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SPACE TOURISM: A VACATION TO MARS OR A SCIENCE FICTION

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Abstract

When Gagarin made his first space flight, no one could have imagined that would be turn space tourism vacation. New tourism horizons were opened when space travel for the first time took place at the beginning of the millennium. Since the story of Jules Verne "From the Earth to the Moon", a trip to space with the purpose of tourism has become a fact in a century. Space is always a curiosity. There is a growing interest in humankind from day to day traveling to extra-terrestrial areas. In the next 50 years' space tourism will become a type of tourism that everyone can easily join. Space tourism is explained as the participation of non-professional people to the space flight with the amount of fee. As yet Space studies have been made with military purposes. After the end of cold war space studies have been made for a contribution to community's culture and economic development. This study provides a brief overview of the space tourism possibilities and its future.

Keywords: Space Tourism, Tourism, Orbital

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1. INTRODUCTION

To see the unseen and know the unknown has been the genesis and heritage of human aspiration from early times, resulting in human migration and travel over centuries (Abeyratne, 2011). In 2001, the world's first space tourist, American Dennis Tito, travelled on a Russian Soyuz rocket to the International Space Station, this aspiration took to space.

The second space tourist was South African Mark Shuttleworth, and the third one was Greg Olsen, in 2005, and then in 2007 and 2009 was Charles Simonyi took a trip to space. As businessmen, they could afford the $20-35 million (about half what NASA currently pays Russia for its own astronauts). International recording artist, Sarah Brightman, is slated to be the first female space tourist in 2015. In view of the astronomical cost of their trips, counting these space travellers as "tourists" may be a stretch (Cole, 2015: 132). As of November 6th, 2013, a total of 536 people from 38 countries have flown in space and only a handful of these flew commercial. In fact, since 2001, just seven leisure travellers have purchased eight orbital flights (one passenger flew twice) for up to US$35 million per (Seedhouse 2014b: 19).

Space tourism, which has emerged as a result of seeing different and undiscovered places of post-modern tourists, is defined as a visit from a general person to a space station or space station created for leisure, education and entertainment in the world orbit for a certain price (İstanbullu Dinçer et al., 2018: 82). Despite the fact that the studies of travel to space correspond to the middle of the 20th century, the expectation of the public about space travel is based on the beginning of the 21st century. The most important reason for this is the cold war that has continued throughout the last century in the world. Because of the cold war, countries have spent their energy and resources instead of commercial space missions to protect their country's interests. Investments in commercial space travel have been going on since the 1960s, and nowadays space travel is being done and perhaps people may spend part of their vacation in the moon-settled halls. Space tourism involves participation in transatlantic or orbital travel for a certain fee for tourism, recreation, and sport, participation in research, recreation, accommodation in space halls (Barrett, 2008).

2. SPACE TOURISM

Space tourism is a term broadly applied to the concept of travel beyond Earth's atmosphere by paying customers. It can be defined to include not only the vehicles that take public passengers into space, but also from the perspective of the "destination" paradigm (Abeyratne, 2011).

Webber (2013) explains the future of space tourism on four main areas. Sub-orbital, Orbital, Point to point and Lunar. Seedhouse (2014a) suggests some type of space tourism adventure possibilities such as a lunar flyby, a hike across the lunar surface, a week's vacation on board an orbital colony and climbing Olympus Mons, the Solar System's highest mountain. Crouch explains the form of space tourism in four main

activities. Terrestrial space tourism enables the public to experience "space" without leaving the Earth's surface. For example, tourists to space museums can view the artefacts of humankind's exploration and history in space. Some limited physical and psychological features of the space experience may also be achieved through virtual reality, high-altitude jet fighter flights, and zero-gravity flights. Zero-gravity flights enable passengers to experience periods of weightlessness during the peaks of parabolic flight in much the same method used to train astronauts to adapt to zero-gravity conditions. Suborbital space tourism, the goal of Virgin Galactic, involves short flights just beyond the officially recognized beginning of space (100 km altitude). Tourists would experience zero gravity for a short time before beginning a controlled descent to Earth. But at approximately 10 times the height above the Earth's surface than commercial passenger flights, suborbital space tourists will experience the blackness of space and the curvature of the Earth's surface. In terms of energy and the cost required, suborbital space tourism requires considerably lower velocities compared to that required to launch a spacecraft into orbit around the Earth. Therefore, orbital space tourism is a much more difficult and expensive challenge. Yet, there are wealthy individuals who have the capacity and motivation to experience higher and longer periods in space. Ultimately, visionaries and entrepreneurs are working to eventually construct orbiting hotels (Crouch, 2016: 888). Space tourism is the term broadly applied to the concept of paying customers traveling beyond Earth's atmosphere. Space tourism can be defined to include not only the vehicles that take public passengers into space but also from the perspective of the "destination" paradigm. As such, the industry can be envisioned to include not only earth-based attractions that simulate the space experience such as space theme parks, space training camps, virtual reality facilities, multimedia interactive games and tele robotic moon rovers controlled from Earth, but also parabolic flights, vertical suborbital flights, orbital flights lasting up to 3 days, or week-long stays at a floating space hotel, including participatory educational, research and entertainment experiences as well as space sports competitions (Abeyratne, 2011).

