

[Transcript] The Realignment / 367 | Ashlee Vance: The Misfits and Geniuses Winning the New Space Race

Marshall here. Welcome back to The Realignment.

Hey everyone. Just wanted to start with a quick shout out to Saga and my frequent collaborators Crystal Ball and Kyle Klinsky's wedding this past weekend in Virginia. We had a blast and we're so pumped for everything they have coming up next.

Second, in case you missed it, Saga and I released our latest Ask Me Anything episode this past Friday.

If you'd like to subscribe to listen to the full version and support the show, go to realignment.supercast.com or click the link at the top of the show notes in your podcast player. On to today's episode.

Ashley Vance is a reporter and writer at Bloomberg and he's the author of the bestselling biography of Ewan Musk.

Now he's followed up with a new book out today called *When the Heavens Went on Sale, The Misfits and Geniuses Racing to Put Space Within Reach*.

Ashley's previous book and a lot of his reporting is focused on the space billionaires, Elon, Jeff Bezos and of course Richard Branson.

This book though is focused on what Ashley calls the Wild West of space.

We're focused on the next generation of companies driving the next iteration of the space race. As you all know, The Realignment is really focused on the broad ecosystem that all these new technological and sociological development is happening.

So the fact that these companies are private yet also separate and connected to rival nation states is also a key part of this story.

So we're focused both on the broader geopolitical dynamics of the next space race and just the sheer promise of the technology with developing out in the cosmos.

Hope you all enjoy this conversation and definitely let me know what you think.

A huge thank you to the Foundation for American Innovation for supporting the podcast.

Ashley Vance, welcome to The Realignment.

Thank you very much for having me on.

Yeah, it's great to speak with you.

So went through the book so much to talk about.

I just kind of want to start at almost quote unquote meta level here.

When you're describing the commercial space industry, you're talking about how this has the potential

to transform our lives going from 2,500 to 10,000 satellites at a pure math level.

That's quite a bit.

But you are also coming at a time in the discourse when lots of folks had a lot of promises from technology.

We're promised meta versus I've interviewed Matthew Ball.

We were promised like Web three.

Lots of good faith, very exciting people have offered a lot of promises.

But I think the audience to a certain degree is somewhat jaded.

I want this to be optimistic facing episode.

But can you kind of explain to folks why you don't think?

Also self driving cars, just throw that in there too.

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So soccer and I were just discussing before this episode.

He's sort of like, man, whatever happened, all those promises.

Why should we not feel like we're going to be let down broadly by space?

Yeah, well, you know, and so my books are deposits this thesis that we're very much in this era of commercial space.

This sort of 60, 70 years of government controlled space is over.

And I have to say, I mean, you know, part of what I write about in the book is like, nobody knows for sure if this is going to work.

And I just want to couch my statements a little bit in that, you know, there's a bit of a gamble here as we build out this new infrastructure.

But what we are going to do is make a go of it.

And so, you know, you mentioned 2,500 satellites to 10,000.

I think, you know, the numbers are actually looking like 100,000 to 200,000 satellites.

So so like in all of space history, we had only put up 2,500 satellites in the next like 10 or 12 years.

You know, this is just going to grow exponentially.

And so the, you know, the pro case on this is that we are building what I describe as like a computing shell around the planet.

And it's going to be full of communication satellites.

It's going to be full of imaging satellites.

And if you just take those two buckets alone with the communication satellites, you know, half the world today cannot be reached by fiber optic cables.

And so you've got like three and a half billion people that are just not really able to participate in the modern economy like everybody else.

And with the imaging satellites, you know, for the first time ever, we're a company called Planet Labs that I write about in the book.

You know, they take a photograph, many photographs of every spot on earth all the time.

This is not really like espionage, although it can be used for that.

It's more like this real time accounting system for human activity on earth.

And we're going to be able to understand our planet like we've never been able to understand it before.

I mean, these satellites already today can count every single tree.

There is the biomass of the tree, how much carbon dioxide gets sucked up in the Amazon.

They're spotting people doing illegal deforestation like the second that it happens and it's getting stopped.

And, you know, so I just think we're heading to this era where we're going to understand our planet much better than we ever have been able to do before.

We're going to be able to put some like math and metrics behind things like carbon credits and a lot of climate change stuff.

