

STE Episode Transcript: Boom

BLAKE SCHOLL: This isn't science fiction, this is just engineering.

Looking down upon all the creations that humanity has made. You get to have, in one glance, a singular vantage point that no other animal could have.

I think in that moment it captures a lot of what it means to be human.

Long range, it's about removing the barriers to experiencing the planet.

I don't think it's an accident that we haven't had a world war since the dawn of the jet age.

Supersonic is all about getting there faster and changing what you can do in a day.

You're much higher in the sky, which means you're over more weather.

It's the difference between being stuck on the road on a business trip, and being able to be home and tuck your kids into bed.

You've never been lost like you've been lost at Mach 2.

[The] last thing you want to do in going after making Earth more accessible: somehow trash it in the process.

CATERINA FAKE: That was Blake Scholl. He's an entrepreneur and long-time pilot who's setting out to build the next generation of supersonic planes – which can fly at twice the speed of sound. That's two and a half times faster than most airplanes today.

To me, Blake voices the deep human fascination with flight. For all of human history, we've yearned to fly – and to fly fast. We humans can't help ourselves from wanting to go higher, farther, faster. But supersonic planes would speed up an already sped-up world. And just as the jet age changed everything in our lives, a double-speed of travel could change it again. If Boom succeeds, we could witness a massive cultural invasion, where the wealthiest nations and individuals could descend on the rest of the world at warp speed.

Fasten your seatbelts, as we depart on this episode of flight.

[THEME MUSIC]

FAKE: I'm Caterina Fake, and I believe that the boldest new technologies can help us flourish as human beings – or destroy the very thing that makes us human. It's our choice.

A bit about me: I co-founded Flickr – and helped build companies like Etsy, Kickstarter, and Public Goods from when they first started. I'm now an investor at Yes VC, and your host on Should This Exist?.

On today's show: the supersonic airplane. No passenger plane has broken the sound barrier since the Concorde stopped flying in 2003. In fact, planes have been getting slower. But a startup – called Boom – is developing a new generation of supersonic planes. This year, they're building their first aircraft: a 55-seat business class plane that will fly routes like San Francisco to Tokyo in half the time.

I have to say: The idea of this airplane fills me with wonder. Humans have always longed to fly. It's built into our psychology: We literally dream of flying. Flight is a metaphor for freedom and progress. The dream of supersonic flight is that travel becomes accessible to everyone. And this makes people more open-minded, more connected across nations and ethnicities. We haven't had a world war since the dawn of the Jet Age. Could supersonic travel accelerate peace?

At the same time, we know that progress always has a price. And a supersonic plane will speed up an already sped-up world. What will supersonic flight do to the places we come from? And the places we can now visit en masse?

[AD BREAK]

Now, your reaction to the idea of supersonic travel depends a lot on the circles you travel in.

ANAND GIRIDHARADAS: I look at the brilliance that it would probably take to create something like this and part of me *mourns* for the problems that these people won't be thinking about while they're raising \$6 billion dollars to create a 55-seat airline that will, essentially, make it a little more painless for people whose lives are already painless, to fly around the world.

FAKE: That was Anand Giridharadas, author of the new book, *Winners Take All: The Elite Charade of Changing the World*. We'll hear more from Anand later in the show.

But we'll start with Blake Scholl, the CEO of Boom. This is really an episode about flight. And in many ways Blake represents everyone who has yearned to fly. Every pilot remembers the first time they sat at the controls. And Blake is no exception.

SCHOLL: We were in a two seat Diamond Katana. Imagine there's one seat that you sit in as the pilot, and your instructor's sitting to the right of you. The whole airplane is not

very big. You're sitting right next to a door on your left and there's another door on the right. You light the airplane up and you put on a headset because it's really, really loud.

You check the engine, and you check the brakes, and you check the radios. And then it's time to go flying. So you can roll up to the runway, and then there's that moment you never forget where the tower says, "November 235 Alpha Bravo. Clear for takeoff, runway three zero." And you roll out into the runway and you push the throttle forward.

