

## **AirSpace Transcript Season 10 Episode 11: Futures in Space**

[AirSpace theme in then under]

**Matt:** Welcome to AirSpace from the Smithsonian's National Air and Space Museum. I'm Matt.

**Emily:** And I'm Emily. In case you missed it, the National Air and Space Museum on the mall, the OG, has been under major construction<sup>1</sup> for several years. Visitors have been enjoying some of the new galleries for a while, but we have some exciting news.

**Matt:** Later this summer on July 28th, we are opening five more brand new galleries and all of them are very cool and very exciting. One I'm very excited about because I curated it, is Futures in Space.

We built it to ask and a little bit to answer the questions: who decides who goes to space? Why do we go? And what will we do when we get there?

**Emily:** We're gonna take you behind the scenes and give you a sneak peek of this gallery and tell you a little bit about the others opening soon. That's today on AirSpace sponsored by Lockheed Martin.

[AirSpace theme up and out]

**Emily:** What I love about this episode is that we're gonna be talking about a spot in our museum that Matt, you are an expert in this place and I am not. And so naturally what we love to do here on AirSpace is to bring in all the experts, and this time we get to bring back friend-of-the-pod, Dr. Emily Margolis<sup>2</sup>...

**Emily Margolis:** So excited to be back

**Matt:** Yeah, so we're standing in our Futures in Space Gallery<sup>3</sup> right now, uh, to set the scene we're all wearing PPE. We've got the hard hats, the glasses, the vests. We look like we're...

**Emily:** Closed toed shoes, Matt, do you understand what these piggies are going through right now?

---

<sup>1</sup> <https://airandspace.si.edu/about/major-projects/transformation>

<sup>2</sup> <https://airandspace.si.edu/people/staff/emily-margolis>

<sup>3</sup> <https://airandspace.si.edu/whats-on/exhibitions/futures-space>

**Matt:** And so, you know, we're here inside the gallery getting a little bit of a, a preview of it.

Of course, Emily and I have been in here several times 'cause Emily is one of my co-conspirators here in, in designing this gallery. And, um, her fingerprints are on everything in here, so it's appropriate that we brought her in. Not literally, 'cause curators can't leave fingerprints on artifacts.

But, you know figuratively, Emily's fingerprints are on everything. And, um, you know, she knows this gallery backwards and forwards at this point. And I should say we've had other co-conspirators as well. We have a third curator who works with us, Andrew Meade McGee<sup>4</sup>, and then we have our designer, Ashley Hornish, our educator, Mike Hulslander<sup>5</sup>, our media person, uh, Samia Khan.

So we've got, you know, a big team of people who've been working on this gallery. And it's the product of everybody's sort of blood, sweat, and tears over the last few years

**Emily:** Can you two talk a little bit about where we are physically standing in the gallery, even though it's not done and it's a construction zone.

**Emily M:** So we are standing in front of the artifact array. This is an absolutely enormous case. I don't have a good sense of this measurement,

**Emily:** It's like four. It's like four Emily Margolis<sup>6</sup> wingspans,

**Emily M:** Yes, it's very wide. And um, in here we have 40 objects that we have selected to answer the question, why go to space?

And we believe that there are many ways to answer this question and some of those reasons intersect. Some of them are in parallel, some of them are in conflict, and so we've selected these 40 objects to speak to one another in addition to representing a particular reason to go to space

**Matt:** And you might notice looking at these objects that not many of them are actually, sort of objects that would go to space or have gone to space. There's only a couple of exceptions to that.

---

<sup>4</sup> <https://airandspace.si.edu/people/staff/andrew-meade-mcgee>

<sup>5</sup> <https://airandspace.si.edu/people/staff/mike-hulslander>

<sup>6</sup> Approx. 20-25 feet (we didn't measure it, but it's pretty big)

Mostly we tried to choose artifacts or objects that really more represent things that people may have engaged with. You know, things like clothing or toys or games or pieces of popular culture that they might have played with or owned themselves so that they can kind of think about how the things they may have done in their lives have intersected with these questions and these motivations about doing things in space that they've participated in this discussion, whether they know it or not.

**Emily:** How does this case in particular fit within the context of everything else that you're trying to do in this exhibit. What are some of the major themes that you're talking about?

