Photo: Netflix

Episode 4: The Privilege to Launch

This transcript is based on the fourth episode of *Moonstruck*, a podcast about humans in space, produced by *DraftHouse Media* and featuring analysis from the *Center for Strategic and International Studies' Aerospace Security Project*. Listen to the full episode on **iTunes**, **Spotify**, or on our **website**.

BY Thomas González Roberts // PUBLISHED May 23, 2018

As you've probably figured out by now, in the earliest age of human spaceflight, the United States trailed the Soviet Union in terms of major milestones. Time and time again, NASA had to prove that it was just as good as the Soviet space agency.

And things got a little predictable if you ask me: when the Soviets launched Sputnik in 1957, the U.S. launched its own satellite just months later. After Yuri Gagarin becomes the world's first man in space, Alan Shepard becomes the second. The first American space walk came a few months after Alexei Leonov's stumbled through the same task. I think you get the picture.

Tit-for-tat, the Americans followed the Soviets into space, matching their major accomplishments. Except, notably, when that tit was a woman. Then there would be no tat.

After the Soviet Union launched the first woman cosmonaut in 1963, the United States did not follow suit. Despite the physical suitability of women for spaceflight —and the proven success of one Soviet cosmonaut— NASA didn't launch a woman of its own for twenty years.

Thomas González Roberts is the host and executive producer of **Moonstruck**, *and a space policy researcher at the* **CSIS Aerospace Security Project**.

This is Moonstruck, a podcast about men and women in space. I'm Thomas González Roberts.

The first woman in space was cosmonaut Valentina Tereshkova, a 26-year-old textile worker with a passion for skydiving. With no experience in the Soviet military services, Tereshkova was also the first civilian in space. With almost three days in orbit, she broke the record for the longest spaceflight. That was more flight time than all of the previous American astronauts combined.

When the news hit the United States that the Soviet space agency launched a woman, there was no way for NASA to immediately follow suit. Because in 1963, there were no women in the NASA astronaut corps. No one selected, trained, and ready to follow in the cosmonaut's footsteps.

But that's not to say that women had never been identified, tested, and recommended for spaceflight training. As early as 1959, prominent voices in the air and space community were pushing for women to join the ranks of the astronaut corps. To understand why these early efforts didn't work, we have to go back to the selection of the first American astronauts: the Mercury 7.

NASA Press Conference: *These men, the nation's Project Mercury astronauts, are here after a long and perhaps unprecedented series of evaluations, which told our medical consultants and scientists of their superb adaptability to their coming flight.*[1]

NASA's Space Task Group was very particular when it came to selecting the first seven astronauts. Project Mercury and its grueling training process required hard-working, dependable, and physically fit candidates. The selected astronauts needed to have the blind courage to sit atop a ballistic missile, and the grounding to stay cool in the heat of a crisis.

Aware of the public attention likely to come from selecting America's first astronauts, NASA also wanted them to be likeable and charming. The agency wanted regular Americans to see themselves in the candidates; to connect with the program, and feel pride in its success. The first men in space to flaunt an American flag on their sleeve needed to be the perfect combination of daring, but cautious; exceptional, but relatable. As the late author Tom Wolfe put it in his detailed writing about the Mercury astronauts' selection, they just needed "The Right Stuff."

To streamline the astronaut selection process, President Dwight D. Eisenhower mandated that only military test pilots be considered. NASA's Space Task Group agreed and tacked on a few more qualifications of their own, like specialized flight experience and engineering training. Lastly, the astronauts themselves had to be pretty small because of the tiny space capsules. No applicants over 5' 11'' could be considered.

After all that, it turns out not that many Americans had anywhere near the right stuff to become an astronaut. Only 110 men met the basic requirements. After an initial round of interviews, briefings, and preliminary tests, thirty-six were recommended for physical examinations.

This examination process started at the Lovelace Clinic in Albuquerque, New Mexico, under the watchful eye of Dr. Randy Lovelace, a physician celebrated for his work in aerospace medicine. Dr. Lovelace specially designed a series of rigorous tests to identify the cream of the crop among the candidates, whittling the list down to just seven. On April 9, 1959, NASA called a press conference and announced them to the American public for the first time.

