategy,

right? So it's a matter of what aspect of your playing in. Like I said, I don't do any short-term investing. So if I was going to put any money in the short term asset class, I would probably want that diversified also because I don't know what I'm doing. But in the spaces where you kind of are the shark at the table or you know what you're doing, yeah. The right strategy to maximize profits is, in my opinion, to be very concentrated, and we've done that, and we've done that I think better than anybody.

[0:51:28.9] JM: We grow up with ideas that diversification is also important in education. You're on the board of old school. As I understand, one of the main appeals of old school is that kids going to an old school are entitled to double down on topics that they may be interested in. What have been the results of kids when they are able to double down as they like to as opposed to have this forced diversification?

[0:51:58.6] BS: I would not even equate this to old school. I would equate this to things like Montessori school that have been around for a very, very, very long time. I think the results from Montessori style of education have been fantastic for some kids. Just like in anything else, I don't think that there's one right answer. So I think for some kids, and you're going to know your kid better than anybody else. For some children, like truly doubling down on what they are good at is the right strategy for them. For some other children, like more broad-based exposure is probably correct. There is not one right answer, but certainly things like Montessori has done a very good job for a very long time.

[0:52:36.2] JM: One company that I am interested in a lot relative to the amount of the public information about is Palantir, and one thing that people misunderstand about Palantir is that the company actually cares deeply about privacy and it tries to define the cutting edge of security technology because they're at the cutting edge. So, if they're at the cutting edge of security technology they can, to some extent, police what is allowable at the cutting edge, and this idea is rarely explored because people don't really talk about the fact that having an honest conversation about privacy and technology, it's not really possible these days. It seems taboo to even have an honest conversation about privacy and technology. Why is that? Why is it taboo to have an honest conversation about privacy and technology?

[0:53:27.3] BS: Oh man! I'm not going to get started on that one. Let's just say that you clearly know how to think outside the echo chamber. Internally at Founders Fund, one of the things that's made us great is that we also have internal conversations that are very much outside the echo chamber. Whether I am happy to discuss those in a very public form like this, is a completely other question.

[0:53:50.3] JM: Fair enough.

[0:53:51.0] BS: But good question.

[0:53:53.1] JM: One of the things that I liked about Zero to One is a talks about the fictional retellings that we over-index on. So like 1984, for example, is one of these things that gets equated to a world with technology that is monitoring you all the time. What are the fictional ideas that we over-index on from your point of view?

[0:54:21.1] BS: I don't really talk about macro, the season macro areas very often. I call myself a very reactive venture capitalist. Meaning that I'm open to any ideas and anything that comes in the door, and the reason this is relevant to your question is that I spend less time philosophizing on the macro state of things, because they're not relevant to finding a good company, right? In order to be truly open to any company that walks in your door, it also means not having any preconceived notions about how the world should look, needs to look, does look or anything like that. So I spend less time focusing on macro questions and philosophical questions that I do about companies.

[0:55:13.0] JM: Okay. A lot of the people who have been influenced to create some of these "frontier technology companies", a lot of them were influenced by science fiction books, things like Snow Crash or Neuromancer. We're now at a place where we can foresee a lot of these technology being built in actuality. Today, is it a waste of time to spend your hours reading fiction? Should you spend all of your time reading nonfiction?

[0:55:48.2] BS: Oh, no. I don't think it's a waste of anybody's time. I think that's where the innovators get their best ideas from reading stuff and then expanding on that and having an idea and having a spark and philosophizing. I'm just saying it doesn't necessarily factor into my

investment decisions. I am not an entrepreneur, right? Again, I come back to I know what I'm good at and I know it I'm not good at, and I am not good at operating a company and I'm not a company visionary, right? But do I think it's fantastic for those people to be have sparks? Of course. It's less important for me in what I do.

[0:56:24.8] JM: Okay. That's interesting admission, because there's a lot of venture firms that will actively say we only hire operators. Is that a mistake?

