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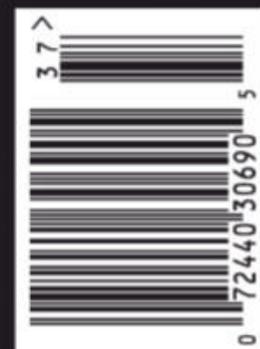
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Blue sky thinking

Entrepreneur **Anousheh Ansari** was the first Muslim woman in space and paid her own way to get there. She tells Chelsea Whyte how the experience shaped her world view



IN 2006, Anousheh Ansari made history in several ways. Joining an international crew of astronauts aboard a Soyuz spacecraft, she became the first Iranian and the first Muslim woman in space, as well as the first self-funded woman to fly to the International Space Station, where she spent nine days conducting science experiments. Prior to blasting off from our planet, Ansari and her family sponsored the first X Prize competition, which offered a \$10 million reward to the first non-governmental organisation to launch a reusable crewed spacecraft into space twice in two weeks.

Ansari is now the CEO of the X Prize Foundation, which offers large sums of money as incentives to find solutions for huge global issues. There have been X Prizes offered for engineering efficient vehicles, cleaning up oil spills, landing a rover on the moon, improving adult literacy and designing sensors to monitor health. Now, the X Prize Foundation is turning towards the biggest threats we face today: the loss of biodiversity due to climate change and the creation of treatments and vaccines for covid-19. *New Scientist* spoke to Ansari about how her experiences in space helped give her the collaborative outlook we need to tackle these challenges together.

ROCIO MONTOVA

Chelsea Whyte: You are best known for being one of the first people to self-fund a trip to space. Were you always interested in space?

Anousheh Ansari: I was fascinated with space and stars. As a young child, when I looked at the night skies, I was just very curious to see what's out there. I always believed there were aliens out there and other worlds, and I wanted to go explore them and visit them.

Do you still go out and look at the night sky? I used some of my limited walks while sheltering in place to look at the stars and say hi to the moon, just to sort of escape what's going on here on Earth.

I love that you said you say hi to the moon, because I do that too. When I was living on the space station for a short, brief moment, I felt at home. When I was growing up, I watched *Star Trek* and all the sci-fi movies. I imagined myself one day being one of those explorers and going to far, far galaxies and meeting new species.

How did you make your dream of going to space happen?

It was a long journey. Normally, you would try to study something that would give you a better chance of getting accepted into the astronaut corps. For me, it was different. I'm an immigrant. I grew up in Iran and came to

the US when I was about 16 years old. I didn't speak English and I didn't think that my chances of getting into NASA were very high. I wasn't even a US citizen, and it was after the 1979 hostage crisis, so the political situation wasn't great.

Not having money, my mom was very practical and encouraged me to think about finding a job that would support us and the family. I chose my second area of interest, which was engineering. I became an electrical engineer and computer science major and built a career, which eventually led me to start my own company with my husband. Building that company gave me the financial capability to find a commercial path to space. Then I became the sponsor of the first ever X Prize, and that was sort of the launching pad.

Why was it important to encourage non-governmental organisations to develop crewed spacecraft?

I think we have about 550 people who have flown to space. Knowing that we have 7 billion people on this planet, that's a very small number – and only about 10 per cent of them are women. So we need to create more opportunities for people to be able to experience space, and we can't just do them through the government space agencies. ➤

Do you think most people would benefit from a trip to space?

Experiencing space is transformational. It's undeniable. When you have this incredible moment of looking at our planet from the vantage point of being in space, it's like a moment of truth. You can really see with your own eyes that we are all inhabitants of one planet. We all have one home and that home is Earth. This notion that we're separate and we're different and we have these borders that we see on maps – it completely washes away.

Also, one thing that becomes apparent very quickly is that you look around and you see the vast darkness of space. The only thing that is beautiful and shining and full of life is our home planet, Earth, right in front of you. You feel this connection to it, even though you are completely separate from it.

Your childhood was marked by political upheaval. Did that heighten the experience of seeing a world without borders?

Coming from the Middle East, I know how much war and conflict plagues the whole region. When you look at just that one area from up there, you can't even see it. It isn't even a pinprick. It's just amazing how much hate and war and negative energy goes into fighting over a small area of land. It just feels senseless. When I was up there, I felt like: "Would people fight over the same things if they were able to see what I'm seeing right now?"

That question always stayed with me. I always tell people that if there were a way we could have the G20 or the United Nations General Assembly held in space, perhaps we would have better global policies.

That's quite an idea.

We would need a bigger space station, but yeah, why not?

Is there anything you don't miss from your trip to space?

The trip is uncomfortable. It took two days. The flight to orbit is short, but it takes days to get into the right orbit and dock. Now it's a bit quicker, but that's probably the only thing I

"The only thing that is beautiful and shining and full of life is our home planet"

would avoid. If I could just be beamed up to space, I would choose that option versus riding a rocket.

That sounds like science fiction, or at least technology that is many, many years down the road. Does looking ahead in that way come naturally to you?

To me, science fiction can easily become science reality. If it doesn't break the laws of physics, it's possible. That's why I came to X Prize, because we try to look into the future and pull that future forward. What I've learned being a tech entrepreneur is that sometimes we underestimate how quickly things can change – just look at what's happening in the world with covid-19 and how quickly people have adapted and changed their behaviour, which is one of the hardest things to change.

We're in a unique point in history where the world has pressed the pause button and we have a chance to think. We're told that things have to change and we can decide how we change them. It's forcing everyone to do things that were hard before, and because of that opportunity, we need to think about what future we want to build.