As such, the industry can be envisioned to include earth-based attractions that simulate the space experience such as space theme parks, space training camps, virtual reality facilities, multi-media interactive games, and tele robotic moon rovers controlled from earth. Also included are parabolic flight, vertical suborbital flights, orbital flights lasting up to 3 days, or week-long stays at a floating space hotel, including participatory educational, research and entertainment experiences as well as space sports competitions (i.e., space Olympics).

Table 1. Stage of Space Tourism

Stage	Description	0-g duration	Flight duration	Price	Realized
1	Natural attractions and others	none	none	$0–$2000	yes
2	Terrestrial tour	none	none	$20–$8500	yes
3	Parabolic flight	½ min.	few hours	$4000	yes
4	High-altitude flight	none	few hours	$32,000	yes
5	Suborbital flight	5 min.	½–3 hours	($200,000)	no
6	Orbital flight	1 day	1 day	($300,000)	no
7	Orbital flight plus stay (ISS,..)	10 days	10 days	$20 M	yes
8	Moon flight	weeks	weeks	($100 M)	no
9	Mars flight	months	months	(billions)	no
10	Titan flight and beyond	years	years	(billions)	no

Source: Goehlich R.A. (2007)

Table 1 shows the time and money costs of space tourism phases. As seen in Table 1, the activities from natural attraction to high altitude flights look affordable for the ordinary tourist. But the activities from suborbital flights to titan flight and beyond are still dreamed for many tourists.

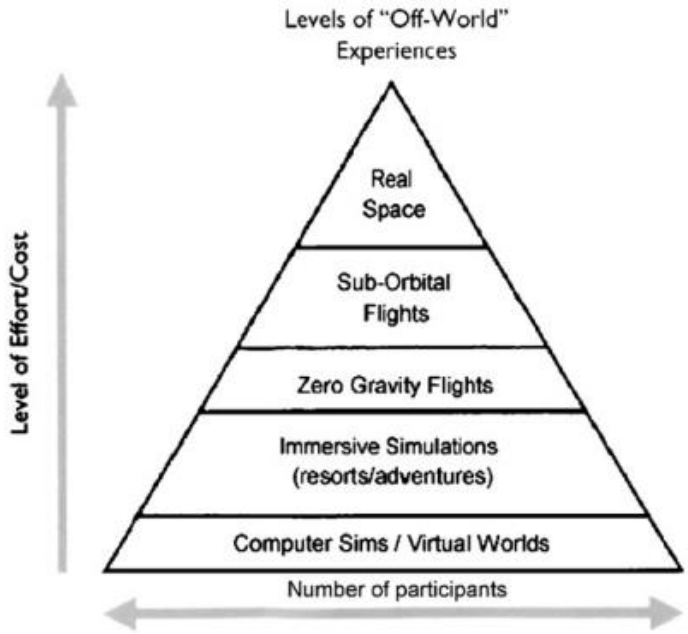

Figure 1. Life Span of Space Tourism
Source: Pizam (2008)

As seen in Figure 1, the space tourism experience consists of five levels. the lowest level of stage computer simulations and virtual worlds. This phase has the lowest cost

and the highest number of participants. In the second place are simulation tools close to reality. Thanks to these tools, space-saving environments and individual conditions of space can be provided. The third stage of sorting involves flights in zero gravity environments. Zero gravitational environments are created by means of created flight vehicles, and gravity-free environments are created. Six orbital flights that allow the world to see from the distance are 100 km from the world. Flights to far away. The ultimate level of extra-terrestrial experience is real space experience. In this phase, it includes the flight of orbits and the passing of orbital days. As you can see, the cost increases and the number of participants decreases as you go up to the upper levels.

