

“WE ARE ALL IN SPACE”

If you happen to be reading this in the distant future, then you probably already know what it's like to go to space. But when this Bathroom Reader was written in the early 21st century, only about 600 humans—out of the billions who ever lived—had gotten the opportunity to leave Earth's atmosphere. And all of those early spacefarers came back...different.

*Here's a look at what space travel does to a person's outlook...
and what a lot more of it could do for our planet.*

THE OVERVIEW EFFECT

Do you remember the first time you gazed out of an airplane window? No picture or movie could have prepared you for the actual experience of witnessing the trees, roads, and buildings shrink beneath you. Whether you realized it or not, your worldview was expanded that day. Now imagine what it would be like to look out of a spaceship window and see your entire planet.

In the 1970s, a self-described “space philosopher” named Frank White was on an airplane staring out his window, thinking about this very thing, when he came up with the concept that led to his 1987 book *The Overview Effect: Space Exploration and Human Evolution*. After interviewing 29 space travelers, White describes the Overview Effect as a sense of euphoria that leads to a “cosmic connection” shared by everyone who has seen the Earth from space. It doesn't matter whether they're astronauts, cosmonauts, taikonauts (Chinese astronauts), or space tourists, or what country they're from. “They have the feeling that the Earth itself is a whole system,” White says, “and we're just a part of it.”

Aside from simply being fascinating, the implications of this are profound. White and many others have suggested that if a lot more people got to experience the Overview Effect, we could finally achieve world peace. “How would everything change if we began to think of ourselves as a seven billion member team, a crew on a spacecraft?” There are plans underway—from White and others in the growing “space citizenship” movement—for that vision to become a reality. (More on those plans later.) In the meantime, if you want to know what it's really like to travel in space or walk on the Moon, there's no one more qualified to describe it than those who have already been there.

YURI'S VIEW

The Space Age officially began in 1957 when the USSR launched the unmanned *Sputnik 1* satellite. The first *human* spaceflight, which took place four years later,



A road in Calgary, Alberta, is called “Vaseline Alley” because empty jars of petroleum jelly keep showing up there. (Nobody knows why.)

was as much for bragging rights as anything else—at least for the countries vying for technological supremacy during the Cold War. All Yuri Gagarin wanted to do was fly, and the 27-year-old test pilot beat out 200 other applicants to become the Soviet Union’s first cosmonaut. Four days after his historic flight on April 12, 1961—in which he completed one Earth orbit in a little less than two hours and became a national hero—Gagarin said in a speech at the Kremlin, “I completed this flight in the name of our Fatherland, in the name of the great Soviet people, and the communist party of the Soviet Union.”

At least that’s what he said in front of Soviet leader Nikita Khrushchev. When Gagarin gave a magazine interview only two months later, he had a much more worldly view, saying our planet is “blue, without boundaries, all countries unite.” He died during a test flight two years later.

He gave humanity its first eyewitness description of what our planet looks like from orbit.

In 2013, Gagarin’s daughter Elena Gagarina said she could remember from her childhood how much her father “desperately wanted to fly in space again. He’d enjoyed that first flight, but it was over so quickly!” That illustrates another aspect of experiencing the Overview Effect: You can’t shake it.

Gagarin’s historic mission did more than just prove, once and for all, that a person can indeed survive a spaceflight (there were doubts)—he gave humanity its first eyewitness description of what our planet looks like from orbit:

“What beauty...The clouds which cover the Earth’s surface are very visible, and their shadow on the Earth can be seen distinctly. The color of the sky is completely black. The stars on this black background seem to be somewhat brighter and clearer. The Earth is surrounded by a characteristic blue halo... particularly visible at the horizon. From a light-blue coloring, the sky blends into a beautiful deep blue, then dark blue, violet, and finally complete black.”

MORE OVERVIEWPOINTS

The Overview Effect has had a similar effect on just about everyone who has traveled to space, but each in their own unique way. Here’s what these spacefarers had to say about their out-of-this-world experiences, along with a few details about what made them tick.

SPACEFARER: Nicole Stott, NASA astronaut

OVERVIEW EFFECT: “You really realize very quickly that we, and our planet, are small. We’re not that far away from each other. We all share the same ‘planet in space.’ When you take the time to think about it, that ‘we’re all in space’ part is pretty compelling.”