NASA Press Conference: *Malcolm S. Carpenter, Leroy G. Cooper, John H. Glenn, Virgil I. Grissom, Walter M. Schirra, Alan B. Shepard, Donald K. Slayton. These, ladies and gentlemen, are the nation's Mercury astronauts.*[2]

Okay, don't let the monotone fool you. NASA knew the historical weight of this moment—the selection of the first American astronauts—and they didn't miss a chance to make things dramatic.

NASA Press Conference: *Which of these men will be first to orbit the Earth? I cannot tell you. He won't know himself until the day of the flight.*[3]

Dr. Lovelace sat next to the seven astronauts on stage. And we didn't know it at the time, but the doctor was already thinking of who would follow these men into space. Who else could become an astronaut?

Margaret Weitekamp: *He was interested in whether women might be able to pass those same tests. "Could women go into space?" was his basic research question.*

That's Margaret Weitekamp, a curator at the Space History Department at the Smithsonian National Air and Space Museum and the author of "Right Stuff, Wrong Sex," a history of America's first women in space program.

MW: *Being male was baked into the description of being an astronaut in the early 1960s in a way that no one questioned. They were looking for military-trained jet test pilots. There were only men who could do that; only white men who could do that, only largely white, christian men who could do that. And that narrowing was seen as a meritocracy, not exclusionary.*

Nonetheless, in 1959, the same year he sat on stage next to the Mercury 7, Dr. Lovelace invited one of the country's leading female pilots, Jerrie Cobb, to take the same astronaut tests he developed for the male astronauts. She would become the first test subject in the Lovelace Foundation's Woman in Space Program. And when it came to women pilots, Jerrie Cobb was an absolute superstar.

In 1960, Jerrie Cobb quietly passed every examination at the Lovelace Foundation designed to select the Mercury astronauts; performing above and beyond all expectations.[4] With Cobb's success, Dr. Lovelace proved for the first time that women were physically fit for spaceflight.

But he didn't stop there. Over the course of the next year, Dr. Lovelace sent letters to twenty-four more women pilots across the country, inviting them to volunteer for astronaut medical testing.

MW: *So the studies themselves were not—the tests themselves—were not really remarkable. It was mostly the most complete physical that they were capable of doing at the time.*

Doctors squirted ice water into the women's ears to shock their sense of balance, measuring how long it took them to recover. Their reflexes were measured through electric nerve stimulation—the list goes on and on. The tests were so tightly packed within the women's five-day schedule that they were often not given time to take a break or eat a meal.

Besides the addition of gynecological exams, the women experienced precisely the same tests as the male candidates. But the female astronaut hopefuls were not facing the same circumstances as their male counterparts. There were additional sacrifices that I'm sure many working women and mothers can relate to.

While the men selected to become astronauts were indeed brave, and committed to NASA's mission, it was also their job. For the Mercury 7, becoming an astronaut was the next step in their young, bright military careers. The women, on the other hand, were regular civilians, working normal jobs and holding families together across the United States.

The Lovelace Foundation agreed to cover all the associated costs of the women's medical testing, but many of them still jeopardized their jobs by leaving to volunteer themselves for the study. Others had to quit to ensure they'd be able to join the program. In short, these women risked more, for less. Dr. Lovelace's program—a mere glimmer of hope for those who volunteered—made no assurances after the first round of physical testing.

Thirteen women, including Jerrie Cobb, passed Dr. Lovelace's tests. They each received a letter instructing

them to head to the Naval School of Aviation Medicine in Pensacola, Florida, where they'd undergo a more extreme round of evaluations. But five days before they were set to arrive, they received a telegram from Dr. Lovelace's office.

The Pensacola tests were cancelled. Because the Woman in Space Program was not formally requested by NASA—it was a privately funded program—the Navy could not allow women to access the facilities. Flying women into space was not a priority for NASA, a growing agency increasingly focused on landing an American on the Moon.

Despite this premature ending, we did get a small taste of the grit these women had to offer. Three of the thirteen women from the program, including Jerrie Cobb, had gotten a chance to complete a few psychological tests they may have seen in Pensacola. In each case, they excelled.

There was one test I found particularly interesting—the sensory deprivation test—which is designed to generate someone's response to extreme isolation. It was the evaluators' best attempt at replicating the loneliness of solo spaceflight.

To start the test, the volunteer wades into a black tank, filled with water heated to their exact body temperature. Once inside, the test evaluators seal off the tank, blocking all light and sound from entering. It's dark, quiet, and disorienting. The test subject can ask to be removed at any time, deciding for themselves when they've had enough, unlike a real astronaut on a space mission. The longer they can last in the tank, the better the score.