**EmilyM:** So we have three central questions that we invite the visitor to consider when they come into Futures in Space. Who goes to space, why go to space, and what should we do when we get there? And so the why go to space question is right at the heart of everything. We are in the center of the gallery towards the back.

And as people circulate through, they'll have an opportunity to encounter objects that might look familiar to them from their own childhood, from their adulthood, things they may have seen at their grandparents' house or their parents' house that will hopefully get them to reflect on how central space is to their lives, even if they don't realize it.

And we hope that by engaging with these objects, they'll be able to start thinking about the different motivations for going to space.

**Matt:** Yeah and, you know, Emily and I, and, and Andrew as well, we're all historians. So we also approached this with the idea that we wanted artifacts from different time periods that would show how, you know, these are questions that people have been asking and thinking about for a long time, really since the beginning of the space age.

And you know, those questions may have evolved and changed over time, but they've remained very relevant regardless.

**EmilyM:** And we've also tried to choose objects that represent different geographies because anyone can go outside and look at the night sky and think about space. And so questions about humans going into space are relevant to all people.

**Emily:** I asked you guys earlier about how you make decisions about what to collect and when to collect it. And when we're talking about Futures, that's kind of asking you to look inside your museum crystal ball<sup>7</sup>. By the way, they do not give those to us when we sign up to work here. I wish they did

---

<sup>7</sup> Also sadly unavailable in the gift shop

But I'm looking at Dr. Sian Proctor's spacesuit right here. And we've had Dr. Proctor on the podcast before<sup>8</sup>. I know Emily, you've met her. Matt, I think you've met her also. I'm the only one, Dr. Proctor, call me. I would love to go to lunch.

How did you collect this spacesuit? What's the story?

**EmilyM:** So we didn't collect it. This is one of,

**Emily:** you didn't?

**EmilyM:** I know, this is one of our wonderful loans in the exhibition.

**Emily:** Oh, amazing.

**EmilyM:** Yeah. So we have, um, the majority of objects in the exhibition come from our collection, but we do have a handful of really significant loans, things that aren't currently represented in our storytelling, but we hope to one day permanently include in our storytelling.

And so, um, the relationship with Dr. Proctor around the loan of her space suit actually began over three years ago when Matt hosted her for an Exploring Space lecture.

**Matt:** That's right. Yeah

**EmilyM:** Um, and so from that moment we've had three years of correspondence. Um, she wore this space suit on the Inspiration 4 mission<sup>9</sup> in September 2021.

It was the first privately operated, um, private crew of an orbital space flight. And she wore the suit, but she's not the owner of the suit. So the, it's loaned to us jointly by SpaceX and Inspiration 4. And so we're so lucky to have that here because we're able to expand our storytelling to reflect, um, really something people are seeing in the news.

If you're watching a SpaceX launch today, you're going to see people who are in this, uh, pressure suit.

**Matt:** Yeah. And we should say the reason that it's, in this case, obviously it's because it's historically significant, as Emily pointed out, but it's also because it does speak to various motivations for going to space and doing new things in space.

---

<sup>8</sup> <https://airandspace.si.edu/editorial/airspaces5ep5>

<sup>9</sup> <https://inspiration4.com/mission>

And the only other thing that's in this case that actually has been worn in space is this blue t-shirt<sup>10</sup> that you see on the back wall of the case,

**Emily:** Oh, I'm excited you're gonna talk about this 'cause I saw it and I was trying to figure out what it means and what it says, actually.

**Matt:** Yeah. So TFNG, officially that stands for Thirty-Five New Guys, uh, which was the astronaut class of 35 new individuals that Sally Ride was, was a part of

**Emily:** they weren't all guys, is what you're saying?

**Matt:** They weren't all guys.

**Emily:** Interesting, okay.

**Matt:** Um, and the underneath it, it says 'we delivered.' And that was because the shuttle program was meant to be, um, you know, a program for delivering not just people, but things into space. And so it's kind of, you know, using the purpose of the shuttle and also the sort of identity of that 35 new astronaut class to make a statement about their place in the shuttle program

**Emily:** So this is a royal blue t-shirt because you guys can't see it. This is a royal blue T-shirt that has a plain, I, I'm gonna call it a plain white silk screen 'cause I like a good silk screen.

