

Space Capital Podcast S01E10 - The Reluctant Entrepreneur with Andy Aldrin Transcript

In today's space world, in today's commercial space world, you need to be more than just a great engineer, you need to more than just a great business manager. You need to understand the breadth of space, you need to understand policy. How managing a company in a entrepreneurial startup environment is different from the way you manage something in a large aerospace company.

Welcome to The Space Angels Podcast, episode ten, The Reluctant Entrepreneur. I'm your host, Chad Anderson, CEO of Space Angels - the world's leading source of capital for early stage ventures. The purpose of this podcast is to provide investors with the context and information necessary to understand the real risks and opportunities in this dynamic, new entrepreneurial space age. Today's age is Andy Aldrin, a true child of the Apollo era. Son of Apollo 11 astronaut, Buzz Aldrin, Andy's career has spanned nearly every aspect of the space economy, from big defense contractors to entrepreneurial space ventures and academia. As a graduate student in the 80's, he traveled to the then Soviet Union to study the behind the scenes factors that had boosted the USSR in the Cold War space race. He says the lessons he learned there influenced how he views American advancement in space, including entrepreneurship. After completing his PhD in political science and government at UCLA, he began his career with incumbents Boeing and ULA before moving into more entrepreneurial ventures, and eventually becoming an Associate Professor at the Florida Institute of Technology. Hi, Andy. Welcome to the podcast.

Andy:

Hey, Chad. Good to be here.

Chad:

Thanks. So, what was your first memory of space?

Andy:

Uh... Well, yeah, I guess it was at a pretty young age. Probably as soon as we moved to Houston when I was five years old, and dad was an astronaut, so space was like right in front of me every day.

Chad:

So, considering that, that it's been part of your life since very early, and also that you've had a really unique career trajectory. So, you were business development and advanced programs for Boeing's NASA systems and launch businesses. You carried that similar position over to United Launch Alliance when they formed with Lockheed.

Andy:

Right.

Chad:

You've been a consultant, and then you also ventured out and had some experience with startups.

Andy:

Yep.

Chad:

As an operator and an advisor. And so, I'd like to hear a little bit more about that. And from your personal point of view, how have you managed that career trajectory, and what influenced your decisions along the way?

Andy:

It's been a long, strange road. And actually, it goes back further than my days in industry. I began life as a Sovietologist. You know, many of your listeners may not even think such a thing existed. But I started out studying the Soviet Union, and I wrote my dissertation on how the Soviet Union beat the United States into space. And it's actually kind of come full circle, the things I'm doing today. But the remarkable story that there was in the Soviet Union, was that it really was very much a story of entrepreneurship and a guy putting together an organization that was kind of a remarkable organization at the very bottom levels of the Soviet system. And created a space system that Soviet leadership didn't want, and he struggled on a daily basis. Constantly selling the program, selling it at times as an anti-aircraft missile program, other times as a ballistic missile program. And then finally, he got an opportunity to launch a satellite that nobody in the Soviet leadership cared about at the time. It wasn't until the success of Sputnik that Sergei Korolev really became known as the father of the Soviet Space Program. Just a remarkable story. And that was an interesting start to my career. And I was working at the RAND Corporation, having a great time, but then the Soviet Union went away. So, a lot of my research agenda went away, and I ended up helping out a few companies in Russia, aerospace companies, understand something about what was going on there. And one of them, COW, asked me to come and work for them in business development. And so, then I ended up in the corporate world. And, you know, I kind of told myself, jokingly, I could deal with it for about fifteen years, maybe. And it's kind of remarkable, because I was at COW, then Boeing, and then ULA for almost exactly fifteen years. And that was a remarkable experience. And I learned a lot in that organization about what it takes, not to just survive, but what it takes to have initiative to, you know, to be entrepreneurial within a very large organization that's not set up to be entrepreneurial. And I think one of the real lessons I pulled out, and I think some of the accomplishments that I had, was helping brilliant engineers learn how to put together business concepts within, you know, a difficult organizational environment at Boeing, and later ULA.