And then we're just going to have this more connected world.

And yes, you know, there's downsides like you will never escape the internet again, whatever mountaintop you're on, you're going to be connected.

But, you know, I think we are building like the if you think about the dot com build out during the 90s.

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I think we're building like the next step in human sort of technological evolution and that there is a lot of good that comes with it.

You know, so many interesting things to pick up on what's pick up on the 60 or 70 years of government leading being over.

You know, the realignment is like a broad like policy and news show.

So I'm like always thinking about global trends and a global trend would just be the return of great power conflict and the fact that an era of like peaceful globalization is effectively coming to an end. So from my standpoint as like a think tank fellow focuses on foreign policy, I would say an environment that's more around great power competition is one where governments probably get more involved in.

So the question of what percentage of those satellites are Chinese versus American versus what's the difference between a, you know, commercial launch vehicle or satellite that's owned by a Chinese company once owned by the CCP.

That seems to be one where there'd be more government rather than less.

So what do you think about that?

Yeah, I get where you're going.

I mean, I wrote this book because I don't think people realize what what's already sort of transpiring and what has happened.

I mean, you know, or almost all of the history of like the space age, as we know it, it has been this this national this thing that countries do and only a handful of countries do and they have all the power.

And, you know, I mentioned Planet Labs and their imaging satellites.

I mean, in the past, you know, who has imaging satellites.

It's it's the NSA and the CIA and China and Russia.

And they are the ones who are who are telling us what the truth is about what's happening down below.

And now this startup Planet Labs has more satellites than any government on Earth.

Anybody can go under their web browser and log in to this service and pull these images.

And, you know, I write about a couple of things in the book during the last presidential election in India.

For example, in Kashmir, India, as sort of a show of power during the election had had bombed a Pakistani military encampment and and and there was this dispute like did the missile hit or did it not.

And India said it did.

And the Pakistanis said no, it missed and it was like this huge conflict.

It turns out Planet had images because they're photographing everything all the time and they could show that this missile missed, you know, and the Indian government tried very hard to suppress these images.

But Planet is sort of the kind of quite an idealistic company.

And they said, no, we're going to put the truth out there.

And so you have this the shift of power, sort of like in the early days of the Internet, what it felt like where.

Yes, it's a company that has this power, but it's not just three governments telling us what's going on

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at the same time.

Well, I mean, this is a huge question.

It's really interesting.

Like if you look at Ukraine as well, right?

I mean, like Elon Musk and SpaceX are essentially have the power of a nation state there.

You know, they Starlink was used to connect the Ukrainian military and still is throughout this whole war.

The Russians tried to take out their communications infrastructure.

Sorry.

No worries.

We had it.

So there's no problems.

I'm sorry. Let me shut all these things down.

I forgot to.

So I'm really sorry about that.

I'm going to jump back in in Ukraine.

You know, you look at somewhere like Ukraine and what Starlink SpaceX's Starlink system did.

The Russians tried to take out Ukraine's communication system early on.

Starlink has been this fabric that's let the country keep going.

Elon's threatened at times to like take Starlink away.

You know, it's too expensive and then give it it back.

I mean, a government could not replicate what Starlink is doing right now because SpaceX has more satellites than any government.

So with this really interesting time where the companies are kind of racing ahead, these governments are getting their traditional powers going away.

Russia, its space program very quickly is collapsing in the face of competition from SpaceX and others.

And so to your point, I mean, I think we are in for sort of a pretty chaotic run over the next 10 years as we see sort of how this balance shakes out.

But the status quo that's been in place for all this time is over.

That is such a fascinating way to put it, especially at the end.

Just when you're describing, look, a government can't do what SpaceX and Starlink are doing.

I guess if I'm sitting in like at the Geospatial Intelligence Agency,

which is part of the broader US intelligence community or the Russian or Chinese equivalents, I'm saying I need that equivalent right now.

So I guess that's what it's just like it's interesting like action and reaction.

So you kind of said it very much like what governments can't catch up.

I think governments are thinking, let me put it this way.

Is SpaceX's dominance a technical feat or is it a will feat?

As in like if government wanted it enough, they could replicate that number of launches and then there'd be more parity.

How do you think about that?

I mean, like, you know, technically it would be possible for the government to do it,

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but they were trying to do this for decades.