What is the X Prize Foundation doing specifically to address the challenges of the covid-19 pandemic?

We have a call to action to all the entrepreneurs in the areas where we work,

whether it's environment or energy or education, and they are now working with our pandemic alliance to find solutions to build resilient communities.

We reached out to researchers, scientists, entrepreneurs, companies and non-profit institutions. We now have 194 universities and organisations from around the globe that have joined forces. They meet on a weekly basis to discuss what research is happening right now, whether it's towards treatments or vaccine development. They are also discussing the use of telemedicine, and identifying areas where there is a need to accelerate a technology or a piece is missing. That's where X Prize can help, through launching challenges that try to address those gaps and bring attention to them.

What are these gaps?

Most of them are around data. Right now, everyone is willing to share their data and their research, which has made it possible for us to create a collaboration and see how we can push things forwards together. That means developing treatments or vaccines or tests for early detection, things that will allow us, perhaps, to be safe and go out and be able to live semi-normal lives.

We're also looking at distribution and supply-chain issues. For example, once we have a vaccine, how can we make sure that it can be administered quickly around the globe at an affordable cost?

What other X Prize challenges are coming up?

We have an active prize called the ANA Avatar X Prize. The aim is to allow someone to experience a place from afar, to basically transport all their senses as if they are there. It's a combination of augmented reality, virtual reality, robotics and haptics. So you can feel like you're in a location when you may actually be sitting in your room wearing a suit and gloves and just imagining you're on Mars or the moon or just down the street.

Could I use that technology to remotely hug my mom during the pandemic?

Yes, you could visit your loved one. When

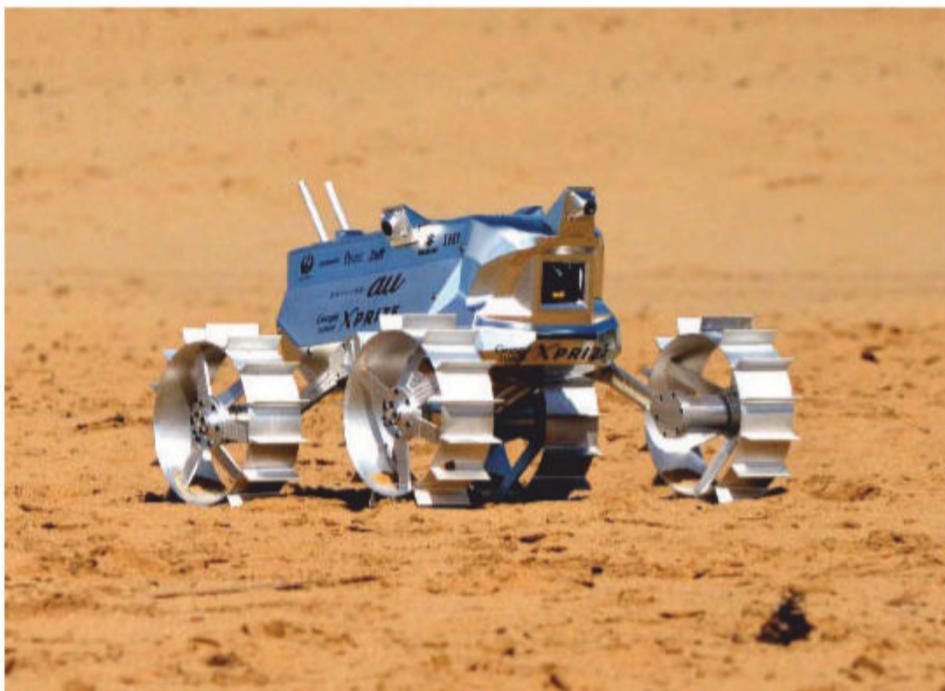
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SHELL OCEAN DISCOVERY XPRIZE



Clockwise from top left: Earth from space; a red-crested turaco in the rainforests of Angola; testing an X-Prize winning device for mapping the ocean floor; a prototype automated lunar rover

we started this a few years ago, we weren't thinking of the pandemic, we were thinking of situations where there may be a disaster and, without endangering someone's life, you can have rescue missions or doctors performing tasks remotely. But in this new world we're living in right now, it may have new uses. I would love to go visit my mom and I can't because she's far away. I may

scare her because the avatars aren't looking so nice right now, but that can be fixed.

Oh no. You will need to add an extra prize to make it look like a person. Is there anything else coming up?

We also announced our rainforest X Prize late last year. Our rainforests are a very important part of our ecosystem, and the biodiversity embedded in the rainforests is an incredible part of our world. It's important that we preserve it. At X Prize, we believe that once you know the value of something, you'll preserve it even more. Through this prize, we're trying to better understand the value of the biodiversity in our rainforests so we will protect it. And as we know, the way we're treating our environment – especially our rainforests and how we're encroaching on them – is actually a root cause of the increasing rate of the pandemics that we have seen.

These days, we are all hyper-focused on the coronavirus pandemic, so keeping your attention on climate change and the loss of biodiversity must be hard right now.

It is difficult, but with the pandemic putting our world on pause, we've seen more of the blue skies and birds singing and our waterways have more biodiversity in them. That demonstrates to anyone who has any doubt that we can change behaviour and reverse some negative impacts. It's obviously a difficult choice. I'm not suggesting that we stay at home to preserve nature, but I think it shows we can find ways to live more harmoniously with our environment. ■



Chelsea Whyte is a *New Scientist* news editor based in Portland, Oregon