Chad:

So, Andy, the organizational stuff aside, what does it mean exactly to be business development of advanced programs and launch business services. What was it that you were doing?

Andy:

It was really the whole front-end of the business, if you will. So, my tasks were business strategy, advanced programs, and business development. And so, what I was doing for the Chief Executive was looking out into the future, figuring out where the markets were, trying to understand whether we had the right capabilities to meet those markets. Developing strategies to

try and capture those markets. And then where we needed to invest to develop capabilities to capture markets. Then I would manage the investments and the advanced programs needed to create those capabilities. So, it was really kind of everything that's looking forward in those organizations.

Chad:

Very interesting.

Andy:

Best way of thinking it.

Chad:

And then so, after fifteen years, you decided to leave these cushy jobs and venture out a little bit. And so, you made quite a- quite a change.

Andy:

Yeah. You know, some people joke with me that it wasn't really so much just a job change, or even maybe a career change, it was like I changed lifeforms. I went from being a dinosaur to a small furry mammal. And life in a startup is- is really, really different, but incredibly exciting. And I think one of the great things I took away from being President of Moon Express was that you can actually focus a number of people on a task and do incredible things. And, you know, with order of magnitudes less time, and with order of magnitudes less resources than in a large company. And it's a pretty amazing experience in that way.

Chad:

And so, you were with Moon Express for how long?

Andy:

Just about a year.

Chad:

Okay. And one year at Moon Express, in a startup, versus fifteen years at a large player looking at future advanced concepts, what were the big differences?

Andy:

It's kind of interesting. One year at Moon Ex equals fifteen years at a big company. It's kind of like dog years. You know, the real difference between the two is in a big complex organization, you generally have a fairly narrow scope of responsibility. I mean, even if you've got a lot of stuff underneath you, your actual day-to-day job is pretty constrained in its scope. In a startup, everybody has to do everything. Everybody in a startup is constantly doing marketing, everybody's constantly doing communications, everybody has to understand the basic business because is making business decisions on how they spend extremely scarce resources. So, you know, it's a much more exciting and, I think, challenging environment that requires, I think, a much broader scope of talent and abilities than a big company. A big company, you can just be a great engineer, and you can keep your head down and do amazing things. In a startup environment, you have to be more than just a great engineer.

Chad:

Okay. So, I really enjoy having this conversation with you now, and hearing how you talk. Versus conversations from a year or a couple of years ago. So, you have a lot of experience with incumbent space. And historically, you have been somewhat of a curmudgeon, or a nonbeliever, when it comes to the entrepreneurial space age. But I've seen you slowly becoming convinced. And I'm curious, what was it that changed your mind? What convinced you? And, you know, what do you see that's different now then maybe was previously?

Andy:

So, actually, ironically at ULA, they called me the space curmudgeon. Which is, you know, if you think about it, a pretty curmudgeonly sort of organization, in general. You know, the thing that has changed it is that, over the last five years, I think it's the breadth and depth and scope of investment, the number of companies that are coming online. You know, just the sheer numbers of companies. And, you know, we're talking about hundreds of companies and tens of billions of dollars being invested. So, there is something very, very real happening. But I'll also tell you that the transition hasn't happened completely. You know, I gave a talk the other day, talking about paradigm shifts, a sort of scientific revolutions. And, you know, there's kind of a formal framework, and in looking at that, we're not through a paradigm shift yet. I think there's an awful lot that needs to happen, but where it is happening, I think, fairly clearly is on the small side. Where you've got small satellites, small launch vehicles. I mean, I think that shift is underway. And so, that's what convinces me.

Chad:

And so, you mentioned a few things, a few data points. The number of companies and the amount of investment. Did you know about this before you read our investment quarterly?

Andy:

No. I have to admit, you guys have opened my eyes. I want more of your data, absolutely.
[laughs]

Chad:

Love it.