DARPA, you know, was funding SpaceX essentially came out of like a batch of early DARPA funding and Elon's own money.

But the government wanted this DARPA has like wanted what they call responsive space in the US to exist for decades, which is this idea that you can do things in space just like you can do, you know, at sea, on land.

When a conflict breaks out, you can have a rocket go up that day and put a satellite right over Iran or Iraq or, you know,

whoever you're trying to look at in the moment.

But they just they could never pull it off.

I mean, it really whether you like him or you hate him, Elon and SpaceX made commercial space a reality and pushed all this forward.

You know, the US government is they have a huge contract with Planet Labs to sort of gobble up as much of their imagery as they want.

But at the same time, if you are if you're Brazil or your Spain or pick your country where you you don't have the money or the inclination to send up tons of your own satellites, you don't have to anymore.

You could just dial into planet.

So, you know, there's a leveling of the playing field a bit with all of this.

You know, and you cover Silicon Valley, so I'm not telling you anything you don't know already.

But a big narrative over the past few years is that, especially in the post iPhone post Facebook or at the start of that era,

companies just go through their like idealistic phase, and then they stopping idealistic.

So, Facebook, we're connecting everyone.

Oh, wait, that causes problems.

Google, don't you know, just don't be evil.

Okay, we're going to like remove that as our tagline, etc, etc, etc, and they reckon with the world.

When you describe these commercial space companies as idealistic, do you see a version of this like idealism to realism to, let's say, national government pushback going on in the equivalent categories?

Oh, yes.

Yeah, I mean, I called the book when the heavens went on sale for a reason.

The company we've been talking a bit about Planet Labs, they are just the most idealistic by nature, by the nature of the founders of the bunch.

And I sort of start the book with them to sort of show some of the origins of this and the hopefulness.

If you go through the book, it's kind of four different stories and things, you know, where we start and where we end gets quite different because this is a business now, and that's what I wanted to write about it.

I mean, Silicon Valley has taken over space.

It comes with a lot of the good, all the things you mentioned, you know, that often accompany the arrival of new technology.

And then, like my point of the book is that now space is like any other business and as you go through the book, things start to descend into chaos and geopolitics and everything pretty quickly.

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You know, I don't think, again, I don't think people realize that like every space story you've probably ever seen or read is like our best and brightest pilots are saving someone courageously. Or it's a room full of MIT's smartest people at NASA solving.

So it's always courage and bravery and intelligence, you know, it's not rocket science.

It's like what I try to show in the book is that commercial space right now is a business like any other.

These companies are, they do have, of course, you know, a few MIT PhDs in there, but there's a lot of welders from Texas and ex-military people.

People from car racing. I mean, this is, this is like, it's not this idealistic sort of pursuit that it used to be.

This is regular business. And so, yeah, no, I mean, the things are going to get weird. Very weird.

You said this is like any other business a couple of times.

But once again, as someone who covers the Silicon Valley, you know this, the thing that makes Silicon Valley unique is it's leveraging technology and, you know, the venture capital model and, you know,

different rates of return that differentiates, you know, a brick and mortar company from a DTC company, whether or not that even works, right?

So I guess my question is what are the differences? And also it's hardware.

So it's in that weird space where it's Silicon Valley, it's tech, but it's also hardware, which is different than just like a B2B SaaS company.

So could you place space tech and commercial space within the pantheon of Silicon Valley investment categories?

Yeah, I'll try to answer this a couple of ways. I mean, one is that in that 60 years of government control, things really didn't change much at all.

Like if you go back to the Apollo era, the rockets were quite similar. If you go to like a rocket launch site, you would be shocked.

I mean, it looks like you've gone into the 1970s, not like the 2040s. You know, I mean, it was all quite antiquated.

And so from a pure tech standpoint, I mean, what's happened now is finally after all these years, we're sending, I call it sort of like taking Moore's law to space for the first time.

Like we have, instead of having military grade technology that was tested 30 years ago, we're sending up, you know, the latest of like consumer electronics, chips, radios, imaging systems, everything into space now.

And finally, space is sort of caught up. And most of these satellites that go up into low earth orbit, you know, people will be probably distraught to learn.

They only sit up that we're sending up thousands of satellites that are only going to sit up there three to five years. These are like disposable satellites.

