

# Watch this space

With Virgin Galactic's trip into space (at \$200,000) set to take off in 2013, Jonathan Margolis looks at the state of travel's final frontier: the risks, the competition, and the payoff for first ascendants

[Jonathan Margolis](#) • November 10 2011



Virgin Galactic's VSS Enterprise gliding above the Mojave desert during a test flight. | Image: Mark Greenberg

Just think of the unlikely things that have become so commonplace today, we barely give them a thought: poster-sized 3-D TVs in high-street stores; personal video communicator devices in everyone's pocket; the former Soviet Union becoming capitalist; hundreds of people a week taking joyrides in space.

OK, that last one, the most unlikely of all, hasn't actually happened yet. Virgin Galactic's leisure spacecraft, christened the VSS (for Virgin SpaceShip) *Enterprise* by Arnold Schwarzenegger in 2009, was supposed to have begun commercial services in 2007, but still hasn't quite flown into space. It most probably will, though, and in 2013 or thereabouts, all systems should be go for the *Enterprise* to take up six passengers three times a day for a two-hour, \$200,000 space experience; eventually Virgin hopes to have a fleet of five craft.

Virgin Galactic's flights will, of course, stop making the news after a day or two. The TV crews will leave the Foster+Partners-designed Spaceport America in New Mexico when the last of the celebrities, thought-leaders and high rollers who stumped up the full fare as long as seven years ago have flown, gushed and gone home. Galactic's close to 500 paid-up early passengers are a diverse group, including Philippe Starck, actress Victoria Principal, Stephen Hawking, the environmentalist James Lovelock, *X-Men* director Bryan Singer, singer and dancer Sarah Brightman, property developers Nick and Christian Candy, and Sir Richard Branson's elderly mother and his children. None will be short of a fine soundbite or several when they land.



Virgin Galactic's Spaceport in New Mexico.

Branson's reputation, of course, will have soared even higher than his spacecraft. Branson is already his country's most popular entrepreneur, and the success of Virgin Galactic will be one of the greatest achievements of any British person – and any British company – in history. The extent to which he will be fêted cannot be exaggerated. Landing 12 men on the moon took 400,000 Americans a decade to achieve. For a British company which in living memory was a cut-price record shop to achieve viable tourist space trips within such a short time frame is beyond extraordinary.

But soon, the travellers' tales will have been told, the videos from on board will have been uploaded a thousand times to YouTube, and we will all have met someone who has been up into space. Knowing how weary and sensation-hardened the wealthy can be, it is likely that some will be underwhelmed – or pretend to be so that they can appear cool, just as they did with Concorde.

The lunar astronaut Buzz Aldrin, who played a major part in inspiring Branson to take Virgin into space when they met at a bar in Marrakech in 1996, was himself a little downbeat about the space experience when he saw the prototype Virgin spaceship on a test flight last June: "You see the sky turn dark blue and then black," Aldrin told reporters. "Then the engine cuts out and you start floating around." OK. (An astronaut with far more time in space, six-times Shuttle pilot Story Musgrave, says, on the other hand, he can't wait to get up again, so the chances are that most Galactic passengers will find it pretty mind-blowing.)

The paradox is that a routine-isation of space flight would be almost a best case for Virgin. For the only thing that would guarantee the return of the news crews and resurgent public interest would be the terrible prospect of Something Going Wrong. The Apollo 13 scenario, you might say, but swifter and possibly fatal.

It seems spoilsport-ish and pernicky to drizzle, or even forecast a shower, on Branson's parade, or on the excitement of the more than 90,000 people who have signed up as potential Galactic passengers, but a little light raining is possibly in order. The safety and commercial viability of the enterprise have lacked sober examination in an enthusiastic media – even though all the potential downsides have certainly been examined exhaustively within Virgin.

The inherent danger of space flight is the biggest elephant in the room, and at first sight, it looks like a charging elephant. One in 64 Space Shuttle flights has ended in disaster, and of around 520 humans who have been into space, 18 have died on mission, plus at least 11 astronauts in training exercises. So depending on how you calculate, space exploration to date has carried a mortality rate of between two per cent and five per cent. If this were the case in civil aviation, there would be tens of thousands of deaths every day.