The youngest woman in the program, just twenty-three years old, set a new record for this type of isolation test. She lasted ten hours and thirty-five minutes in the tank—a better performance than all of the male candidates that came before her. She actually never tapped out, but the evaluators eventually called things off themselves. I think she proved her point.

Despite the cancellation of the Lovelace Woman in Space Program, doctors were able to make a pretty compelling argument for why women may be better suited for spaceflight than men:

MW: *And part of it came from the idea that women are on the average lighter and smaller than men are. They require less food, less water, less oxygen. They have higher tolerance for pain. They statistically do better on isolation testing. And there were a lot of concerns about the psychological ramifications of locking a person into a tiny little tin can where they weren't sure the pilot would really be in control of the vehicle so much as being a passenger.*

While in many ways the Lovelace women were the victims of overt sexism, historians acknowledge that it was a pretty big deal that a program like this could exist in the 1960s.

MW: *It's actually the story of a door that's briefly opened to women in a way that's really extraordinary in the history of women in medicine. Women were routinely excluded from medical studies, routinely excluded from pharmaceutical studies because medical researchers worried that women's cyclical bodies would be too unreliable to be counted on as a medical subject. And so for a group of twenty-five women to have access to going out to the Lovelace Foundation and really be evaluated and found to be physically fit and capable—I think is an extraordinary door opening. Albeit short lived and without any follow through, but it's one of the first places where you see medical research taking women seriously as test subjects and perhaps even looking at women's bodies as capable—perhaps more capable than men's bodies.*

Despite the program coming to an end without any women being named to the NASA astronaut corps, Dr. Randy Lovelace should get a lot of credit.

But I also can't let him get away with the squeaky clean description of a feminist leader on the rise. While Dr. Lovelace didn't want to see women replace men in the astronaut corps, he also didn't see them occupying the same role in the program.

MW: *And in some ways what he was thinking about was very much a product of his time. If we're going to have a station that allows us to do reconnaissance and Earth observation and weather and military applications in space it's going to require dozens and dozens of people. And largely that gets supported by women's jobs. Secretaries, telephone operators, laboratory assistants. And so he was really wondering: are there going to be women who can physically withstand what spaceflight is going to require. And a good place to start that testing—as an experiment—was looking at women pilots.*

The absurdity of Dr. Lovelace's vision for a future civilization in space might take a while to sink in. Despite having no trouble looking decades into the future technologically—essentially predicting the development of a much larger space station than the one we have now—he was unable to escape the social and cultural bounds of the world around him.

Years before any man had entered space, Dr. Lovelace imagined women going there, too—just as secretaries, coffee fetchers, someone to wish you good morning with a sweet smile on your way into the office. Lovelace's radical vision of a future human race still featured women working for men.

But of course, outer space doesn't know what makes up the right stuff or the wrong sex; who's a test pilot and who's not. It offers kindness to no one. We build our own world of humans in space. We bring all our problems along with us.

MW: *So Valentina Tereshkova's flight in 1963 was the first woman in space, but did not represent any significant commitment to integrating women into spaceflights and when you look at the vast disparities between men and women historically in who has flown into space the overwhelming maleness of the Soviet and then Russian cosmonaut corps really skews those numbers tremendously. The American numbers don't start to change until the late 1970s, where you have the first six women as a part of that group of thirty-five astronauts selected in 1978.*

After the race to the Moon subsided, NASA's astronaut corps began to change. The class selected in 1978 was the first to fly aboard the Space Shuttle, a new American launch system capable of bringing more people to space, more often. It was also the first cohort with non-pilot astronauts, known as "mission specialists."

Mission specialists were not required to have military or commercial flight experience, opening the doors to more applicants than ever before.

Although all six women eventually flew on the Space Shuttle, the first to do so was Sally Ride, a young physicist.

MW: *So I would say the largest challenge to Sally Ride as the first American woman in space was the scrutiny. She was unprepared for the public relations hubbub that came with it, really honestly did not see why her flying would be any different than the other members of her crew, was pointedly not interested in any different treatment.*

Over twenty years had passed since Tereshkova's launch in 1963, But Sally Ride couldn't escape being treated differently for being a woman.