And so they come back to earth. Hopefully they burn up in the atmosphere, but then a new batch goes up with ever newer technology.

So from that sense, you know, and everything binding that together is software and AI that's analyzing all these images. And so, so you do have this modern tech.

I will say, even though this is like regular business now, and I'm arguing that there is like a, you know, the prologue of my book is called a shared hallucination because the space, it hasn't proven to

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be very profitable yet.

We're investing hundreds of billions of dollars into this. Nobody knows if any of these business models for sure work. There is this like allure the centuries of mythology around space.

This sort of like, like rockets are probably like one of the worst businesses you could possibly be in, but everyone wants to do it because there's like this sex appeal of having like a rocket and all the fire and the noise that goes with it.

So there's like this irrationality to the actual business behind this.

People are kind of searching.

Could you explain why it's a bad business to be in? In the sense that there are big contracts, there's commercial need, but why is this a bad, especially, wait a minute this way, post 2008.

So post like it's been proven you could do commercial space like I get if it's the 1990s and everyone's telling you guys this literally just can't be done, don't bother.

But now that this has proven to be doable, why is this still a bad business?

Well, and I should, you know, yes, I should refine the statement like rockets are a bad business.

Satellites are a great business.

That's where that's where all the money is.

So if you're actually providing a service that tends to be quite a lucrative business.

It's the actual the rocket part of the transportation.

It's just it's a it's a very, you know, even like SpaceX is by far the world leader at this now.

Nobody knows if the rocket part of the business is actually profitable and almost all of the value of SpaceX, which it's a private company, but as investors are putting money into it is around Starlink and its internet service.

That's fascinating. So I guess the question is, this is probably something you, you know, point out very directly is that a lot of the energy for this story is caught up in the various billionaires engaged.

So the story of Musk, Bezos, Branson, etc, etc. And this story is a different story.

This is the Wild West.

I guess the question of the, the rocketry and the reusability is an example where these stories could intersect.

But where did the stories depart?

So where does the probably conventional understanding of this being a battle between billionaires differ when you actually look at the companies you're profiling?

Yeah, I mean, I purposely, you know, I'd written a biography of Vila and had my my fill.

And then I, you know, I wanted to in the water.

I just, I saw all this, all this frenetic activity taking place. It was all just so fascinating away from them.

You know, we, this has gone in stages. We went from this like government backed stage to the billionaire stage and then we moved into the venture capital stage and people might not know, but there's dozens of venture capital backed

rocket companies. There's even more venture capital backed satellite companies now.

I think about \$256 billion has been poured into the space economy over the last couple of years.

And so, so this is, you know, we've, we've moved to this other stage.

And, and in the book, you know, I go, I mean, the prime example that comes immediately to mind is the story of this guy named Peter Beck, who runs a company called Rocket Lab.

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And, and they are SpaceX's closest sort of rival and competitor.

Not, not, not, not, not Blue Origin.

No, you know, Blue Origin does the space tourism, but they have never actually gotten a rocket to orbit after all.

So it's like, that's an example of like the narrative is Bezos versus Musk, but if you're actually looking at a company commercial level, that's not how it plays out.

Yeah, there's, there's SpaceX with like hundreds of launches and Rocket Lab with dozens.

And I'm talking about taking like satellites, not, not humans, which Blue Origin also cannot do.

But there's like SpaceX, Rocket Lab.

And after those, there's all these sort of hopefuls that have only done one or two flights and Rocket Lab is based in New Zealand.

And this guy, Peter Beck did not even go to university.

He's like an apprentice ship at a dishwasher maker and then a government laboratory.

He's just like this possessed sort of genius engineer.

And he, you know, New Zealand has no aerospace history, no talent to pull from, no industry set up to sort of back this.

And he built a rocket company in more or less the middle of nowhere.

And it's this huge example of like how far we've come.

It used to be you is like a government had to be like, we're going to make a rocket and dedicate the next 20 years to this mission.

And you had this guy who was just wanted to do it.

He did all these experiments on the side.

He raised some VC money and now it's like the second coming of SpaceX.

You know, something I worry about as someone who's excited about the space, just like the zero interest rate,

is going on dynamic to what degree is investing in an exciting but unclear return category like this to what degree of recent economic troubles and Silicon Valley going to hamper investment.