The VSS Enterprise in flight with its "mothership". | Image: Mark Greenberg

Now this dire picture does need putting into perspective. All space flight pre-Virgin Galactic has been based on the crudest of engineering models – the placing of human beings atop an enormous bomb, in effect. Musgrave has described the concept of Nasa's Shuttle as inherently unsafe – "A butterfly bolted onto a bullet". However, Virgin Galactic's model of a launch into space from a "mothership" aircraft at 50,000ft, with the spacecraft using fuel derived from two benign ingredients – laughing gas and recycled rubber – and an ingenious new re-entry method, would seem to eliminate most of the danger.

There's another key point. Take away from the death statistics the 14 astronauts who died in two Shuttle disasters and the Soviet-era fatalities, and the figures become far less grim from Galactic's perspective.

Virgin is highly risk-averse for a business better known for risk-taking. Virgin Atlantic set out to be "safer than Qantas", and its fatality-free safety

record ranks it alongside bigger and more experienced airlines. Many on the Galactic team nonetheless do acknowledge some risk factor. However logical the case for the safety of Galactic may be, Sod's law dictates that new technologies can suffer unforeseen problems. The legendary aeronautical engineer Burt Rutan, creator of the Virgin craft, says: "This is designed to be at least as safe as the early airliners in the 1920s. But don't believe anyone who tells you that the safety will be the same as a modern airliner, which has been around for 70 years." Branson's friend and one-time right-hand man, Will Whitehorn, one of the co-founding fathers of the project, has similarly said: "We need to make this safer than driving a car. I don't think we can get it quite to being as safe as flying a jumbo jet because that would take a very long time."



Greg Olsen in a Soyuz space craft | Image: Space Adventures

These are perhaps sobering words, which beg a question: when their flight date comes close, how many who booked flights are going to have second thoughts? How many company heads who want to go will be

stopped by their board of directors? Whitehorn, who has since moved on to chair the Loewy design group and sit on Stagecoach's board, but still consults for Galactic and is on one of the early flights, has noted that each time the launch date is pushed back, customers seem to be "almost relieved" that the *début* isn't being rushed.

It's not hard to understand why this should be. The majority of customers are men in their 40s and 50s – men like Branson and Whitehorn, who were moon-landing-struck teenagers, and hence have an enthusiasm for space that pre-dates the more sceptical younger generation's take on the subject. People from this group also have money to spend, tend to be free of young children and are, dare one say it, more sanguine about mortal danger than younger people with dependants might be. At the same time, middle-aged men are not exactly keen to embrace death. So being gung-ho about having booked on Galactic but not having to climb on board just yet suits them – if not Branson and Whitehorn – fine.

The Candy brothers, on the other hand, can't wait to go. The older brother, Nick, who is 38, has bought three early-flyer tickets, one for himself, the others a wedding present for his younger brother and his wife.



SpaceX rocket. | Image: Boeing image

“They’re not going to put up the first spacecraft carrying civilian astronauts without being absolutely certain it’s safe,” he argues. “Richard and his mum and kids are all going up together first – talk about leading by example.” Nick Candy concedes, though, that to kill off both Candys

together in an accident, however improbable that might be, would not be great for business: "We probably won't all fly together, for family reasons," he says. "And I do think there might be issues if you were on the board of a big company where you're a director and have responsibilities; I can imagine you might be asked to think twice."

One of the other rarely discussed obstacles in Galactic's path – although Whitehorn brought it up unprompted in interview – is that the project could be grounded before or after it launches not by its own disaster, but courtesy of someone else's. Although there's no question that Galactic will be the first private jaunt into space, probably by many years, there are a lot of competitors jockeying for position in what some think will be a \$700m space tourism industry by 2020 – and any one could screw things up for the rest by flying before they are ready and having an accident. It may be that the competitors for this "second space age" have the same concern about Galactic, too.