**Matt:** Mm-hmm.

**Emily:** And it's a picture of a space shuttle kind of staring at the viewer with the bay doors open and an arm out and it says underneath it 'TFNG we delivered.' And I roughly counted there's about 30 astronauts, either inside or outside the space shuttle doing various shenanigans. Um, and I, as a graphic, it's really cool and powerful, but, um, this is a space flown object

**Matt:** That's right. Yeah. Sally Ride wore it onboard the Space Shuttle

**EmilyM:** On STS seven<sup>11</sup>.

**Matt:** I was gonna say, Emily can give you more accurate, accurate information.

---

<sup>10</sup> <https://www.nasa.gov/image-article/hard-work/>

<sup>11</sup> <https://www.nasa.gov/mission/sts-7/>

**EmilyM:** So we have this wonderful photo of her from STS seven, her mission in June of 1983, in which she became the first American woman in space and she was wearing this T-shirt. Um, and I think it speaks to the solidarity among the astronaut core.

They had their inside jokes, they had their cool t-shirts. Um, and as Matt mentioned it represents a variety of different motivations here, including, um, space as a place for science. Sally Ride was a mission specialist. She trained as a physicist, and so we use this to represent, um, science in orbit.

**Matt:** Yeah, and I said it officially stands for Thirty-Five New Guys, the F does not stand for five. It stands for something that we can't say on this podcast. We'll do that in our after hours show.

**Emily:** *laughs* But what I think is really interesting is the two things we've talked about so far are space flown things by women astronauts who also happen to be scientists, both Sally Ride and Sian Proctor have their. PhDs in science, you can get PhDs in other things, which is also really important, like history. Hey guys... [*laughs*]

Um, but I think it's really interesting that those two things have so much in common as in addition to being space flown.

**EmilyM:** Well, one of the things that we do talk about in this case is some people are inspired to go to space by their role models. And so we actually use both of these objects to bookend that story.

So we know that Sally Ride inspired many generations of astronauts, um, not only women, uh, to explore space. And then on the other side of the coin, Sian Proctor was inspired to be interested in space by her dad, who was in fact, uh, working at a tracking station in Guam during the Apollo program.

And so role models are actually an important part of the story of motivating people to go to Space

**Matt:** That's right. And we have, you know, one more notable woman who's, uh, also included in this case, what you can't see because it's wrapped up...

**Emily:** I've been dying to ask this question! I'm standing front of this ghost, this white paper ghost that's in the case that I'm, I'm hoping there's a uniform or something underneath there.

**Matt:** Well, it's not a uniform. It's actually a lovely silk sari that was worn by Dr. Nandini Harinath<sup>12</sup>. Emily, you remember we did our episode about<sup>13</sup>...

**Emily:** I was just thinking about how we went on our field trip to go see the movie. Yeah.

**Matt:** So, you know, at one point I really wanted that mission to be represented in this gallery as, you know, an example of how other nations are now doing more ambitious things in space.

And this becomes really important to national pride. I started reaching out to folks who knew the women who had worked, uh, on the Mars Orbiter Mission<sup>14</sup>, uh, at the Indian Space Research Organization, and I eventually got connected with Nandini Harinath, who was the mission operator, uh, for that mission.

And we were able to talk to her and collect from her the sari that she wore in mission control during the day that they sent the orbiter from Earth orbit into its trans Mars orbit so that it could then, you know, connect with Mars and go into orbit there. So it was from a significant moment, from a significant person.

And, you know, the women in Mission control, wearing those saris became such an important image when it was publicized sort of around the world, but especially in, in South Asia, you know, as role models, um, of examples of what women were doing in science and engineering. And so Nandini is here for some, somewhat the same reason that, you know, Sally Ride is here as well as, um, as Sian.

So it's, it's all, you know, telling that story of the importance of the people and the representation, uh, in space exploration

**Emily:** A lot of folks get inspired to explore space in one form or another by seeing somebody else that they can identify with, um, doing that exploration. But there's a lot of other gateways I feel like that especially kids kind of get that spark from. And one of the central features in this case is this kind of montage of model rockets and board games and trading cards and LEGOs.