It's going to be, it's going to be fascinating, you know, like when when COVID first hit, I thought a ton of these space companies were going to go out of business because money was going to get tight and they are like the most speculative of all businesses.

So they'd sort of be the first to go.

But then as we know, sort of a funny thing happened and money got free for a while and then we had all these SPACs and the space companies were some of the biggest beneficiaries of the SPAC sort of trend.

Like there used to be no public space companies.

And during during that wave, you know, about a dozen of them went public, they raised hundreds of millions of dollars.

So they're all sort of living off of that cash. Some of the ones who who didn't raise are already, you know, really up against it.

I think we're at this period where there was like this kind of Cambrian explosion of rocket and satellite companies.

And, you know, like only a couple are going to kind of make it out of this first wave and then there's going to be a big sort of return to reality.

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But I think I think we've already learned a ton of lessons.

I think there's going to be like the second go at it because because a lot of things are trending.

The price of launches is coming down so much that that it just opens up like spaces becoming like we talked before about how it was like a business but a much more mature business where every company doesn't have to build everything from scratch.

And so so more people will be able to make more attempts at this over time.

And we're already is, you know, we're moving things have been like tourism, imaging communications.

But like in the next couple of months, we're going to see the first space manufacturing happen.

There's a company called Varda that's based in Los Angeles.

They have these little little capsules that do pharmaceutical manufacturing and microgravity.

There's molecules have sort of different properties outside of the bounds of gravity.

And they're going to try to make medicines and then send them back to earth.

Like this is the first sort of step of a whole new class of experiments that are going to take place.

Yeah, listeners, I know you hate when I break the fourth wall, but I've interviewed deli and the co founder from founders fund a couple of times.

So check the feed if you want to learn more about it gets really wonky, but it's a really fascinating example of how categories you just wouldn't think of like pharma by space mixing together.

I love about Silicon Valley history, just these like fascinating like metaphors, right?

And if you think of your point around like lessons learned from this boom, I think of just the, you know, in Great Britain in 1840s, they laid down all the the rails, the industry went bust.

But what actually mattered was that the Brits had a rail system and then long term, that was a really important thing for the Industrial Revolution.

The thing is true in the 1990s, the dot com bubble, the dot com bubble burst, but you still have broadband everywhere.

So I guess what I'd first ask you is, was there an equivalent over the past 10 years since 2008 that maybe companies could have rode off of and could fuel the next the next wave.

I think we're actually like in the middle of that right now.

You know, I think we're in that that dot com like the we're kind of like in 1996 of the consumer internet.

I mean, we're doing the equivalent of laying the fiber and building the first sort of wave of data centers and and that's what's happening right now.

You know, so like from 1960 to 2020, we put up those 2,500 satellites.

That number doubled from 2020 to 2022.

So like all of human history and then that number doubled is going to double again this year and the year after.

And quick question, because as you pointed out, they're staying a lot for four to five months.

Is this are there 2,500 satellites all at the same time?

Or is there just a total?

If we just add them all together, there's been 2,500.

No, well, so they stay a lot for like four to five years.

The like months, months, months would make that.

That's a really bad business in 2020.

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There are about 2,500 satellites in low earth orbit.

That was not that's not like the sum total that had ever been made, but that it was like a pretty consistent number.

It didn't change much.

Yes, some of those would deorbit and be replaced, but it was always kind of like hovering between 2,000 and 2,500 for a very long time.

And and now we've we've doubled that number.

And yes, like some of those are being replaced, but that's also kind of like just a pure addition of satellites and that same addition is going to happen again.

So the next follow up question is then I know that lessons, quote unquote, are difficult, especially as we're in the middle of the story.

It'd be hard to say, hey, like it's 1996 Netscape.

What's the lesson?

But like what what?

Since there have been like failures and successes, like what would you say are just like, we just know this or this is a takeaway you could have if you're a founder or VC getting into the space.

Well, I think I mean, the most fascinating thing to me, and it's kind of like a frustrating one is that, you know, beyond like the imaging and the communications and some of the science, like nobody can really has a very clear answer on what, you know, I hate the phrase killer app.

But that is like what everybody's searching for is like, is like, what are we going to do next is going to make a lot of money there.

And, you know, the whole thesis here is like, OK, we've changed the cost of what it takes to get to space.