I remember going down the runway and the instructor saying, "Okay. Pull back on the stick." It was this simultaneous feeling of "Wow, I have my life in my own hands." And "WOW! I have my life in my own hands!"

We took off to the north, and instantly as you rise into the sky your viewpoint opens up, your vantage point opens up, looking down upon all the creations that humanity has made.

You get to have in, on one glance, a view of roads, bridges, highways, factories, homes, parks, and natural beauty – from a singular vantage point that no other animal could have. And I think in that moment, it captures a lot of what it means to be human.

FAKE: In 1958: Pan Am flies the first Boeing 707 across the Atlantic, ushering in the "Jet Age."

In ways that we can no longer even identify, the Jet Age changed where we live, what we eat, who we marry. The easier it was to fly – and to fly home – the more people relocated. This created unprecedented opportunities – and also led to brain drain from developing nations and rural communities. It allowed ideas to flow – and diseases like AIDS to spread. The Jet Age changed how we live, and quite possibly who we are.

But if the jet airplane caused a tsunami of changes, the first supersonic jet barely made a ripple. The Concorde flew from 1976 to 2003. It was banned from flying over most countries due to the sonic boom. It failed to attract many customers. But Blake believes that has less to do with the technology than with its origin story.

SCHOLL: Concorde didn't come from an entrepreneur, not even from an established company; it came from a joint venture between two governments, the French and the British.

FAKE: The French and the British had one goal: to beat the Russians.

SCHOLL: This was a national prestige, Cold War Era, glory project. And when you do things for glory, well, you can do them. You can do things that are technologically very, very impressive. The problem is when there's no requirement of a commercial model, it's a bridge to nowhere.

FAKE: Interestingly, Blake didn't dream as a kid – or even as an adult – of building a supersonic jet. In truth, he just wanted to fly in one.

SCHOLL: I never had a chance to fly on Concorde. I was 23 working at Amazon in Seattle when it was shut down, and I didn't have that kind of money. I made a lifetime goal a few years later that I wanted to go at least Mach 2.

FAKE: Mach 2 is twice the speed of sound.

SCHOLL: And I figured somewhere else in the world I would get a chance to do that. But after 10 years of crickets I started to wonder, "Maybe I have to start this company if I want to have that experience."

FAKE: After years of working in tech companies (and founding a few of his own), Blake founded Boom Supersonic in 2014. It's not an airline, but a creator of aircraft, like Boeing or Airbus. His goal: to build a new generation of supersonic planes that fly two and a half times faster than typical airplanes today.

And this seems a good time to pause and talk about how exactly that technology might work. Flying supersonic means flying faster than the speed of sound, which is 767 miles per hour. Just how does a plane get that much speed?

SCHOLL: From the simplest perspective, you have to have enough thrust to overcome the drag. So as you go faster, the wind resistance on the plane, or the drag, increases.

FAKE: Getting enough thrust is the job of the engines. And Boom's first plane will have three.

SCHOLL: And those engines are about as powerful as the ones that power large subsonic aircraft today.

FAKE: To overcome the drag, the airplane needs an aerodynamic design. In fact, that's where the word "aerodynamic" came from.

SCHOLL: The fuselage is long and skinny, in fact it's not even the same size all around. Up front is a bit bigger, in the back it's a bit skinnier.

FAKE: The wings are triangular and placed in the back of the plane.

SCHOLL: Imagine something that looks a little bit like a fighter jet, but flies like an airliner.

FAKE: Now, you can't talk about a supersonic plane without talking about the sonic boom, which is the noise created when something breaks the sound barrier.

When a supersonic plane flies overhead, people on the ground hear a loud "crack" or a deep "boom" depending on the distance from the plane. And because of the sonic boom, high speed jets are currently banned from flying over most countries, so Blake's jets will initially fly the long-haul overseas flights.

SCHOLL: New York to London, San Francisco to Tokyo, Seattle to Shanghai, LA to Sydney, Tokyo to Perth.

