

ROCKET MAN

Ever wondered what it's like to travel to SPACE? Editor-in-chief Michael McHugh meets FORMER ASTRONAUT Brian Duffy at NASA.

INTERVIEW MICHAEL MCHUGH PHOTOGRAPHY RICHARD KRALL

You're lying horizontally, shaken by excitement and fear, when the engines start rumbling against your shoulder blades. Then that calming voice takes over the radio: "Three ... two ... one ...". Before you can complete your prayer, the boosters light up; the bolts holding the shuttle to the launch pad explode; and you feel the extreme force of gravity press against your chest, lift you up from your seat and hurl your vehicle into the air.

"During the first two minutes, you're just along for the ride," says Brian Duffy, retired commander of the National Aeronautics and Space Administration (NASA). "The boosters are burning and there are about [2.3 million kilograms] of thrust." By minute two, at about 40 kilometres above the Earth's surface, you're already travelling at four times the speed of sound. Six-and-a-half minutes after that, the shuttle is hitting 28,000 kilometres per hour. Finally, the external fuel tank blasts away and you're on your way to space.

At the Space Center Houston, Duffy, 62, is sitting in an enormous upstairs meeting room that's plastered with memorabilia from historic missions, trying to translate the feelings and sensations that only an astronaut could possibly understand. Our spacey MINDFOOD STYLE photoshoot (see page 162) may have traversed the Moon and beyond, but we were all left wondering what it's *really* like to travel in space. Duffy enlightens us.

"You feel very detached from the rest of the world," he says. "Your only connection with [Earthlings] is the radio. One astronaut who did a long-duration space flight described it as 'the astronaut's paradox': you have the best view of this beautiful planet, but you can experience none of it. You can't smell the grass after it's been cut; you can't feel the wind. All you have is the noise of the fans humming in your spaceship."

In 1961, the "Space Race" saw Russian astronaut Yuri Gagarin claim the title of first human in space. Less than a month after Gagarin's 108-minute orbit of Earth, NASA astronaut Alan Shepard set off on Project Mercury, becoming the first American in space. Duffy was eight years old when he watched the *Freedom 7*, the Project Mercury space capsule, launch on television. While he never imagined becoming a future Alan Shepard himself, he was intrigued by space flight and followed NASA's progress, including the moment Neil Armstrong made that "one small step for a man, one giant leap for mankind" in 1969, staking an American flag on the surface of the Moon.

Subsequent missions have united Americans and Russians in space; tested the possibilities of zero-gravity living; introduced and pushed the technology of space shuttles; and built the International Space Station, which has opened vast new frontiers for scientific research. "It's this fabulous laboratory that's operating in 'micro-gravity', which is essentially weightlessness," Duffy explains of the space station's importance. "So you can make things happen that you can't do on the ground because of gravity."

Duffy, who served as an astronaut from 1986 to 2001, logged four space flights during his tenure. He and his crew studied the atmosphere and its interactions with the sun, retrieved and tested equipment, prepared the International Space Station for its first resident crew and undertook spacewalks. Missions also involved orbiting Earth, which, shockingly, takes a mere hour and a half to complete, Duffy says.

"It takes longer to drive across Houston in rush hour than it does to go around the entire planet in orbit," he says, laughing. "But you look down at [Earth] and you don't see borders. You don't see wars. You don't see disease. You just see this beautiful place we all share. And you have this feeling of oneness with all of humanity, because we're all in this little place together."

While Duffy admits it only takes one person to cut him off in that Houston traffic to forget these revelations, they always come back; his NASA career has expanded his worldview from the local to the universal. And NASA is aiming to open the minds of non-astronauts as well. The agency has been busy building the crewed space capsule *Orion*, designed to send humans beyond lower Earth orbit, past the Moon and, hopefully, to Mars, where it just discovered liquid water. The test flight has already taken place, and the evaluation of the space launch system (SLS) will occur at the end of 2018. If all goes well, humans could reach beyond Earth's orbit as soon as 2021. "It'll be a huge step in re-energising deep space exploration," Duffy says.

Duffy's most colourful memories involve busting back through the atmosphere on return trips home. No matter how many successful landings you have under your belt, he says, the world is watching you manoeuvre a vehicle you've never flown before. If that's not enough pressure, there are also physiological challenges associated with readapting to gravity. Your body only has 30 minutes to adjust, so you drink three litres of water and pop salt tablets (to retain water) while you brace yourself for the eye-watering descent.

But all those concerns vanish when you cut through the atmosphere at night, Duffy says. The shuttle's speed knocks electrons off atoms, creating charged gasses that swirl and form waves in front of the spacecraft. The gasses start as a haze of grey before turning into a yellow-orange sheet that envelops the vehicle.

"I looked down at the nose cap, which is this black carbon material, and it was carnation pink," Duffy recalls of his very first re-entry. "My eyes got so big, and then I noticed there were little burning embers flying by my window."

Luckily, the embers were harmless and Duffy made it home that night, just as he did three more times after that. In total, he spent 40 days, 17 hours, 34 minutes and 59 seconds in space. When asked about the biggest impact of these experiences, Duffy beams with pride.

"You do feel like you're helping all mankind," he says. "You know it's [in] a small way, but you're contributing to human knowledge and human advancement." And it never stops feeling like a dream. "You look back in amazement," Duffy says. "Like, 'Wow, was that really something.'"

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RETIRE ASTRONAUT BRIAN DUFFY



SPACE COWBOY
Retired NASA commander Brian Duffy feels right at home in a space shuttle at Space Center Houston.

ADDITIONAL WORDS: SERENA RENNER