MW: *So when she landed they had a big bouquet of roses that they intended to give to her, and she said, basically: "unless you have roses for everybody, I'm not walking around holding a big bouquet of roses when I've just landed. I'm just like the rest of my crew."*

But in order to earn her place in history, Ride had to make sacrifices more challenging than turning down a bouquet of roses.

When Sally Ride passed away of pancreatic cancer in 2012, it shocked the space community. She hadn't publicized her illness. But it was her obituary that revealed something even more surprising. Tucked away at the bottom of the article, after a long string of her outstanding achievements, was a tiny window into the astronaut's life, previously unopened: "Dr. Ride is

survived by her partner of twenty-seven years, Tam O'Shaughnessy."

On top of being the first woman in space, Sally Ride—as far as we know—was also the first LGBT astronaut.

Ride spent the last half of her life advocating for women and girls in science, developing elementary school curricula, and writing children's books. But despite working in the public eye, America never really knew all of who this beloved hero was. While we won't know why she chose to keep her life partnership with a woman secret, it's so tempting to speculate.

Being the first American woman in space—whether she liked it or not—meant representing an entire population of people across the United States; people she had never met before who might not look like her, think like her, or love like her. Perhaps keeping her partner secret from the public meant she could look a little more like the "right stuff" candidates selected in 1959.

There have now been over fifty women launched to space, but the astronaut corps still faces diversity challenges, just like most workplaces in the U.S.

Okay, so, as I was researching this episode of Moonstruck and studying the flight records of women astronauts from around the world, I started investigating patterns amongst minority astronauts in the contemporary astronauts corps. One area that drew my attention was African American astronauts' flight records over the past few years.

Only a small number of of the hundreds of Americans to fly to space have been African American—fourteen to be exact. But what I found particularly interesting was that although African Americans are routinely selected and trained to become astronauts, they don't actually seem to fly that often.

In fact, no African American has flown since 2011. That was the last year the U.S. Space Shuttle was in operation. Since then, NASA has had to rely on the Russian Soyuz rocket to get American astronauts to the International Space Station.

Digging a little further, I learned that no African American had ever flown on a Russian rocket system, even before the Soyuz became the United States' only avenue to space. Over the past twenty-three years, NASA has selected American astronauts to fly on the Soyuz launch system more than fifty times. And in all that time, a Black astronaut has never been given a seat.

So I was so excited to hear that last year in January of 2017, NASA announced its plans to change this, selecting Jeanette Epps, an African American woman, to fly aboard a Soyuz rocket.[5] After her launch, Epps would also become the first African American—man or woman—to fly a full-duration mission to the ISS, another important first for NASA, ending a seven year drought for African Americans in space.

Then, seemingly out of nowhere, Epps was pulled from the flight and replaced by another astronaut from her class.[6] NASA didn't say why the decision was made and didn't name another flight for Jeanette Epps. And to be fair, they don't have to—NASA has no obligation to comment on personnel issues. It's also not that uncommon for NASA to ground an astronaut after they've been assigned to a launch. Typically health or training concerns are to blame. So, I didn't expect to get any answers any time soon.

But a few days later, it was reported that Jeanette Epps' older brother posted on Facebook that racism was to blame for his sister's removal, writing: "My sister Dr. Jeanette Epps has been fighting against oppressive racism and misogynist[s] at NASA and now they are holding her back and allowing a Caucasian Astronaut to take her place!"[7]

He removed the post soon thereafter. The brother's comments were explosive, but at the end of the day, unsubstantiated. And I'd be lying if said I didn't immediately think about race when I heard of Epps'

removal, but I knew that there were so many factors that I couldn't possibly know about.

The story didn't stop there. Although she couldn't comment on her brother's remarks, Epps did confirm that she was not removed for health or training reasons.[8] She's still listed on the active astronaut roster and NASA says she's eligible to fly on another mission in the future, meaning she's not disqualified for flight due to health concerns.

And as a back-up crew member for a previous Soyuz launch, Epps had not only completed all of her required training in Russia—becoming the first person of color to be trained for a Soyuz launch—but also received additional specialist training in Germany and Japan. She's one of the most trained mission specialists available at NASA.

So why was she pulled from the launch? Does the Russian space agency have a say in which American astronauts fly aboard the Soyuz?

Okay, I think you can tell, I'm getting in a little too deep, here. I have to stay focused. What started as a history about women in space turned into what feels like me accusing the Russian space agency—and in part, NASA—of racism;.a claim I did not intend to make today. Ready to suck it up and call it quits, I decided to try one more thing: call Jeanette Epps.