And I feel like that is a really big spark for a lot of kids who get into something through another avenue, whether it's model building or in the case of LEGOs, LEGO building or board games because they love the games. But then there's this theme or this vibe that

---

<sup>12</sup> [https://en.wikipedia.org/wiki/Nandini\\_Harinath](https://en.wikipedia.org/wiki/Nandini_Harinath)

<sup>13</sup> <https://airandspace.si.edu/stories/editorial/airspaces2ep13>

<sup>14</sup> <https://www.isro.gov.in/MarsOrbiterMissionSpacecraft.html>

they kind of really get excited about. And Matt, you always have the most impressive LEGO sets that you like to show off on social. Are these your LEGOs?

**Matt:** Well, actually no, but um, they do belong to at least one of 'em belongs to one of our exhibit team members. So Ashley Hornish, our designer. That's her LEGO Apollo 11 set<sup>15</sup>

**Emily:** that she put together?

**Matt:** That she put together, and she's loaning it to, uh, the museum for this exhibition. So, you know, she can say she has something on display in the museum. But the idea behind including that was, you know, it's a wonderful set that does inspire, as you say, but it also commemorates an important moment in American history.

You have the two astronauts, Neil Armstrong and Buzz Aldrin, and then you have the American flag that they're planting. So the importance of that mission for national pride and also for geopolitics in that moment of the Cold War space race was very important.

I didn't want that to be the only LEGO set we had. So I went looking around to see what I could find maybe representing a different nation. And it ended up finding this, um, Chinese, uh, SEMBO set.

So SEMBO Block is sort of a, LEGO- esque company based in China. They also manufacture and design buildable brick models. And in this case we were able to find one actually on eBay that's of a Long March rocket, the kind that's used to send astronauts today to the Chinese Space Station, but has also been used in the past to send other payloads into space.

And you can see in, in the case of this one, it actually has, um, one taikonaut Yang Liwei who was the first human in space sent by China. So, you know, their first example of human space flight is commemorated in this, you know, rocket model

**Emily:** Taikonaut. Like Tycho? The crater on the Moon<sup>16</sup>? Tycho-naut?

**Matt:** Well, sort of like, um, just like the U.S. uses astronaut and, um, the USSR and now Russia use the term cosmonaut. In China, the term is taikonaut.

**Emily:** And taiko means...?

---

<sup>15</sup> <https://www.lego.com/en-us/product/nasa-apollo-11-lunar-lander-10266>

<sup>16</sup> One of the Moon's brightest craters, named after 16th century astronomer Tycho Brahe



**Matt:** Meaning space<sup>17</sup>.

**Emily:** Meaning space. Okay.

**Matt:** But there are two other rockets that are actually, uh, not LEGO. They are launchable model rockets, one of which was built by Emily Margolis right here when she went to space camp<sup>18</sup>.

**EmilyM:** It's true.

**Emily;:** Wait, which one?

**EmilyM:** It's the one on the right.

**Emily:** So the blue. It's blue. It's like half blue, half white with three little fins on the bottom

**EmilyM:** Exactly

**Emily:** Oh my God. It says space camp on the side!

**EmilyM:** It does. There's space camp stickers, and if you look very closely, my name is on one of the fins at the bottom.

**Emily:** Oh my gosh, can you see it from outside the case?

**EmilyM:** You can yes.

**Emily:** Field trip [sounds of Emily walking around the microphone]

**EmilyM:** It's on the right hand side. It is blue.

**Emily:** [gasp] Oh my gosh is says 'Emily.'

**EmilyM:** I know. So we're represented here, Emily.

---

<sup>17</sup> From the word taikong, 太空

<sup>18</sup> <https://www.rocketcenter.com/SpaceCamp/Adult/Academy>

**Matt:** [laughs] Emily's in space.

**EmilyM:** Emily's in space.

**Emily:** now I'm trying to not step on anything I'm not allowed to step on.

**EmilyM:** Oh, this is all protective. It's fine.

Um, but so, uh, what's really exciting about being a curator is that your own personal research and in this case, lived experience can sometimes end up on display.

So, um, when I'm not working on exhibitions, I'm writing a book on the history of what I call space tourism. So people might be thinking of tourism in space, but I actually traced the roots of space themed tourist attractions on Earth dating all the way back into the 1960s.

And so one of the chapters of my book is a history of Space Camp, and when I was a graduate student, I convinced my advisor to send me to Space Camp. Adult Space Camp, I should mention, although they do make you stay in the child side bunks.

