



*View from the edge of Space. Photo courtesy of Space Adventures.*

# The new space race

For the majority of us, the thought of taking a trip into space is still well and truly science fiction. However, if you have the money available, a visit to the final frontier is absolutely possible. Helen Jameson explores how what was once science fiction is now rapidly becoming science fact.

**Ever since man could dream he looked** to the stars and the planets for inspiration. Even before the US put man on the moon, the concept of space travel and actual space colonisation was reflected in literature, art, through comics and even cartoons. The ability of man to travel into space has always been at the forefront of the human mind. Now, it seems that we are not so far away from living that dream.

In 1969, when Neil Armstrong became the first man to set foot on the moon, the space race came to an end. That is until now, where we are seeing a space race of a new kind. We are witnessing the emergence of private companies offering space travel as an experience to civilians. The concept of space travel is no longer available only to astronauts.

### **The first space tourists**

It could be argued that the first space tourists were those people who worked for companies or institutions and took part in space missions as they had an interest in a particular 'payload'. They were not trained as astronauts but were part of the space mission due to their particular interest and expert knowledge. NASA coined the term 'space participants' to describe them. Christa McAuliffe was chosen

as one of these participants through the NASA's 'Teacher in Space' programme but her tragic death in the Challenger disaster meant that a follow-up 'Journalist in Space' programme and all further commercial ventures were shelved.

In 1991, the UK chemist Helen Sharman was the successful applicant of a competition, the prize of which was to visit the Russian MIR space station. She was selected from 13,000 applicants who responded to a radio advertisement looking for the lucky individual who would be the first Briton in space. Project Juno, as it was called, was an arrangement between a group of British companies and the Soviet Union.

The first person who ever actually paid to go into space was Dennis Tito, a Californian businessman who reportedly paid Space Adventures, a commercial space flight company, US\$20 million to spend ten days at the International Space Station. He travelled there in the Russian Soyuz rocket that launched from Kazakhstan. So far, five civilians have flown, and spent time on, the International Space Station. Space Adventures, the only company to achieve orbital and suborbital space tourism, will announce the next space tourist's identity in the next few weeks.

There are several main companies that are working to realise



the concept of space tourism. Space Adventures have, so far, been the most successful. In April this year, Charles Simonyi became the latest person to travel to and spend time at the International Space Station.

However, Space Adventures are not the only company exploring the potential of space tourism.

At present the only vehicle that may be used for transportation to the International Space Station is the Soyuz rocket but the concept of getting the people up into space is being worked on and has seen some success. A competition named the X-Prize was launched in 1996 by Peter Diamandis who had a vision of space opened up to the masses. The aim of the X-Prize competition was to find the first spacecraft that could reach suborbital space twice in 14 days. Burt Rutan eventually won the prize. An aircraft engineer himself, he developed 'Spaceship One' which was carried by an aeroplane up into space. He developed the use of twin tails that folded at a 90 degree angle and slowed the craft down on re-entry into the earth's atmosphere, therefore slowing it down sufficiently for a safe landing. This was the first commercial manned craft in space. Recently, Richard Branson has teamed up with Rutan to introduce a new commercial space venture called Virgin Galactic. To date, over 7,000 potential space tourists have shown interest in a seat at US\$200,000 a go. The craft has not yet even been finished.

There are various ways of experiencing space and its effects without making a trip to the International Space Station. The cosmologist and scientist Stephen Hawking very recently took advantage of Peter Diamandis' latest venture, the Zero-G Corporation. Hawking took part in a brief training session that was followed by a 90-minute flight aboard G-Force One, during which eight parabolic manoeuvres were performed. Parabolas, or arcs, are the controlled ascent and descent of the specially modified 35 passenger Boeing 727-200 which allows passengers to experience gravity on Mars (1/3 gravity), the moon (1/6 gravity) and in zero-g space. Since launching its service to the general public in September 2004, the company has conducted more than 100 weightlessness flights and has flown more than 2,500 passengers.