We've made it possible so that you can do all kinds of new interesting things up there because now we can use consumer electronics.

And it's like, OK, now a bunch of people are going to try a whole bunch of ideas and somebody's going to work and turn into this big business and we're going to need like even more rockets and more satellites.

You know, this is a lot of people think this is just kind of like the start.

I find it like incredibly unsatisfying that if you ask Elon Musk, if you ask Peter Beck, if you ask all the leaders in this field, like I've never found one that really can tell me exactly what this next thing is.

I mean, there's like a hunch that is like the manufacturing sort of part.

So I don't know, it's going to be an equally unsatisfying answer to you.

I don't know that we have like huge lessons yet only that that this commercial space idea that people were like pining after for decades is real now.

And now we actually get to see what happens when when business instead of government gets up there.

So that leads into another question, which is.

Hope. So obviously, government's still there. Obviously, there are still missions, but just we can now bracket where it used to be just total.

I mean, it was all government 100 percent.

There are going to be especially national security related areas areas where it's just government centric.

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What would you say is the distribution of quote unquote tasks in this space that you would think about?

Well, you know, government is still huge, right?

It's like for all the reasons you outlined and and they've been big backers of SpaceX of these satellites, all of that.

And really, you know, like DARPA, the military sort of NASA helped help make a lot of this possible. Like so all that's still going on.

But to give you an example, you know, if we talk about just that 2,500 satellites to 5,000, almost all of that that extra 2,500 satellites is SpaceX and Planet Labs.

You know, so there's there's like none none government in that in that half.

Like sort of like the the all of this kind of additional hardware is in the most of it is in the commercial sector.

And the government's kind of like trying to figure out where where it's going to play and what it's going to do and all this.

So the in, you know, the race has begun.

So Amazon, they want to compete with Starlake.

So they're trying to send up about 14,000 satellites.

China wants to put up its own internet constellation.

Europe wants to do the same thing.

And so, you know, you see very quickly that like the industry far outweighs the government assets up there.

And, you know, earlier and in some of your pre publication materials, you kind of refer to this as the the Wild West.

I want to be precise with like kind of like the historical analog.

Like, are you actually saying this is the Wild West or like is this, you know, the 16th century and their joint stock company is in Queen.

I forget my British Queens, the Queen is sending, you know, privateers and Drake and everyone out is or or are we laying down the railroad in like the 1870s.

And they're always like, you know, 1870s IPOs.

Like how should we understand like the comparison of eras?

It's funny that you pick those two examples because that's like exactly sort of the two spheres.

I thinking about it.

And, you know, Wild West of space is probably like an awkward phrase that I've kind of gotten stuck on.

Anyway, that's the way I feel.

I get where I get.

I mean, you know, we are at like that that explorers stage of this in a lot of ways.

It's people amassing a big pool of capital and telling someone to run off and see what they can explore with their rocket or their satellite.

But I don't, I don't think again, like people realize the, I think you think of space as this very regulated, almost like static controlled sort of business.

And there's a bit of that, but people probably do not know.

You know, a couple of years ago, there's a company that makes very, very, very small satellites and

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the US government forbade them from launching them because they didn't think we could track them.

And they launched them anyway on an Indian rocket.

And this was like the first illegal satellite launch that anybody knows about in history.

In my book, I tell the story of this company called Firefly, which was acquired by a guy named Max Polyakov, who was a OBGYN turned software magnet turned rocket here.

You know, he's like a very larger than life, hard drinking, hard living character.

He's a wonderful guy.

But I mean, this is like, this is not this is as far as from like MIT.

PhD as you can get, this is just like a wild man with a rocket, you know, who ends up getting thrown out of the country by the US government.

And so, you know, it's this mix, it's this mix of setting out to explore, but also like a bit of like barely controlled chaos behind all this.

And I think I wonder, whenever you talk with anyone in the commercial space category, you speak to founders like Dalian or or VCs, there's a lot of just dunking on on NASA.

Right. And the public facing part of space, I don't just mean dunking in the sense of like, we never should have had this thing and you know, big government sucks just like these guys had this opportunity and they just blew it for 20 to 30 years.

So we stepped up.

Now that we've had 10 plus years of like private development, what do NASA people say?

Yeah, I mean, do you kind of like when you when you talk to them because the whole narrative in this space is just shit talking them basically.

