Jeff Bezos unveils his sweeping vision for humanity’s future in space

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- Jeff Bezos, owner of Blue Origin, spoke Thursday during an unveiling of his Blue Moon lunar lander.
  Mark Wilson/Getty Images
- During the speech, he showed off a full-scale mock-up of the Blue Moon lander on stage.
- Bezos said the lander could be used to carry humans down to the surface of the Moon.
  Mark Wilson/Getty Images
- The company plans to hotfire the lander’s engine, named BE-7, this summer for the first time.
  Mark Wilson/Getty Images
- Bezos also extolled the virtues of O’Neill cylinders, shown on screen at left.
  Mark Wilson/Getty Images
- Here’s a diagram of the new BE-7 engine.
  Blue Origin

WASHINGTON D.C.—The world’s richest person, Jeff Bezos, unveiled his sweeping vision for humanity on Thursday afternoon in a Washington D.C. ballroom. With the lights dimmed, Bezos spoke on stage for an hour, outlining plans for his rocket company, Blue Origin, and how it will pave the way to space for future generations.

We have seen bits and pieces of Bezos' vision to use the resources of space to save Earth and make it a garden for humans before. But this is the first time he has he stitched it together in such a comprehensive and radical narrative, starting with reusable rockets and ending with gargantuan, cylindrical habitats in space where millions of people could live. This was the moment when Bezos finally pulled back the curtain, in totality, to reveal his true ambitions for spaceflight. This is where he would like to see future generations one day live.

His speech felt akin to the talk SpaceX founder Elon Musk delivered at an international space conference in 2016. Mexico City is where Musk first unveiled a design for a super-large rocket and starship, as well as his plans for millions of humans to live on Mars and make a vibrant world there.

The grandiosity of Bezos and Musk's visions are similar, and both billionaires believe the first step must involve sharply reducing the cost of access to space. This is why both SpaceX and Blue Origin have, as their core businesses, large reusable rockets.

But their visions also differ dramatically. Musk wants to turn Mars green and vibrant to make humanity a multi-planet species and provide a backup plan in case of calamity on Earth. Bezos wants to preserve Earth at all costs. "There is no Plan B," the founder of Amazon said Thursday.

First, the news

As part of his speech, Bezos revealed new details about a large lunar lander, called "Blue Moon," capable of delivering up to 3.6 tons of cargo and scientific experiments to the lunar surface. Blue Origin has spent three years working on the vehicle, he said.

The company also has a brand-new engine, not previously known,

named BE-7 that has 10,000 pounds of thrust. It will power the Blue Moon vehicle during its descent to the lunar surface. The company will perform its first hotfire test of the BE-7 engine this summer in West Texas, Bezos said.

[embedded content]
Introducing Blue Moon.
Near the end of his speech, Bezos praised the goal set by Vice President Mike Pence of landing humans on the Moon by 2024. “I love this,” Bezos said. “It’s the right thing to do. We can help meet that timeline but only because we started three years ago. It’s time to go back to the Moon—this time to stay.”

In a configuration with “stretch tanks,” Bezos said Blue Moon could carry up to 6.5 tons to the lunar surface, and this would be large enough for a crewed ascent vehicle. This aligns with NASA’s vision for a multi-stage lunar lander that involves both a descent vehicle and then a different spacecraft for humans—the ascent vehicle—that will launch back from the surface of the Moon and return the crew to low lunar orbit. Blue Origin will bid on the descent vehicle portion of NASA’s lunar lander contract.


Enlarge / A Blue Moon lander with an ascent vehicle (built by another company) on top.
Blue Origin
Bezos, who is self-funding Blue Origin at a rate of approximately $1 billion a year, did not say whether he would fund the development of Blue Moon without NASA contracts for cargo delivery to the lunar surface or the descent module contract for the crew lander.

O’Neill cylinders

Throughout his speech, Bezos displayed his enthusiasm for this topic. He was five years old when he watched the Apollo 11

lunar landing. Spaceflight, and the possibilities it offers for humanity, have fascinated him ever since. “You don’t choose your passions—your passions choose you,” he said Thursday.

During the first part of his talk, Bezos spoke about the world’s looming energy crunch. Human energy use grows at a rate of 3 percent a year, he said, and this figure factors in increasing efficiency in computing, transportation, and other sectors. Today, all of humanity’s energy needs could be met by a solar farm covering an area the size of Nevada. In a couple of centuries, a solar farm to meet our needs would cover the entire planet.

At some point, unless humans expand into the Solar System, this growing energy demand will meet with finite resources and energy rationing. “That’s the path that we would be on, and that path would lead for the first time to your grandchildren having worse lives than you,” he said.

- An artist’s rendering of a manufactured environments that could exist in space in the future.
  Blue Origin
- The design was inspired by Gerard O’Neill, a professor Bezos met when he was a student at Princeton University.
  Blue Origin
- Bezos said they could have natural environments or cities within.
  Blue Origin
- Up to 1 million people could live in each habitat.
  Blue Origin
- Bezos views this as a more viable outcome for human growth than other worlds such as Mars.
  Blue Origin

Other worlds in the Solar System lack Earth’s atmosphere and gravity. At most, they could support perhaps a few billion

people, Bezos said. The answer is not other planets or moons, he said, but rather artificial worlds or colonies in space known as O'Neill cylinders.

These are named for their creator, Gerard O'Neill, who was a professor at Princeton University where Bezos attended college in the early 1980s. In his book *The High Frontier,* O'Neill popularized the idea of free-floating, cylindrical space colonies that could have access to ample solar energy. Bezos was hooked then and became president of the campus chapter of Students for the Exploration and Development of Space.

And he is still hooked today, imagining up to 1 million humans living in each cylinder built from asteroid materials and other space resources. Each environment would be climate controlled, with cities, farms, mountains, or beaches. "This is Maui on its best day all year long," Bezos said. "No rain. No earthquakes. People are going to want to live here." And when they need to, they could easily fly back to Earth.

Brave and bold

This is a far-flung future, certainly. Bezos said the challenge for this generation is to build the "road" to space that could, one day, lead to in-space activity that creates such a future.

He cited two "gates" holding back human development of space. One is low-cost access to space, and he noted that his company has already built the reusable New Shepard launch system and will fly the much larger New Glenn rocket into space in 2021.

The second limiting factor is that, to thrive, human activity must rely on resources in space, water from the Moon, metals from asteroids, and energy from the Sun. To this end, Blue Origin has been working on the Blue Moon lander to deliver small rovers and other scientific packages to the Moon. The rovers would suss out information about water ice on the Moon

and how it might be harvested for use as rocket fuel. (Conveniently, the Blue Moon lander will use liquid hydrogen).

Bezos said he believes that—if this generation builds the infrastructure needed to enable humans to get into space and develop an economy there—future generations will pick up the ball and run. “People are so creative once they’re unleashed,” Bezos said.

It was brave and bold of Bezos to put his entire vision for humanity’s aspirations out there all at once. Like with Musk in 2016, it opens him up to criticism for being too dreamy about outer space or not caring about the immediate problems here on Earth. But the reality is that, while Earth has plenty of problems today, humanity faces existential concerns in the decades and centuries to come. It is good to think about these problems and plant the seeds for solutions that may one day solve them.

It is all the better when the dreamer proposing them has enough money to get the ball rolling.

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