Many of the challengers are ultra professional. In December 2010, SpaceX, established by PayPal's co-founder Elon Musk, became the first private company to successfully launch, orbit and recover a spacecraft. Its cargo was a large wheel of Brouère cheese – Musk's tribute to his beloved *Monty Python* cheese-shop sketch. Then there's California-based Xcor, developing a two-seater rocket plane to get into suborbital space. And Armadillo Aerospace, started by the computer-game developer behind Doom, John Carmack, has developed reusable rockets that will take scientific payloads soon, and, it's hoped, humans later. Jeff Bezos, founder and CEO of Amazon, has a project called Blue Origin with a grant and a contract from Nasa totalling \$25.7m, a spaceport in Texas and the goal of putting up a manned flight in the near future. Also, the mighty Boeing has announced that two of its employees will crew the first manned mission of its astronaut capsule, the CST-100, by 2015.



Artist's impression of the XCor craft | Image: Mike Masee/XCOR Aerospace

Russia, too, has a stake in the market. As early as 1990, Branson discussed with President Gorbachev the possibility of going up on a Soyuz for \$4.5m but decided that it was too risky. Later, an American company called Space Adventures put seven customers into orbit aboard the International Space Station, using Soyuz rockets, between 2001 and 2009 for multimillion-dollar fees. Guy Laliberté, the Canadian Cirque du Soleil founder, was the last, paying a reported \$35m for his two weeks in space. Space Adventures, which has partnered with Armadillo Aerospace, will soon have a fresh offer for 10-day trips to the International Space Station. It is also selling a 17-day moon-orbiting junket for \$150m a ticket – *Avatar* director James Cameron is said to be interested – plus more “affordable” orbital flights in co-operation with Boeing, from 2015.

Other commercial operators are arguably a little eccentric, but by no means to the point of lunacy. A Barcelona-based company, Zero2infinity, founded by a former aeronautical engineer, José Mariano López-Urdiales,

has attracted VC funding and achieved test flights to near space with a 129m-diameter helium balloon – called Bloon – which will, possibly by 2013, carry passengers to 36km altitude in a luxurious 4.2m pod with panoramic windows and, possibly, a private cabin. (“Listen to your MP3s. Have dinner,” reads the brochure. “Sip your favourite drink. Or join the mile-high club. It’s your choice.”) Tickets are already bookable at €110,000.

Other wannabe Virgin Galactics are what might kindly be termed overoptimistic; one British team has been stringing along a credulous media for more than 20 years with regular grandiose announcements that it will launch people into space within a few years. It’s a fair bet that it won’t.

Such is the momentum behind space tourism, then, that it is more likely than not to become a routine part of life within a very few years.

Antarctica was once the craziest frontier. Many died exploring it. Now it’s an adventure-tourism favourite. Scuba diving was, in the 1950s, an expensive and dangerous innovation seen to have no commercial future; there are now more than 30m scuba divers. And railways were a thrill-seeker’s novelty long before they were perceived to have any practical value.

The extrapolation from that must be that space tourism will lead to cheaper and safer commercial space travel, which could lead to there being a variety of ways of travelling to the planets and beyond. One day, humankind may need such transport to find a new home. Which is why, if the world’s smartest minds agree on one thing, it’s that space exploration must not be neglected.

So Virgin Galactic and its competitors turning out to be a damp squib or a disaster might please a few of the more regressive environmentalists and those who feel that it is no more than a rich person’s plaything. The road to the launch day will still, plainly, be a rocky one. And it’s conceivable that things could go badly askew. But failure would do no one any good, while applauding and supporting the Galactic project will be hugely beneficial

for Britain's image across the world – and ultimately for the future of humankind.

“Richard deserves total support,” says Nick Candy. “He pushes the boundaries in every direction, whether it’s in the sky or the sea. It’s mind-blowing that a private British company is putting people into space ahead of the Americans. It would have been unthinkable not long ago. Hats off to him.”