Andy:

No, I mean it. And I think the community's doing a better job of getting that story out. You guys are doing a phenomenal job getting the story out, but it really needs to get out there. What's happening here is real. As I said before, we've got a way to go. I think we need to see a lot more healthy exits. I think I would like to see more stability, in terms of entry and exits in the industry. I think that, you know, as you've got very high levels of entry and exit, that tends to create kind of an unstable industry, which is not a great investment environment. And, you know, this is a conversation we've had a few times. I still- I still think they're inflated valuations out there.

Chad:

Certainly.

Andy:

That could be problematic. So, I would like to see a little bit closer connection between, I think, reasonable projections of discounted cash flows and valuations. But none of these things are really that unusual in the early phase of an industry development. So, it's all exciting. And, yeah, it's real.

Chad:

Yeah. And we like to say, you know, it's not an industry with a handful of companies anymore, right?

Andy:

Nope.

Chad:

So, there's- We're counting four hundred-plus that have raised external financing. And it's that robustness, that you mentioned earlier, that really what gives the sector its strength. So, totally agree. There's certainly some- some inflated valuations and some business models that we still need to see closed, and there's gonna be some failures and some successes. But it's good to see that robustness, because that demonstrates that it's going to carry on.

Andy:

Right.

Chad:

I read something you said somewhere, that I believe very strongly, you believe very strongly that Florida will be one of the key spaces of space entrepreneurship, and that you have to go through Florida to get to space.

Andy:

Right.

Chad:

And you're not saying that just because you've got a soft spot for Florida and spent a lot of time there, right?

Andy:

[laughs] Well, I suppose I do have a little bit of a vested interest. But, you know, one of the things that we're seeing is kind of a migration with everything happening in Silicon Valley to other centers. And so, Florida is one of the obvious centers. And if you're going to launch into space at some point, you're probably going to go through Florida. I mean, I realize there's a proliferation of new launch sites out there, but most of the launches that are gonna be happening are still gonna be coming out of Florida. And we're starting to see some real industrial development. You know, there's a road right outside of the Kennedy Space Center that's called Space Commerce Boulevard. And in many ways, it's a metaphor for the business. And I'll tell you that for twenty years, Space Commerce Boulevard was empty. Maybe about ten years ago,

NASA built a facility there. Ultimately, NASA moved out of it. It was a facility for space station processing, in particular it was gonna be doing commercial stuff on the space station. And that didn't really pan out. But now, you drive down that and, you know, you've got OneWeb, Blue Origin, the old space station facility is now almost completely full. Space Commerce Boulevard is starting to fill up, and I think you'll see some other companies coming in there in the very near future. It's not gonna be everything is in Florida, but a lot of things are in Florida. I think a good educational system, I think you've got relatively supportive State-level government, you've got a very, very well-educated and, I think, robust aerospace work force there. So, there's a lot of good things about Florida.

Chad:

And yesterday, a lunar lander launched from Florida for the first time since Apollo 17.

Andy:

Yep.

Chad:

And this is exciting for a lot of reasons. Another reason is that it was the first privately funded moon lander.

Andy:

Yep.

Chad:

It was launched in a private SpaceX rocket, and the launch was brokered by another private company, Space Flight Industries.

Andy:

Yep.

Chad:

So, how significant do you think that was for Florida and for the broader space economy?

Andy:

I want to start with, honestly, a personal significance to it. Morris Kahn, who financed a fair amount of that venture, is a personal friend and I think a committed space advocate. And so, I gotta give Morris a shout out, because this was very important for him. I think the way you described it though, Chad, is actually kind perfect. That is an example of, you know, early private stack. Every payload that was on that was privately financed. So, we're gonna see a lot more of that in the future, and that's gonna be really exciting to see.

Chad:

Cool. Okay. So, Andy, you are a learned man. You have all kinds of degrees. A PhD in political science from UCLA, you have an MBA, you have an MA in science, technology, and public policy from George Washington. An MA in international relations from UC Santa Barbara. And now you find yourself back in academia.

Andy:

Yeah.