FAKE: I travel a lot, especially to Europe since a lot of my family lives in Finland. So when I learned about Boom, I was immediately excited by the possibility of not spending 16 hours in transit. I found myself fantasizing about how much time flying supersonic could save, and how it could even bring my family closer. But with Boom, like with all new technologies, I knew there were perils, and I wanted to explore them. Could supersonic flight transform the world as drastically as the Jet Age?

Welcome to the Should This Exist? workshop. Here, Blake and I will respond to ideas I've gathered from super smart, creative experts. People in the sciences, and people in the arts and humanities. We asked each of them to throw unexpected things at us – both possibilities and pitfalls. All of them forecasted unexpected, dramatic ways that Boom could shape humanity.

Our first outside voice is the comedian Baratunde Thurston, who has spent his career at the intersection of humor and technology. He's the host of the podcasts "Spit" and "#TellBlackStories." His first question is one that will be on a lot of listeners minds. Everyone loves the idea of flying – and of flying fast. But a lot of people can't help but think about the question of who will benefit from Boom's supersonic plane – and who won't. Here's Baratunde's take.

BARATUNDE THURSTON: This is for, apparently, 55 people at a time whose lives depend on getting to New York from London not in seven hours – which is just not enough magic for some people – but in three and a half hours. And that just feels like one of those like 1% of the 1%.

And for the rest of us, we're going to have to deal with the climate externalities of this and the Instagram envy that will come from seeing "Rich Kids of Instagram" on their Super Sonic Boom Jet, showing off their fantastic and fabulous lives.

FAKE: This notion of Boom serving the 1% percent is something I thought about as well, and I couldn't help but wonder whether Boom is a luxury for the ultra-wealthy, or a necessity for an increasingly globalized world. So I explored this idea with Blake.

FAKE: So what'd you take from that?

SCHOLL: Well, I mean I sympathize with the perspective, because historically, supersonic has been this really elitist thing where you had to have 20 grand and be a rock star or a banker, or you save up for years, and then it's this once-in-a-lifetime thing that's unreachable to most people. And it's more about status and prestige than about human connection.

And that's actually what's changing here. Through a whole series of innovations, we're going to get supersonic to the point that everyone can afford to fly it.

FAKE: How do you get there?

SCHOLL: If we look at Overture, our first airplane, with 55 seats, it's like the Tesla Roadster in that yeah, that was an expensive car for a small number of people and you could say, "Who needs joy rides in these superfast showy electric cars?"

But now we have the Model S and the Model 3 and we see the trajectory of where this is going, where you have to start for the market you can start with the tech that you have. And then the environmental profile gets better and the cost profile gets better – and then you're able to take this new technology and bring it to everybody.

FAKE: The question of how new technologies reach everybody is top of mind for our next guest – but probably not in the way you think. Anand Giridharadas is a journalist with *Time* and author of a new book that's having a deep impact on many of us in Silicon Valley and beyond. The book is called *Winners Take All: The Elite Charade of Changing the World*, and it questions many of our first principles about technology and philanthropy.

GIRIDHARADAS: In the United States – in many countries in the world – you have transportation problems that are actually in the spine and skeleton of the transportation system that most people use, right? We haven't figured out buses in a city like New York or city like LA, so that people don't have three- and four-hour commutes, working two or three jobs a day. We haven't figured out high-speed rail in America.

So I look at the brilliance that it would probably take to create something like this and part of me mourns for the problems that these people won't be thinking about while they're raising \$6 billion to create a 55-seat airline that will, essentially, make it a little more painless for people whose lives are already painless, to fly around the world.

What would that kind of resource of treasure and also of intellect do if it were deployed to think about public transportation in America? What would that do if it were deployed to think about the climate change problem?

SCHOLL: One of my greatest hopes for Boom is that by taking on a problem of audacious scale – and doing something that you know, on day one, everyone told us, we're crazy – that we'll open more people's eyes to more problems that can be solved.