### Who will fly?

Futron Corporation and Zogby produced a report on the space tourism market. They found that by 2021 it is possible that 15,000 people will be flying into space annually on suborbital and orbital flights bringing revenues of US\$700 million. The study, which was conducted in the United States, found the following profiles of those people who would take orbital and suborbital flights:

#### Orbital customers:

- Average Age: 53
- Gender: 89 percent male, 11 percent female
- Fitness: 60 percent have average fitness or better
- Vacations: 37 percent spend 1 month or more on vacation annually
- Employment: 57 percent full time, 14 percent retired

#### Suborbital customers:

- Average Age: 55
- Gender: 72 percent men, 28 percent female
- Fitness: 46 percent have average fitness or better
- Vacations: 48 percent spend 1 month or more on vacation annually
- Employment: 41 percent full time, 23 percent retired

The report found that the wish to travel into space was prompted by a desire to experience something unique and challenging – to be a pioneer. What better way to impress your friends? 54 percent of those participants asked about suborbital spaceflight said that they



*Where will people stay once they get into space? Motel Tycoon Robert Bigelow acquired plans from NASA's abandoned 'Transhab' project and has already launched a spacecraft, 'Genesis' in 2006, that is able to enter space and increase its size and volume. Hotels in space? It could be possible. Photo courtesy of NASA.*

would be prepared to pay between US\$100,000 and US\$250,000 for a seat. The desire to see earth from space was also a major reason given for people's interest. For some, spaceflight was a life-long dream, for others it held no interest. Reasons not to travel included expense and the fact that it could be too dangerous.

### Bed & breakfast in space?

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In 1999, SpaceHab (a US-based Company) and RSC Energia, announced completion of a baseline design for the 'Enterprise' commercial space station. The project was endorsed by the Russian Space Agency, Rosaviakosmos. The project involved the development, construction and operation of the space station as part of the International Space Station Russian Segment. SpaceHab and RSC Energia were actively seeking customers and investors for marketing and business opportunities. Enterprise would become a replacement for the Russian Docking and Stowage Module (DSM) and would provide all off its functions and also additional capabilities including a docking port for logistics vehicles, propellant fuel supply via transit fuel lines and roll control thrusters, whilst also pursuing other commercial objectives. It would be developed to meet research, stowage, crew support, habitation and multimedia needs.

In 2000, Boeing and the Khrunichev State Research and Production Centre announced plans to commercialise the FGB-2 backup of the International Space Station's Zaraya module. The idea was that this commercial space module would attach to the International Space Station and would be utilised to deliver propellant and other cargo and would also provide crew quarters, multimedia, scientific and communications equipment and waste management capabilities. Boeing eventually lost confidence in the project due to a lack of market opportunities..

In 2001, MirCorps and Rosaviakosmos agreed to develop, launch



and operate the 'Mini Station-1'. This station would support a range of commercial activities and would combine taxi flights to the International Space Station. The station would accommodate three visitors for 20 days at a time and would have a lifespan of 15 years. The Mini Station 1 was scheduled to launch in 2004.

So we can see that up until today, the viability of placing a 'space hotel', a commercial space station into orbit has been unsuccessful but there are a number of companies and agencies that remain optimistic and dedicated to making it happen.

The Space Tourism Society, based in the USA, is doing just that. Their mission statement is 'to conduct research, build public desire, and acquire the financial and political power to make space tourism available to as many people as possible, as soon as possible'. The organisation was founded in 1996. Its overall vision is to introduce new industries to the concept of space tourism. Industries such as travel and tourism, the financial community, the cruise ship and resort sector and the entertainment industry are all seen as potential investors in the exploitation of space. To the organisation and their members, this is the next logical step for private enterprise to pursue towards the goal of expanding humankind in space.

They consider the suborbital and orbital spaceflights and earth-based space experiences to be key in introducing industry and customers to the potential held by space tourism. They have a worldwide membership and boast a board of Directors comprising key figures such as Buzz Aldrin, Peter Diamandis and Robert Bigelow – all space pioneers in their own right.

### Exploitation?

The question is, once we have achieved what we are promised to eventually achieve, where will it end? If we do develop the right vehicles and technology to get us to the moon on a regular basis, will we stop there?

It appears that plans are already being hatched that could see humankind actually mining the moon. For years, scientists have been trying to re-create what happens on the sun to create energy – nuclear fusion. Nuclear fusion is a clean source of energy that would potentially replace nuclear power as we know it and end the requirement for fossil fuels. However, they have discovered that the process damages the chamber in which the reaction happens. Scientist Jerry Kulcinski is trying to make the process less destructive and his research has led him to a substance called Helium-3. Helium-3 is very rare on the earth and is only available through de-commissioned nuclear weapons. However, it is plentiful on the moon. Helium-3 is a gas that is ejected from the sun. The earth's atmosphere reflects this gas away from earth but the moon does not have an atmosphere so the soil absorbs helium-3.