**Emily:** I feel like I did grad school wrong.

**EmilyM:** I know. This is one of my proudest achievements. Thank you, Bill Leslie.

So I created this model rocket when I was at Space Camp and when we were thinking of putting this case together, we really wanted to represent the experience of what I would call space tourists, people who visit the Kennedy Space Center<sup>19</sup> when they're on spring break with their family or people who do go to Space Camp at any age.

And so I wanted to represent that. We have the Space Camp Model Rocket here, um, to show what that experience is like. This is so iconic. Um, everybody who goes through Space Camp has made one. Um, and we also have on display here a tiny little souvenir purse that was sold at the Kennedy Space Center sometime in the eighties.

And so we also want people to reflect on how their experiences of visiting these space sites might shape their interest in or motivation for going to space.

**Emily:** So I've had minimal experience working on exhibits, although I have had some, one of the things that I learned through that process was how hard it is to write what are

---

<sup>19</sup> <https://www.kennedyspacecenter.com/>

called scripts, which are essentially these big, really big tables of images and descriptions of artifacts and the words that are going to be written on little labels underneath the artifact so that visitors are gonna come in and they're gonna be able to see what these objects are and kind of contextualize what they mean.

There's, um, a suspicious lack of labels in this case you two. What gives?

**EmilyM:** Good luck? No, umm

**Matt:** yeah,

**Emily:** Choose your own adventure?

**Matt:** it is kind of, but uh, yeah, not in the way you might think.

**EmilyM:** So where we are standing right now is actually sandwiched between this very large artifact array and a digital interactive, um, which has two screens.

And it's through these screens that visitors will have an opportunity to view the individual object labels if they want to learn more about my Space Camp Model Rocket, for example. But we've also created another interface. That, um, connects all of these objects thematically. So if people want to learn about the theme of science and exploration as a motivation for going to space, they can click through that theme, see how the objects relate to one another, see also related content, videos, images that we don't show in the exhibition itself, but that we can enhance through this deep dive experience.

**Matt:** And that was really, I think for me, the exciting creative part of, of putting this particular case together was thinking about not just like what do, what individual stories do each of these artifacts tell, but if you string them together under a theme, what larger narrative could you create about the, the ways that those themes are reflected and people engage with.

So, we have a theme like generate profit and new industry, which multiple artifacts in this case speak to individually, but when you put some, put them together, it becomes more of a story about how people have thought of that over time.

So for example, we have a board game from the 1970s called Belter: Mining the Asteroids 2076<sup>20</sup>, which is about. Um, you know, a group of of astronauts sent out to mine the asteroids and the companies who send them there, and the wars that might break

---

<sup>20</sup> <https://boardgamegeek.com/boardgame/4316/belter-mining-the-asteroids-2076>

out between companies as they fight for, you know, valuable resources in space. Kind of a very 1970s, almost dystopian vision of what it would be like to mine outer space resources.

And then the more contemporary example of that is our, uh, Terraforming Mars<sup>21</sup> board game, which is a very contemporary example. I found out about it by playing it at a friend's house. It has a very complicated set of rules that I cannot master, but it's still a fun game when I'm with people who know how to play it. Um, but in this case it's not about warring over resources, but it is about private industry going to Mars and doing things to make a profit while at the same time changing the environment of Mars in different ways that eventually make it habitable. And the person who contributes the most to a habitable Mars is the one who wins the game as they compete in a more economic way with their corporate adversaries around the board

**Emily:** So in a way it is a little bit of a choose your own adventure, where visitors are really gonna have the opportunity to sort of read a custom set of labels depending on the kinds of things that pique their interest

**EmilyM:** And this was very fun for us to work on as curators because we know that every object contains a multitude of stories, but when you only have an opportunity to write a single object label, you...

**Emily:** like a 20 word object label,

**EmilyM:** It's tight. Okay. So we have to pick and choose, and this was really fulfilling to be able to tell more complex stories by connecting artifacts to each other.

**Matt:** So we've spent all of our time in front of this large artifact array case. That's inside terminology. We call it the artifact array. Now you can pretend to be an insider.