And there are so many freaking problems that are huge that sit right in front of us that we tolerate every day, and we're so accepting of, like traffic. Our public transportation is broken in so many ways.

These are all big, hairy, thorny, capital-intensive, really big problems that need great entrepreneurial attention and that tend not to get it! Because you tend to get taught that like you should pick something where you can ship in six months or three months or three weeks – and iterate on it. And not every problem in the world is solvable that way.

FAKE: There's something about the human spirit that strives for these peaks, these mountaintops, these huge problems.

And I think what Anand is saying is that we can push – those of us who work in Silicon Valley and have the luxury of working in an industry that's all about disruption, creation, invention, possibility – and direct it to some of these more mundane problems.

SCHOLL: I don't think they're mundane problems at all. Transportation at every level is... Think how much of our lives gets soaked up waiting around getting places. You come back to the supersonic piece of it, again, I think it's important to take the long view of this. This is not about 55 passengers going Mach 2.2. This is about getting anywhere on the planet in four hours for a hundred bucks.

FAKE: Let's be honest: That seems like a bit of a reach. But Blake believes he can get there, though it requires a number of things to fall into place, both technologically and commercially. I asked him to share the bigger picture: How does a \$100 ticket become plausible?

SCHOLL: That's one of the really interesting questions. So Overture, like I said before, is the first in a series of airliners. And it's going to be affordable to anyone who can fly business class today. So think \$5,000, round-trip New York to London. But what happens historically is when you make high-speed travel available, all of a sudden more people go more places, more often.

FAKE: As demand increases, airlines can fill a bigger plane. And Boom can invest in building a larger airplane.

SCHOLL: There are things you can do with the aerodynamics in a larger aircraft, that you just can't do on a smaller one – and what that means is that the fares can go down.

And when the fares go down, more people can go more places, more often. And you start to get a flywheel spinning. And in fact, there's a whole technological trajectory here.

So when we make enough progress in fuel-efficiency – and we have line-of-sight to doing that. This isn't science fiction, this is just engineering. Then there's a tipping point not that far away – that we're going to see in our lifetimes – where the fastest flight actually becomes the cheapest one.

FAKE: This next question is from Kevin Delaney, a long time business and tech journalist and Editor in Chief of Quartz. When I brought up Boom to him, he had just returned from Singapore to New York after a business trip.

KEVIN DELANEY: If I was able to take a much faster flight, I would have spent more time with my family last week rather than the 50 hours in airplanes and airports.

FAKE: Setting aside the admittedly first-world fantasy of fast business travel, our conversation turned toward the environmental impact of supersonic flight, especially when it comes to fuel consumption and carbon emissions. Kevin had a suggestion.

DELANEY: Before this proceeds, why don't we require that every single person who buys a ticket on a supersonic flight more than offsets the carbon impact of that flight? That's done by basically paying people to plant trees in places like Peru or Texas. And the forests basically do what plants do, which is they absorb the carbon in the atmosphere and cut down on emissions. There is a whole infrastructure for this. It's actually kind of reasonable, and you could argue that none of us should fly anymore unless we are offsetting our travel.

FAKE: I wondered: would Blake consider working with airlines to have passengers pay a carbon offset?

SCHOLL: There's a role for offsetting, but you can only offset your way so far. We want your average person to be traveling around the planet much more often than they are today. So I don't know if you can plant enough trees to make up for that.

When we went from props to jets we had a sixfold increase in travel on the most affected routes in 10 years, and it kept on growing. And Texas is big, but I don't know if we could put enough trees in Texas to deal with that.

You have to work on the fundamental efficiency and fundamental emissions profile of the actual machine – because that's how you get the cost down, and that's how you make it scalable from environmental-sustainability perspective.

And that requires tech innovation in how the airplane works, and it requires requires supply chain and fuel innovation in how we produce jet fuel – or in some alternative to jet fuel in the future that could that could work better. That's that's where our attention is. And in fact, we just we just finished biofuels testing on our X-B1 prototype and got better performance on biofuels than we got on jet fuel. But the problem is you can't get enough of the stuff today.