What are they saying response to all these big and I'm not saying you're doing that, but it's just like the whenever you talk to a founder, it's basically like the elephant in the room.

What do they say to this?

Yeah, well, I mean, it's like a mixed bag for NASA.

I mean, a lot of ways they helped push a lot of this along, at least, you know, NASA sort of like split up into factions.

And one was like, Elon and commercial space are terrible.

They'll never be able to do what we do.

And we're going to stop them at every turn, you know, and we need our money to fund our projects.

And then this other part of NASA was like, no, no, no, we got to work with these guys.

This is kind of the future.

And obviously that side won out and NASA is still kind of like recalibrating to to what that means.

The worst part about NASA is that, you know, like its budget is controlled by the government and it's essentially sort of like run by by people in Congress.

You know, there is obviously had NASA administrator, but this agenda gets set by by what these these politicians want in their states and what they want to fund for Lockheed Martin and Boeing.

And that all still exists. And it's just like what is totally holding it back.

We have this example where NASA has been building this giant rocket called the SLS that costs, you know, \$50 billion to make in SpaceX and Blue Origin and others are making rockets for a fraction of that cost.

And so I think NASA just needs to reach, it needs, it needs to like get with the times.

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It's done a lot to help some of this along, but it needs to like just bail out of all the stuff these commercial companies are doing.

And I think get back to like its original sort of mission of doing the hardest, deepest space type of things, you know.

Non-commercial, non-fundable.

And like do research that's going to support these guys.

Like if we're going to make space habitats like NASA is an ideal organization to like sort of figure out how that would work and how you'll keep people alive and science, right?

I mean, like the Webb telescope, which again took many, many years and many more billions of dollars than it was supposed to.

But still can do like amazing science.

I think that's where they need to get their head into that space.

But it's, you know, it's a little sad.

Like in my book, I write about the NASA center in Silicon Valley called NASA Ames.

And this amazing guy named Pete Warden who took it over and he totally revamped it and turned it into this kind of like unconventional counter punching NASA center and tons of these commercial space startups grew out of that.

And like the second Pete left, it just returned to the way it was, you know, and so we need change.

And that is so, that is so interesting.

I guess what, you know, wherever you read your Elon book or any of these stories about early commercial space, especially the billionaire function, it does seem so personal, personally driven.

There's a, there's an individual in an industry.

Like how do you think about that?

You mean like for the commercial guys just and sorry, not personal motivation.

Just like think of the way you told the Silicon Valley Ames Center story.

Like there is this guy.

And he and I'm not saying this is a fallacy.

I guess is the basic answer is that like, do we need to have more structures that is fixing NASA or fixing these problems about like empowering individuals, changing structures like what's the lesson you take of what the way we tell that story.

I mean, I hate to say, you know, there's so much I love about NASA.

But I mean, there's, there's parts that I think are, it's just unsavable at this point, because it's just so wedded to like political money and all these like decades of tradition.

I mean, it's, it's like just like almost like an arm of the same sort of military industrial complex, you know, and Pete Warden, he was almost fired like 19 times as he was trying to just sort of save the country money and try new ideas that all turned out to be correct.

You know, like he was trying to make a lunar lander for \$20 million instead of \$400 million.

And he had to like basically I write about it in there.

He had to keep it secret in this shed so that like nobody would see it and shut it down before they could finish.

And stating that is \$380 million in funding that wouldn't go different places.

Like it was almost like free for NASA and there were still, you know, politicians, elements within NASA that they'd tried and did shut it down and he would hide it again and just keep trying.

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So, you know, I think, I think as the commercial space industry takes off, I mean, it almost feels like it's like inevitable that NASA will have to change eventually because it's just like what are you guys doing?

You know, we've already got 10 of those over here. We don't need another one.

I think it'll just take a long time to sort of get there.

So for these last two questions, I'd love to hear, especially because this is very much a story of the non-Elon Branson and then Jeff Bezos founders.

What is the like archetype for a successful commercial space founder?

Because the three I listed, I mean, Richard Branson is complicated in terms of like where his money comes from.

But like sticking to Ewan and Jeff Bezos, the answer is you made money during the 1990s tech boom and you're deeply passionate about this space and you have the ability to fund potentially decades of failure.