Um. But this is just one of the sections of this gallery. There are two other sections that address the questions of who goes to space and what we'll do when we get there, including humans and robots. And then we also have an art wall in this gallery that explores how artists have thought about the connections between humans and space and space and the future. So, you know, we hope you'll come and see all of the sections of this gallery, but also there are other new galleries opening this summer. Emily, what are some of those galleries

---

<sup>21</sup> <https://boardgamegeek.com/boardgame/167791/terraforming-mars>

**EmilyM:** Ooh, well, when you come to visit, you can enjoy the Boeing Milestones of Flight Hall<sup>22</sup>, Barron Hilton Pioneers of Flight<sup>23</sup>, World War I: The Birth of Military Aviation<sup>24</sup>, and the Allen and Shelly Holt Innovations Gallery<sup>25</sup>.

**Emily:** So what other kind of artifacts might people sort of look forward to in the other four galleries that we haven't mentioned as much?

**Matt:** I guess there's some airplanes, uh, you know, in in the other galleries. [all laugh] That's what I would guess

**EmilyM:** Well, one thing that I really am excited about upstairs is, uh, right in front of the Pioneers of Flight Gallery, before you're even in the gallery, our interpretive work starts. So look down at your feet because there is this absolutely beautiful embedded compass rose in the terrazzo flooring that was the symbol of the 99s<sup>26</sup>, which was an association of women pilots that was co-founded by Amelia Earhart.

And yes, Amelia Earhart, I believe it's the Lockheed Vega, is in Pioneers as well. So, um, when visitors come in, I hope they look up and they look down and left and right, because we have things everywhere to enjoy.

**Matt:** You know, we we, have talked on this podcast, I think, multiple times of the importance of World War I, um, in aviation in America, how it kind of kickstarted larger scale aviation here.

And if you've enjoyed those podcast episodes, then walking into a space where you'll actually get to see the airplanes and, and explore the technological development that happened during the war and then, you know, carried on in the interwar years to then be picked up again in World War II I think, you know, you'll find that gallery incredibly fascinating.

**Emily:** We don't wanna give you all of the spoilers because you really should come explore those galleries in person starting July 28th.

---

<sup>22</sup> <https://airandspace.si.edu/whats-on/exhibitions/boeing-milestones-flight-hall>

<sup>23</sup> <https://airandspace.si.edu/whats-on/exhibitions/barron-hilton-pioneers-flight>

<sup>24</sup> <https://airandspace.si.edu/whats-on/exhibitions/world-war-i-birth-military-aviation>

<sup>25</sup>

<https://airandspace.si.edu/whats-on/exhibitions/aerospace-and-our-changing-environment-presented-allan-and-shelley-holt>

<sup>26</sup> Still an active organization today, <https://www.ninety-nines.org/> see our episode <https://airandspace.si.edu/editorial/host-favorites-emily>

Just to be sure your visit runs as smoothly as possible, and so that you have a really good time, it's still really important for you to get online and get those free timed entry passes<sup>27</sup> so that you can come visit in person. And those are gonna be available for the new galleries really soon.

What do we tell visitors who don't have plans to be IRL anytime soon because they don't live here or don't have any trips planned?

**Matt:** So just like with the first galleries that we opened a couple of years ago we will have virtual tours of the new galleries that will go up online. So you will be able to experience the galleries from your home, you know, might not be as satisfying as being here in this wonderful building

**Emily:** but they can access it

**Matt:** Yeah. But you can access it and you can, you know, explore the content and, um, get a taste of, of what we've done here in the building

**Emily:** Ah, I love that! Oh, I'm excited

[AirSpace theme up then under]

**Matt:** AirSpace is from the National Air and Space Museum. It's produced by Jennifer Weingart and mixed by Tarek Fouda, hosted by Dr. Emily Martin and me, Dr. Matt Shindell. Our managing producer is Erika Novak. Our production coordinator is Sofia Soto Sugar, and our social media manager is Amy Stamm.

A big thank you to Dr. Emily Margolis for joining us on the tour of Futures in Space. Additional thanks to Ashlee Privette for facilitating our foray into the construction zone.

Did you know the transcripts of AirSpace episodes include citations and extra fun facts? You can find them linked in the show notes. For additional content, photos and more Follow Airspace Pod on Instagram and X, or sign up for our monthly newsletter using the link in the show notes.

AirSpace is sponsored by Lockheed Martin and distributed by PRX.

[AirSpace Theme up and out]

---

<sup>27</sup> <https://airandspace.si.edu/visit/museum-dc> Passes for July 28 onward available beginning June 13, 2025