Chad:

As faculty, adjunct faculty at ISU, I think previously?

Andy:

Yeah.

Chad:

Okay. And then as an Associate Professor at the Florida Institute of Technology.

Andy:

Right.

Chad:

And you are the driving force behind a new space entrepreneurship program that will come to the Space Coast in the Summer of 2019, The Center For Space Entrepreneurship. And the big question is, what's the purpose of this center and why is this the right time for this type of program?

Andy:

Yeah. So, the purpose kind of gets back to something I said a little bit earlier. That, in today's space world, in today's commercial space world, you need to be more than just a great engineer, you need to more than just a great business manager. You need to understand the breadth of space, you need to understand policy, you need to understand how managing a company in an entrepreneurial startup environment is different from the way you manage something in a large aerospace company. And, you know, by the same token, I think large aerospace companies need to understand that if they are going to continue to be the leaders in this field, they're going to have to learn how innovate and behave more entrepreneurially themselves. So, I think there's a real demand for a breadth of a program, and what we put together is something that- It's a program that's designed to serve as a portion of a Master's degree. So, what we have is a certificate program of four courses in space policy, commercial programs, technology and systems, and then, you know, putting teams together to actually develop business ideas in an entrepreneurship course. And the idea is students will come in while they're working on their aerospace engineering degrees. aerospace management degrees, business degrees. We've got one school, Purdue, that's even been talking about sending students from their educational- their school of education to kind of get a space emphasis to education, business, what have you. And so, the idea is to take people that are already being trained at the best universities in the United States as engineers, businessmen, and turn them into real space cadets. And I think this is gonna help them- this is gonna help them become the leaders of the future. And, you know, we put this together with the International Space University, which has been at the forefront of teaching space since 1985. We pulled a faculty together from around the world. Really, we've got faculty coming from several different universities, the Aerospace Corporation, International Space University. We've got what I think is the lead in space entrepreneurship professor coming in to

teach with Greg Autry. We've got Ken Davidian coming in from the FAA. Henry Hertzfeld who runs the Space Policy Institute in Washington, he's gonna be teaching with me, as well. We've got, you know, the magic of Florida, because one of the great things about Florida they said, is we have lots of launches. And you know what happens when you have a launch, everybody has to show up. But, you know, the truth is, a lot of the senior executives come in and they do the launch readiness review and then they sit around for a day. You know, we're gonna take advantage of those people being around for the launches, and interact with them and so some workshops with our students and faculty. And, you know, as you mentioned, we start teaching in the summer. Basically, four full college courses in six weeks. So, students are gonna be really busy.

Chad:

Andy, it sounds like amazing access to the caliber of executive and business leaders that come through there. You know, the faculty that are running this, but also the people who are gonna come in and guest lecture and be part of this. Really, really privileged to be able to have access to that. And you're also talking about building in launches to the program, and access to launches for students to view from a VIP viewing area.

Andy:

Yep.

Chad:

Which is really cool. And I always like to say, when I envision this, I'm thinking of that sci-fi movie, Gattaca, with Ethan Hawke, and Uma Thurman, and Jude Law. Where they have an academy where they teach space travel essentials. And I just imagine you're going in and you're studying space and entrepreneurship, and, you know, you're hearing from all these business leaders and launches are going off in the background, out the window.

Andy:

Yeah.

Chad:

And it just seems like a really incredible experience. And then also, you've got it in a pretty special room. Right? A pretty special facility.

Andy:

Yeah. I didn't- I didn't mention that. So yeah, we're teaching the whole program at the Visitor Complex at the Kennedy Space Center. So, at times, we're gonna be having lectures, literally, in a Mars base that they've done at the Visitor Complex. You know, students can go out in between classes and hang out under the shuttle Atlantis, and some of these amazing facilities that they've got there. And I also gotta say, you know, one of the things that makes this different from, I think, almost any academic program I'm aware of, is at the tail-end of this whole thing, you know, Chad, you're gonna be there with your Space Angels looking at the ideas that these students are developing, the business concepts they're developing. And I think you're gonna find some interesting investment opportunities for you, and the students are gonna find some interesting job opportunities.