This is a quick way I'd tell that.

So that's a successful model for if you're a VC in the mid 2000s, search for those dudes and kind of go from there.

Then I guess the question is if it's the 2010s, like, and we're not talking about those billionaires, like, are there any rhymes, archetypes, et cetera that kind of fit there?

I mean, it's a funny question. I don't know. You know, I don't know that there's a common thread like in this in the book where I have these sort of like four different sections.

I tried to show that like there were four different archetypes, you know, driving each one of these people and that their motivations were all sort of different planet had kind of this idealism.

We're going to save the world with this this imaging.

Peter Beck from Rocket Lab is just this, this, he's, I always think of him as like the platonic ideal of an engineer.

He's just this guy who's possessed and like has to make a rocket. Chris Kemp at this company called Astra.

I mean, to me, he's just the, he's the archetype of Silicon Valley.

He's the guy he kind of like lovespace, but he wants to make a lot of money and he wants to shake things up and like he's going to stop at nothing to do it.

And then Max Plyakov from Ukraine, his parents were these Cold War. They worked on the Soviet space program.

He made a ton of money. He just had like space in his blood and wanted to be part of it and was willing.

You know, he's nowhere near as rich as Elon and Jeff, but was willing to put up \$250 million to like make a go of this.

And so, I mean, I think we're, even though we're at, even though I keep arguing that we're at this kind of more normal stage, I think we are still at this part where like space calls to people in different ways.

And, and the ones who have been the most successful, you know, is Elon and Peter Beck.

And they're two respective companies. And I would say the common thread there is just that they're like extremely driven and relentless and just, just like very professional.

They're like amazing at sort of harnessing the energy and enthusiasm of 25, 26 year old engineers.

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And, you know, it's something that just takes that sort of like relentless drive over a number of years to make it work.

So for the last question, for me to get on the soapbox for for half a second, I a few years ago during kind of like the height of the quote unquote billionaires are just, you know, doing a dick measuring contest way of telling the space tourism story.

I was listening to pivot with Scott Galloway, Kara Swisher, huge fan of Scott Scott's been on the show before but Scott was specifically talking about how like this was like a bad thing and how it shows that like America can't do anything anymore.

And, you know, we used to be able to go to the moon and now it's all these companies, but I guess from my perspective, like this kind of is America in the sense that like America's a company, America's a country where like your private sector and like

Elon Musk could say I want to do this thing and he can like do this thing. So I don't think like the existence of a commercial space industry, while NASA stagnates says anything negative.

So I guess I'm kind of like, so like without asking you to talk crap about Kara Scott, I just, I just all when I was have this conversation and I think of your book, I just think that this is kind of almost the response to thinking that like man like this used to be some dudes in like white short sleeve shirts and black

ties and now the taxpayer is not leading in the way. I don't know I just always viscerally feel that that's kind of the wrong way of looking at this so I guess what does the story you're telling tell about America and how things work here.

Well look on this particular case Scott doesn't really know what he's talking about because you know like 10 whatever if you go about like 15 years.

It was a it was a much more depressing story than even that it was like it was like not only the US was about to be like wiped out of the space industry you know we couldn't even get once the space shuttle retired we couldn't get our own astronauts to the ISS anymore we have to fly on Russian rockets, Lockheed and Boeing use Russian engines to send up American spy satellites, you know China was pumping tons of money into space we're about to get just like totally eclipsed and again even if you despise Elon or don't have any feelings about

them like SpaceX is just about the most patriotic story you could sort of a magic because immigrant comes to this country and in 20 years you know builds the space superpower and SpaceX is flying astronauts to the ISS all the time it's like totally

every country in the number of rockets it can set up and now you know the US has more commercial space started up than anywhere by far and is like the envy of the world it's really sort of like a two, sort of like a two horse competition

US commercial space and China backed government space now is to like where like the really exciting activity is and so no I mean you know this is so exciting like SpaceX's mission is like send stuff to Mars I guarantee you it would like get a human there faster than NASA ever would and so no I mean I think he's just I think he's wrong I think we went through this kind of like fallow period and through a bit of like luck have come out the other side in a pretty sort of like ideal position.

I think that is an excellent place to leave this Ashley thank you so much for joining me on the realignment this is really fun.

Thanks man I appreciate it.

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