The American flag Neil Armstrong left on the Moon was knocked over by rocket exhaust when he blasted off to return to Earth.

DETAILS: In the first half-century of spaceflight, it wasn't too difficult to be the first to do something. For example, in 2011, Stott became the first painter in space to use watercolors. (That painting is now in the Smithsonian.) Known as the "Artistic Astronaut" during her 27 years with NASA, Stott flew twice on the space shuttle *Discovery* to the International Space Station (ISS). "Going to space gave me the opportunity to separate from our planet," she said, "but in doing so it allowed me to feel more connected to it than I ever had on its surface...I carry that with me all the time now."

SPACEFARER: Neil Armstrong, NASA astronaut

OVERVIEW EFFECT: *"I remember on the trip home on Apollo 11 it suddenly struck me that that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth. I didn't feel like a giant. I felt very, very small."*

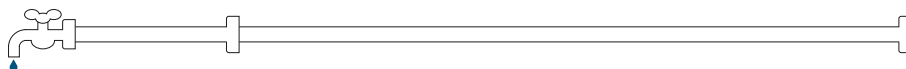
DETAILS: That was on Armstrong's trip home in July 1969, after he became the first person to set foot on the Moon. Although he trained as a test pilot, Armstrong was an aeronautical engineer by trade, and a self-proclaimed "space nerd" at heart. Though he seldom gave interviews, he did say in 1970 that he fully expected a permanently manned Moon base by the year 2000.

Decades later, as it became evident that politics were getting in the way of space exploration, Armstrong testified before the U.S. House of Representatives' Science and Technology Committee in 2010: "Some question why Americans should return to the Moon. 'After all,' they say, 'we have already been there.' I find that mystifying. It would be as if 16th-century monarchs proclaimed that 'we need not go to the New World, we have already been there.' Or as if President Thomas Jefferson announced in 1803 that Americans 'need not go west of the Mississippi, the Lewis and Clark expedition has already been there.' Americans have visited and examined six locations on Luna, varying in size from a suburban lot to a small township. That leaves more than 14 million square miles yet to explore."

SPACEFARER: Valentina Tereshkova, Russian cosmonaut

OVERVIEW EFFECT: *"Once you've been in space, you appreciate how small and fragile the Earth is."*

DETAILS: Unlike American astronauts, who until the late 1970s were required to be fighter pilots, the only qualification for a Russian cosmonaut was to be a parachutist. That opened the door for women to apply. Tereshkova beat out more than 400 other applicants, and on June 16, 1963, she became the first woman in space, orbiting Earth 48 times over three days (without a toothbrush). Twenty-six years old at the time, she still holds the record as the youngest woman in space, and she's the only woman to go up there by herself. Tereshkova went on to attain the rank of major



The Bloody Mary drink was originally called the Bucket of Blood.

general in the Soviet Union, another first-and-only for a woman.

SPACEFARER: Sally Ride, NASA astronaut

OVERVIEW EFFECT: *“The view of Earth is absolutely spectacular, and the feeling of looking back and seeing your planet as a planet is just an amazing feeling. It’s a totally different perspective, and it makes you appreciate, actually, how fragile our existence is.”*

DETAILS: When NASA made the switch from command modules to space shuttles, scientists could finally be astronauts. Ride, a physicist, was one of six women accepted in the first group, and was later selected for a 1983 *Challenger* mission. Admitting that she “felt a special responsibility to be the first American woman in space,” Ride’s historic flight took place nearly 20 years to the day after Valentina Tereshkova’s. “I’m sure it was the most fun that I’ll ever have in my life,” Ride said afterward. She got to fly to space one more time, in 1987, before retiring from NASA and returning to academia. But she said a part of her would always remain on that orbiter.

SPACEFARER: William Anders, NASA astronaut

OVERVIEW EFFECT: *“We came all this way to explore the Moon, and the most important thing is that we discovered the Earth.”*

DETAILS: Before NASA put men on the Moon, they flew men around it. On Christmas Eve in 1968, *Apollo 8* astronaut William Anders was completing a Moon orbit when he saw a glowing blue orb rise into view beyond the cratered Lunar surface, and decided to photograph it. “Oh my God!” he said. “Look at that picture over there! There’s the Earth coming up. Wow, that’s pretty.”

“Hey, don’t take that,” joked crewmate Frank Borman. “It’s not scheduled.”