Chad:

Yeah. And that's one of the main reasons why we're so excited to be involved. And it's a bit bigger than this too. So, you mentioned Purdue.

Andy:

Yeah.

Chad:

But you're also working with a number of other organizations and schools that have caught wind of what you're doing, and wanted to be involved as well, right?

Andy:

Yeah. When we originally proposed, we had five other universities and we're working with them to ensure that the students get credit back at their home universities for their Master's degrees. So, we started out with Purdue, Ohio State, University of Florida, University of Central Florida, Embry-Riddle University. We've actually added a couple that we're talking to right now. You know, we're building a team, you know, that's gonna ultimately be global. So yeah. Then we've got some great partners. Of course, The Space Angels, Aerospace Corporation, and Delaware North, Space Florida. It's- it's not just a great team of institutions, but it's a great team of people.

Chad:

And that's an important point as well, that this is an accredited program. Right?

Andy:

It is.

Chad:

So, you would envision students come out of this, they sign up for this program and they do it over the summer, and they come out at the end with a degree from their university with a certificate in space studies?

Andy:

Right. They'll have a certificate in commercial and entrepreneurial space studies. And it's part of the Florida Tech curriculum. So, for example, we've already got an MBA program with an emphasis in commercial space, a Master's in engineering management with an emphasis in commercial space at Florida Tech. And we hope that other universities will create similar emphasis in their programs as well.

Chad:

Okay. So how do we register? Let's say that I'm a student considering a program at Florida Institute of Technology, and I see that they've got the certificate and so I get excited. As a new student, how do I register. And also, if I'm an existing student, how would I register having just become aware?

Andy:

Right. First thing is I-S-U-C-S-C dot F-I-T dot E-D-U. Go to the website, it'll take you to a registration page and you can file your application today. We'd like to get all the registrations handled by the end of April so we can start getting students their pre-reading materials. And I guess the other things that's important is we're capping this at fifty students. We never want this to become a big engineering 101, kind of, auditorium experience. It's intended to be very interactive. And, you know, we want to create a cohort of students that are gonna continue to work together. When I did my MBA program, it was actually something very similar to this. It was a consortium of London School of Economics, the British Chamber of Commerce in Paris, and New York University. And we had a cohort of just fifty students, sort of travel the globe together. And I'm probably closer with my students that- that I attended that program with than any of the other schools that I've been to. So, I think there's really tremendous value in bringing a diverse team of students from around the world, with different disciplines, working together towards really common goals. So, I think there's magic in it.

Chad:

Certainly. It sounds like an amazing program. Something that I wish was around when I was back going to school. So, certainly happy to be involved and excited to see this take off. So, before we go, on the show, we like to say that there has never been a better time to get involved in space investing. Can you give us your personal perspective on that, and which areas are the most exciting for you?

Andy:

Well, I think there has never been a more important time to invest in space. Probably never been more opportunity. What I worry about is there's, probably also, there's a substantial amount of risk today. And so, I think it's never been more important to be a smart investor.

Chad:

If only there was an organization that existed where people could go and get some information about investing in space.

Andy:

[laughs] Well, I can help them with that too. They're all welcome to the Center For Space Entrepreneurship. And, as you know, Chad, we're gonna be doing some workshops that are really focused specifically on the idea of helping make people a little bit smarter about their investments in space.

Chad:

Right. And we're gonna announcing those very soon, and we're looking forward to that.

Andy:

Yep.

Chad:

Andy, it has been great talking with you. Thanks very much for your time today.

Andy:

It's been my pleasure, Chad. Thanks for having me on.

Thanks for tuning into The Space Angels Podcast. A link to register for the Center For Space Entrepreneurship Program is available in the show notes for this episode. If you're interested in learning more about space startups, I invite you to visit our website, Space Angels dot com - where you can learn all about Space Angels membership and how you can get involved in this exciting new sector.