FAKE: So there's the environmental impact of the plane itself, and that's largely within Blake's control. But there's also the potential impact of all the extra travelers. When Blake and I talked, I couldn't help but think back to the Jet Age, and all the changes – good, bad, and neutral – that came as a result.

FAKE: I'm certain that people were not eating sushi in the 1930s and '40s, like seriously. We can't help but wonder what will happen in the Supersonic Age, when the distance between us is even smaller, and how will it change? Will it change for the better? Will it change for the worse?

SCHOLL: I do think we have a role to play in this. We're the ones who see around this corner before the rest of the world. A lot of the second order impacts, both the positive and the negative.

FAKE: This idea of seeing around corners fascinates me – and underscores so much of what we're trying to do on this show. It might not be Blake's formal responsibility to tackle second-order impacts. But... shouldn't it be?

SCHOLL: The mission we have at Boom is to make the planet more accessible, and the last thing you want to do in going after making Earth more accessible somehow: trash it in the process.

And so that's I think one of our responsibilities at Boom, is to be thought leaders on that and say, "Well, what happens when there's 10 times more tourism volume to Tahiti or Fiji.

FAKE: Yeah. I remember reading – it was a description by Eliot Weinberger, who is one of my very favorite writers and he's the editor-in-chief of New Directions. And he described taking a hike in China in which 10,000 other people on the same day decided to take the same hike. And he described it as "a horror movie produced by the Sierra Club."

SCHOLL: That's an interesting turn of phrase.

FAKE: Which is kind of a hilarious way of describing it.

FAKE: It's one thing to consider the impact of supersonic flights on the natural world. But it's another to forecast how Boom could impact the man-made world. Baratunde envisioned a future of ultra-gentrification.

THURSTON: There's a real possibility for some destructive and destabilizing impacts on communities on the ground from this technology in the sky, and if you make it easier for people to leave home and return, then in a way you devalue home, right?

And so we've seen what it looks like to have a brain drain at a national level or a rural community level. We've also seen the impacts of displacement when people with resources can easily impact communities that haven't had them. I'm speaking of "urban development" AKA gentrification.

FAKE: So I think that what he's getting at here is that developing countries and rural communities have seen this brain drain as their brightest minds leave for western urban centers, which is of course, a second order effect.

SCHOLL: Mhm. Yeah. Well, let me... I'm kind of grappling with that aspect for the first time here. It occurs to me that fundamentally what you're doing is breaking down barriers to movement. And when you do that people move where they want to move, and you're allowing them to make the choices that they would unconstrained make.

Again, think really big about this and think really long range about this. Imagine a transporter that allows you to go anywhere on the planet and then you come home – and you can have home wherever you want it to be, and you can have the interactions that you want to have elsewhere on the planet.

So what will the net impact beyond where people live and where they work is hard to predict but you could sort of imagine a world in which you actually get to stay where you want to stay and have the other things to versus you have to pick up and move.

But you know what happens what happens when you can break down some of those barriers on a more planetary scale. What does that do for gentrification? What does that do for movements? I don't know. It'll be very interesting to watch.

FAKE: When you're introducing a radical new technology, the potential negative impact ranges from direct danger – like a possible crash – to more indirect dangers, like the speed at which a new disease could become a global pandemic. Scientists have known for some time that the rise in air travel has driven the spread of diseases from AIDS to SARS.

Our next expert speaks philosophically to these risks. Janna Levin is a professor of physics and astronomy at Columbia.

JANNA LEVIN: I think with any innovation, there is always some extreme risk that we can't really foresee. The idea that diseases have more aggressive vectors if you have things like rapid travel is surely true, but also, at the same time, we have much better vaccines and much better technologies – it's unclear that the Great Plague would somehow have been worse now. That doesn't necessarily register. I think that's a very complicated calculus, and I just don't think we can be completely linear in our thinking about it.