Anders laughed and asked Commander Jim Lovell, “You got a color film, Jim? Hand me that roll of color quick, would you...”

Lovell replied, “Oh man, that’s great!”

Then Anders snapped what is arguably the most important photograph ever made. Called *Earthrise*, it marked the first time that the people of Earth were able to see their home planet as a small dot in space. According to *National Geographic*, “That photo...is often credited with helping to launch the environmental movement.”

SPACEFARER: Mae Jemison, NASA astronaut

OVERVIEW EFFECT: *“Once I got into space, I was feeling very comfortable in the universe. I felt like I had a right to be anywhere in this universe, that I belonged here as much as any speck of stardust, any comet, any planet.”*

DETAILS: Jemison, a former Peace Corps doctor, became the first African American woman in space as mission specialist on a 1992 *Endeavour* flight. A huge *Star Trek* fan, Jemison began each shift by informing Mission Control, “Hailing frequencies open.”

After her historic flight, she asked (begged) to be on an episode of *Star Trek: The Next Generation*, and was given the bit part of Lieutenant Palmer, a transporter room operator. She's also one of a handful of people alive to have been inducted into both the National Women's Hall of Fame and the International Space Hall of Fame. Today, Jemison is actively working to make the utopian future laid out in *Star Trek* a reality. She serves as principal of 100 Year Starship (a joint venture of NASA and the Defense Advanced Research Projects Agency). Launched in 2011, the project's mission is "to make the capability of human travel beyond our solar system a reality within the next 100 years."

SPACEFARER: Gennady Padalka, Russian cosmonaut

OVERVIEW EFFECT: *"Climate change, ecological problems, I don't consider them to be the main problems for the Earth. The bigger problem is people conflicting with each other...But if you take astronauts and cosmonauts, we work together in a very restricted space together, Americans and Russians and Canadians and Japanese. We speak a common language. We understand each other. Why can't the same approach be applied to Earth?"*

DETAILS: That quote comes from a 2019 *National Geographic* interview, in which Padalka described how spending more time in space than any other human in

"This is probably my best discovery, that the people of different nations, from different countries, under very severe conditions, can work very successfully, can be friendly all the time, understand each other, though their situations are sometimes really stressful."

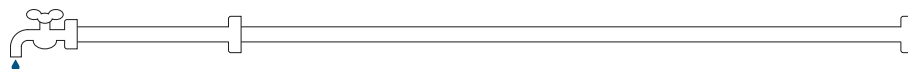
history—879 days and counting—has affected him. He was surprisingly down to Earth, so to speak, starting off the interview by stating that he's "not philosophical." But then he got philosophical, especially when asked if he cares more about the planet after seeing it from far away: "This is probably my best discovery, that the people of different nations, from different countries, under very severe conditions, can work very successfully, can be friendly all the time, understand each other, though their situations are sometimes really stressful.

But there's something wrong in the fact that only such difficulties as I've just mentioned unite people. This is wrong. There should be something else."

SPACEFARER: Liu Yang, Chinese taikonaut

OVERVIEW EFFECT: *"Though I had been prepared, I was deeply astonished. I could hardly describe how beautiful and miraculous the Earth is. The beauty of our planet is quite beyond words. I couldn't help shouting: 'Look, the Earth is round, indeed'...I felt like a free fish swimming in the ocean of space."*

DETAILS: In 2012, the crew of *Shenzhou 9* ("Divine Vessel 9") docked with China's



Coral live underwater, but they can still drown.

first space station, *Tiangong-1* (“Celestial Palace 1”). Onboard the school bus-sized station was 33-year-old Liu, the first Chinese woman to go into space. Even though the ISS was also in orbit, there was no rendezvous. “I think we all sensed being in space with other astronauts in orbit,” she later said in a press conference. Liu expressed pride on behalf of the Chinese government but added that the future of space travel will require international cooperation. “The Chinese have the saying, ‘When all the people collect the wood, you will make a great fire.’”

SPACEFARER: Alexei Leonov, Russian cosmonaut

OVERVIEW EFFECT: *“The Earth was small, light blue, and so touchingly alone, our home that must be defended like a holy relic. The Earth was absolutely round. I believe I never knew what the word ‘round’ meant until I saw Earth from space.”*

DETAILS: If you want to see what effect being the first human to perform an EVA (extravehicular activity—an activity performed outside the spacecraft) had on Alexei Leonov, go online and look at his paintings. They’re brightly colored earthscapes and spacescapes, along with detailed depictions of his historic space walk. On the March 1965 mission aboard *Voskhod 2*, Leonov brought along paper and a set of colored pencils. Though he could barely move in his bulky space suit, he became the first person to draw a picture in space. It was, fittingly, a sunrise—which, in Russian, is *voskhod*.