The former Apollo astronaut, Harrison Schmitt, is a great believer in mining the moon and extracting the helium-3. It cannot be denied that helium-3 would solve the earth's energy problems. Just one metric tonne of helium-3 equals 1/6 of the energy needs of Great Britain. Perhaps space tourism will be a step towards setting up the communities that would make this happen for real.

### Dream or delusion?

So will our grandchildren and great grandchildren be flicking through holiday brochures in years to come and booking a week away to the moon? It seems unlikely. However, they may be able to experience space in a form whether on an orbital or suborbital spaceflight or even a flight that enables them to experience zero gravity. After all, looking back to the dawn of air travel, it was an experience only for the rich yet nowadays we can fly to faraway destinations faster than it can take us to drive into some of our nearby major cities. If the correct developments are made in terms of space travel surely the same model would apply. The concept of space tourism may not be as far-fetched as we think. With technological developments, new vehicles to transport us, and the drive and determination of those who yearn to make it a reality, why should it remain a dream? ●

### Space Adventures' client, Charles Simonyi, returned to Earth after completing longest duration private spaceflight.

Space Adventures, Ltd., the world's leading space experiences company, announced that Charles Simonyi, Ph.D., successfully landed in the Kazakhstan steppes after a 14-day visit to the International Space Station (ISS). Dr. Simonyi returned to Earth aboard Soyuz TMA-9 with Expedition 14 crew members Michael Lopez-Alegria and Mikhail Tyurin, who both spent seven-months aboard the ISS.

"Seeing the space station for the first time from inside the Soyuz was such an unforgettable experience. Seeing the Earth from space, so beautiful, majestic and calm, has filled me with great optimism," said Dr. Simonyi. "I think it is written into our DNA to explore. Space exploration is so important to humanity, that to have been able to participate in it, even in a very small way, was such a privilege."

"We, at Space Adventures, applaud Charles, not only for pursuing his lifelong dream of space travel, but for taking his own personal step toward opening up the space frontier for all of us. Charles is an inspiration and it has been a pleasure and an honour to help make his goal of spaceflight a reality," said Eric Anderson, President and CEO of Space Adventures.

On April 7, Dr. Simonyi launched aboard Soyuz TMA-10 from the Baikonur Cosmodrome in Kazakhstan. He joined Expedition 15 commander Fyodor Yurchikhin and flight engineer Oleg Kotov for the flight. They arrived at the space station on April 9 and were greeted by the Expedition 14 crew.

In preparation for his spaceflight with Space Adventures, Dr. Simonyi completed a training program at the Yuri Gagarin Cosmonaut Training Center located in Star City, Russia. During his 11-day stay aboard the ISS, Dr. Simonyi assisted several international space agencies by conducting experiments, communicated with hundreds of high school students via HAM radio signal in cooperation with Amateur Radio on the ISS (ARISS) and celebrated Cosmonautics Day by presenting a gourmet meal to the space station crew.

Dr. Simonyi has been chronicling the details of his mission, from training to landing, on his Web site, [www.charlesinspace.com](http://www.charlesinspace.com), with photos, video, audio, in-depth blogs, answers to questions posed by visitors to the site, and much more. Now back on solid ground, Dr. Simonyi will continue to share his experiences on his site, expanding upon the accounts of his time aboard the ISS, and providing insights into his landing and return to Earth. Additionally, children can continue to visit the site's "Kids' Space" and earn an official "Charles in Space Certificate of Achievement."

Dr. Simonyi's mission to the ISS is the latest destination in a life defined by exploration and discovery. Born in Budapest, Charles Simonyi earned his Bachelor of Science degree in engineering and mathematics from the University of California at Berkeley and a doctorate in computer science from Stanford University. From 1972 to 1980, Dr. Simonyi worked at Xerox Corporation's Palo Alto Research Center (PARC). He left PARC to join Microsoft Corporation, where Dr. Simonyi held the titles of Director of Application Development, Chief Architect and Distinguished Engineer.

In August of 2002, Dr. Simonyi left Microsoft and founded Intentional Software Corporation, a software engineering company focused on improving the way organizations write software. He then founded the Charles Simonyi Fund for Arts and Sciences in 2003 to support arts organizations, science programs and educational institutions.