[0:56:32.5] JM: I mean, having any dogmatic blanket rule I think is almost always a mistake. Yeah, I think that you never know where the next best company is going to come from. You never know where your next best hire is going to come from. You don't know what the right answer is, and people who claim "Oh! It's this one way." I mean, I disagree with that.

[0:56:55.1] JM: We started this conversation talking about board games. How do you decide what board games you like and which ones you dislike? What are the features of a good board game?

[0:57:07.1] BS: Yeah. I don't like board games, unless they're quick. I don't like board games with too much luck. So my favorite – If they're quick, that's fine. But the board games I find myself playing the most are the ones that have very minimal luck, or luck that can be mitigated to a large extent, or if they have a lot of luck, i.e. dice rolls, if they're a five-minute game, that's fine. But the worst games in my mind are the ones that take 10 hours and where dice is deciding those things, because 10 hours is not even necessarily enough for the dice to smooth out, the variance, yet it's such a long game to have variance be dominant.

[0:57:44.2] JM: Although in many of these games, variance is only dominant to the extent that it affects the outcome in terms of win or loss. You can still have a game that is high variance that has very interesting and productive decisions in an atomic sense. So are you saying that winning or losing is an important factor of a game to you?

[0:58:02.9] BS: Yes. Yes, I'm saying winning or losing is an important factor of a game for me. I like to be able to figure out, "Okay. How can I play better and actually win?" Versus, "Oh! How can I roll the dice better?"

[0:58:16.0] JM: There's been massive innovation in board games and deck building games in the last several years. Do you have any particular notion for why that happened?

[0:58:26.3] BS: I think more people started playing it, playing these types of games in the late 90s and around the turn-of-the-century, and that means that there's more money in it and that means more people can be rewarded for their skills and designing these games, right?

[0:58:40.0] JM: Yeah. That makes sense. So to conclude, Cloud9, that's a business you invested that's related to games. What insights? What other insights has that given you about the development of gaming that will occur in the future?

[0:58:54.0] BS: About the development of gaming, not much. I think Cloud9 is awesome because we're also an example of reactive, and whatever the best game is we are going to have the best teams, right? If there is a game out there that takes off and is a good e-sport and becomes very popular, we're totally open to that and we're going to put together the best team in that space regardless of having a thesis of, "Oh! We will only play Battle Royale," or "We will only play first-person shooter." No. We're going to take whatever kind of games get developed and put together the best teams on earth for those games.

[0:59:32.0] JM: People seem to age out of the e-sports business quite rapidly. Are there any e-sports games that you've seen where older players tend to do better?

[0:59:42.4] BS: Magic the Gathering? I don't know.

[0:59:44.0] JM: There we go.

[0:59:44.8] BS: I mean, I don't know why – For the pure strategic games, I mean, I don't necessarily know why that would be, nor would I count on that being the case forever, right? I mean, there's probably something to be said for hand-eye coordination and dexterity being a gift of younger people in the same way that it is in anything. For this pure strategic games, for Hearthstone, if you will, as long as you're willing to adapt or die, then I see no reason for that trend to continue.

[1:00:11.4] **JM:** Magic versus Hearthstone. Which one do you prefer?

[1:00:13.4] **BS:** Ha! Ha! Ha! How should I answer that question? We have a Hearthstone team. We don't have a Magic team. So, Hearthstone.

[1:00:21.8] **JM:** It is faster.

[1:00:23.1] **BS:** It is indeed faster.

[1:00:24.8] **JM:** Brian Singerman, thanks for coming on Software Engineering Daily . it's been great talking to you.

[1:00:28.0] **BS:** All right. Thanks, Jeff.

[END OF INTERVIEW]

[1:00:32.6] **JM:** If you are building a product for software engineers or you are hiring software engineers, Software Engineering Daily is accepting sponsorships for 2018. Send me an email, jeff@softwareengineeringdaily.com if you're interested. With 23,000 people listening Monday through Friday and the content being fairly selective for a technical listener, Software Engineering Daily is a great way to reach top engineers.

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