Artwork aside, Leonov’s historic space walk nearly killed him. It was all going well—“I felt like a seagull with its wings outstretched, soaring high above the Earth”—until it was time to go back in. By that point, his space suit had become so pressurized that he couldn’t use his hands to open the outside airlock. He actually had to let some of the oxygen out...in space. And then there was a malfunction on reentry that dropped him and his copilot 600 miles off course. They spent two cold days in the mountains before being rescued. But Leonov came home a national hero, and he continued painting until he died in 2019 at the age of 85.

SPACEFARER: Peggy Whitson, NASA astronaut

OVERVIEW EFFECT: *“You see billions and billions of stars and recognize that you know some of those have planets, too, and maybe there’s life out there, and this is just one of billions of galaxies...and so it gives you this huge perspective of how far we potentially have to go for real exploration.”*

DETAILS: Here’s a slightly less profound Peggy Whitson quote: “Gravity sucks.” She should know, having spent a record 665 days in orbit (cumulative)—the most, not only for a woman, but for any American. Whitson, who made her third flight at 57, is also the oldest woman to have gone to space. She said that coming back was always the hardest part. “It’s a big challenge just readapting to feeling heavy again, you know?”

The last sword duel in France, between two members of parliament, was fought in 1967.

Even my arm feels heavy. My legs feel heavy.” Whitson hopes that one day, everyone will get the chance to experience the sensation of weightlessness. “Zero gravity is such an alien environment—completely different from everything we’ve grown up with every single day of our lives. And it’s incomprehensible how much better it was than I anticipated it would be.”

SPACEFARER: Kalpana Chawla, NASA astronaut

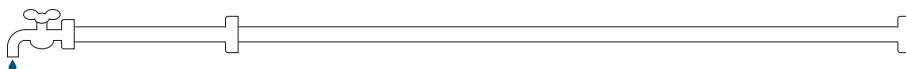
OVERVIEW EFFECT: *“One day I was in the flight deck looking from the overhead windows outside. It was starting to get dim outside, so you start to see your own reflection...I could then see my reflection in the window, and in the retina of my eye the whole Earth and the sky could be seen reflected.”*

DETAILS: Chawla, the first woman of Indian descent to go to space, had that experience on her second *Columbia* mission...which was also to be her last. There were 135 STS (Space Transportation System) missions during NASA’s 30-year space shuttle program. All but two were successful. On January 28, 1986, the *Challenger* mission STS-51-L ended 73 seconds after launch when the shuttle’s external fuel tank exploded, destroying the shuttle. And on February 1, 2003, the *Columbia*—with Chawla aboard—disintegrated as it reentered the Earth’s atmosphere. The shuttle’s left wing had been damaged during launch. That exposed the wing’s internal structure and, in the extreme heat of reentry, caused the wing to fail and the shuttle to break apart. The two accidents claimed the lives of all 14 crew members.

EPILOGUE

As Sally Ride once said, “I’ve discovered that half the people would love to go into space and there’s no need to explain it to them. The other half can’t understand and I couldn’t explain it to them.” But if you do want to take your own star trek, there might yet be hope. In July 2019, two astro-advocacy groups—the Space for Humanity and the Overview Institute—teamed up to announce a challenge to send 10,000 “citizen astronauts” into space over the next decade. (The organizers said they’re in talks with private aerospace companies to create a low-cost space tourist transport system.) If you think you have the right stuff, they’re accepting applications. The only two requirements are that you can speak English and that you’re 18 years or older. If accepted, your mission is simple: Go to space, look out the window and experience the Overview Effect, and then come back and tell people about it.

But be warned: One flight won’t be enough for you. In the words of the fourth person in space, Russian cosmonaut Gherman Titov, who orbited planet Earth 17 times in August 1961, “It’s a pity I flew only once. A spaceflight is like a drug—once you experience it, you can’t think of anything else.”



Creme Puff, the oldest cat on record, lived on a diet of cat food “supplemented by bacon, eggs, turkey,...