Jeanette Epps: *My name is Jeanette Epps and currently I am a NASA astronaut.*

Wow, okay. I really did not expect that to work. Now what?

I found myself nervous and stuttering more than I was used to. I wasn't ready to jump right into the hard questions. I started things a bit slow, asking about diversity issues in the NASA astronaut corps in general, and why it's important that the agency fields more than just white, male candidates.

JE: *I think having a corps that's more representative of the U.S. demographic helps to alleviate to a certain extent some social issues—not seeing people of color. I'm always surprised to find out that people are surprised that I'm an astronaut.*

I can understand that. I'm sure one reason people are surprised is because African American astronauts, and especially African American women astronauts, are so few and far between. Because of that, Jeanette Epps is poised to become the first to do something at every turn.

JE: *And it's so bizarre because you know I never do anything anything to be the first. And a lot of people have been pointing out things that hadn't dawned on me...why am I the first to do this in Baikonur or even in Star City and complete all the training? It's very...it's just an eye opener when you think about it. And it really hadn't dawned on me until getting back from Baikonur and getting back here to the States.*

But she wouldn't have to think about being first much longer. Not long after she returned to the U.S. after training in Russia it was announced she wouldn't be launched this year. It turns out she and her cosmonaut colleagues were surprised to hear the news, like the rest of us.

JE: *I finished everything that was required for the Soyuz launch. So my removal was also a surprise to the Russians as well. Because I had finished everything and you would think that after being at NASA for 8 years at the time...*

And eight years in the NASA astronaut corps is a long time. All of the other astronauts from Epps class have flown to space, or are assigned to an upcoming trip. Some astronauts from the class after Epps have also received their flight assignments.

It broke my heart thinking about the possibility that she was being passed over; slowly skipped over the course of many years.

I've chatted with enough NASA representatives to know that she couldn't disclose any details about unannounced flight assignments, so I asked her if she was still hopeful that she would be assigned a mission sometime soon.

JE: *It's my hope that I fly in the Soyuz because I actually finished all of the work and all of the training for the Soyuz...I really am very hopeful that something can be worked out where I can fly with the Russians and on whatever subsequent vehicle we have.*

I don't know if Jeanette Epps will ever fly aboard the Soyuz rocket. I'm not sure she knows either. And if she doesn't fly aboard the Soyuz, I don't know how long it'll be until another American launch system becomes available. Although NASA plans for another vehicle to launch next year, others speculate it'll be much a much longer wait.

Until then, Epps will stay ready, training at the Johnson Space Center in Houston, Texas, and advocating for diversity in the NASA astronaut corps.

JE: *If we have a more inclusive NASA, it shows that we can live up to the ideals, the idea that we are a fair, socially just, altruistic technical organization. Kind of like Star Trek envisioned years and years ago.*

The international astronaut corps represents just one tiny fraction of all of humankind. Fewer than 600 individuals have ever made it to outer space. We have to work hard to make sure it looks like the rest of us on the ground.

There are too many stories like that of Jeanette Epps or the Lovelace women. Too many times that one part of our world has the privilege to explore life outside of Earth's gravity and another is grounded. We have a long way to go.

Notes

1. “Press Conference Introducing 7 Mercury Astronauts,” NASA, April 9, 1959, https://www.youtube.com/watch?v=FXj5lc_QUOM.
2. Ibid.
3. Ibid.
4. Margaret A. Weitekamp, *Right Stuff, Wrong Sex: America's First Women in Space Program* (Baltimore, MD: Johns Hopkins Univ. Press, 2006), 77.
5. "NASA Assigns Upcoming Space Station Crew Members," NASA, January 4, 2017, https://www.nasa.gov/press-release/nasa-assigns-upcoming-space-station-crew-members.
6. "NASA Announces Updated Crew Assignments for Space Station Missions," NASA, January 18, 2018, https://www.nasa.gov/press-release/nasa-announces-updated-crew-assignments-for-space-station-missions.
7. Sarah Kaplan, "NASA Pulled This Astronaut from a Space Station Crew. Her Brother Blames Racism." The Washington Post, January 22, 2018, https://www.washingtonpost.com/news/speaking-of-science/wp/2018/01/22/nasa-pulled-this-astronaut-from-a-space-station-crew-her-brother-blames-racism/?utm_term=.f70e585f0d95.
8. Ibid.