There's no question, if Boom succeeds, it will have disasters. It just will. We just lost this Boeing flight out of Ethiopia where 157 people died, and that's incredibly well-regulated air travel that's tried and true and familiar by one of the staples companies producing aircraft. So we're not gonna come out of this without some damage, but this is the world that we live in, and it's just not simple to say, "We can't ground all cars because there are car accidents. We can't ground all planes because there are plane crashes, and we can't ground all shuttles." They went up afterwards, some of my friends went on shuttle flights after some of the disasters, right? They got back in the module and they did it again. And that's where we are as a culture.

SCHOLL: Progress is not free of risk and you think about the safety profile of what we're doing. If we achieve the success that we're going for, the scale that we're going for, where every flight becomes high speed, will there one day be a crash that people lose their lives on? The answer is almost certainly yes. It's just a matter of time because the law of large numbers gets you there.

One of the things that's been really interesting to me personally in working through XB-1, which is our one third scale prototype for overture, you have to answer questions like, "Should it have an ejection seat?" That particular one was really gut-wrenching decision that I ultimately had to make myself. We decided not to put an ejection seat in the airplane.

The second order effects were fascinating. As soon as we said we're not giving ourselves a "get out of jail free" card on safety, all of a sudden a lot of other things that we hadn't been doing that would bring home the airplane and the pilot started to be on the table: "Why don't we do a final confirmatory wind tunnel test instead of trusting our iterations on the simulations?"

I think we have to be very safety conscious and we also have to be bold. We can't stop because something might go wrong. Because if we do, the risk-free life gets very boring because really we don't leave home. We literally don't leave home. We don't eat lettuce because sometimes that goes wrong.

FAKE: E. Coli.

SCHOLL: Right. Exactly. In avoidance of risk, you end up taking the worst risk of all, which is not making any progress, and not having any adventure.

FAKE: All this exploration of fast travel made me think of the opposite: slow travel. Kevin and I discussed that there's a time and a place for supersonic flight. But if all travel happened faster than the speed of sound, it would be a major loss for humanity.

DELANEY: One of the best trips and arrivals that I ever had, which was to take the night train from Paris to Venice. And you wake up after spending the night in this train, sort of clanging along, to the morning in Venice, at the station just on the outskirts of the city. And there are few things in my experience as magical as that.

FAKE: I've taken a boat to St. Petersburg from Helsinki, and back. And I have to tell you that there is something really phenomenal about traveling that way. You transition better, in some ways. You leave the place, you see the city you left receding into the background. There's a lot of ocean. Some islands. Other boats on the water. Many, many hours pass, and then you see land. "Land, ho. On the horizon." You see yourself approaching the harbor of, say, St. Petersburg. But what a phenomenal experience, right? Instead of the plane experience, which is very strange.

FAKE: I wondered what Blake would have to say about this. When do we want speed? And when does going super fast actually take away from our experiences of traveling the world?

SCHOLL: You get on trains in Europe and it's just so frictionless; and you get on a boat, and it's peaceful. You go to an airport and you're surrounded by throngs of people and security officers and nervousness about catching your flight and where's your bag going to go?

It's really crazy actually. We've managed to screw it up so badly that people dread it. It's not so much the speed I think, but like the stress of it.

FAKE: Well, I really hope that you're able to change the emotional tenor of travel actually. I think that's true. I think that what you're saying is true. The emotional tenor of traveling by car has a certain feeling, right? There is the great American romance of the road movie, but then there's the actual experience of sitting in your car in pollution, in a commute, in a massive parking lot. Those experiences can be somehow transformed through all kinds of innovation.

FAKE: Blake's technology was fascinating because it captures our collective imagination about flight. But it also paints a dark picture in which we become further separated from our communities, and invaders from the 1% descend like locusts.

Blake puts forth a compelling case for his tech, but we want to know what you think. Tweet us using #ShouldThisExist; and rate, review and subscribe on Apple podcasts or wherever you listen.