The most challenging task for a successful establishment of a mass space tourism market is to link the gap between today's conditions and conceived future demands concerning technical, economic and political aspects. In the current situation, only a few manned missions are performed annually; they are very costly and must be planned years in advance Goehlich (2007: 224).

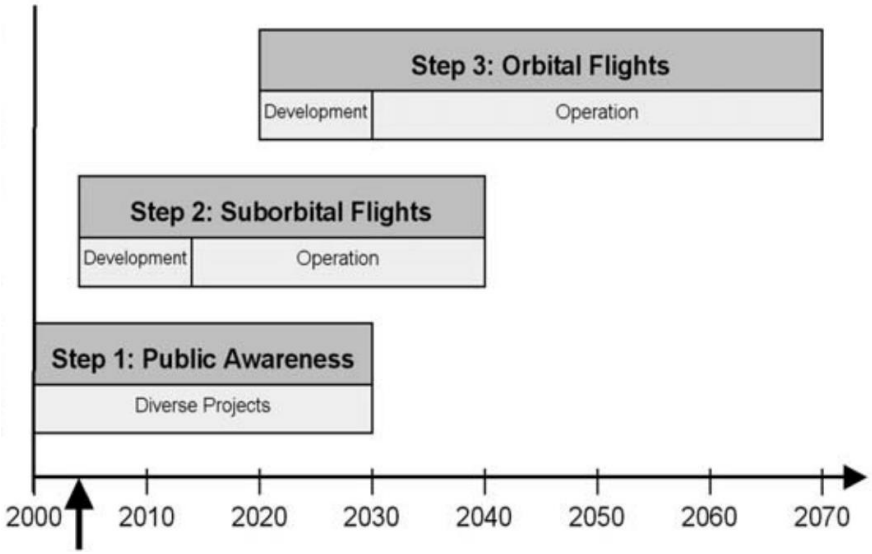

Figure 2. Proposed life-cycle scenario for mass space tourism
Sources: Goehlich R.A. (2007)

3. SPACE TOURISM A SCIENCE FICTION?

"Space tourism" denotes any commercial activity that offers customers direct or indirect experience with space travel. Such activities have many different designs, ranging from long-term stays in orbital facilities to short-term orbital or suborbital flights, and even parabolic flights in an aircraft exposing passengers to short periods of weightlessness. (Hobe, 2007).

After 66 years, the Wright brothers developed into the moon in 1903, and man-made their first flight to Boeing and Concorde. The most significant impact of the aircraft produced has been seen in the travel and tourism industries. A century after the Wright brothers and sisters, they began to talk about humanity, space tourism, and traveling in the distance. In the late 1960s film 2001: A Space Odyssey, Stanley Kubrick, and Sir

Arthur C. Clarke envisaged a future 2001 in which mankind would be traveling in orbit around the Earth in reusable vehicles resembling futuristic passenger aircraft flying passengers and crew in a zero-G environment (Crouch, 2001: 213). Traveling to outer space should become possible for everyone by the beginning of the next century. Developing low-cost passenger launch vehicles is not just to create an expensive pastime for the wealthy but develop a large 'middle-class' market rich (Cole, 2015: 136). Space tourism emerged in a conjunction between the long-lasting human desire to fly in space and 'reach for the stars', and the cutting-edge modern space technology, driven by military and political aims. But as science and technology helped to realize an ancient dream, they also pointed at the limitations facing space travel, which might limit human expansion in space to the solar system, and put into question humanity's ability to traverse the vast distances to other stars or galaxies in the future. Human space tourism, at present limited to the vicinity of the Earth, might expand to the Moon and to other planets, especially Mars, in the future, but will in all probability fall short of the aspiration to reach the stars. Indeed, until access to space is cheap, it will not be possible to make use of the limitless resources available in space to solve the problems of our ever-more-crowded Earth. And here it is argued that tourism can generate the large-scale launch activity needed to reduce costs sufficiently to start to use space resources. Hence, this is "one of the most important projects in the world today." Collins (2014) projects that, by 2100, there could be annually 30 million sub-orbitals, 40 million orbitals, and 10 million lunar surface travellers (Cole, 2015: 136).

Cohen (2017) identifies four principal paradoxes inherent in the efforts to develop space tourism (Cohen, 2017: 22):

1. the limitations on human cosmic expansion.

2. the subversion of adventure in space tourism.

3. the banalisation of the sublimity of the experience of space tourism.

4. the deflowering of the pristinely of other celestial bodies by space tourism.

Klemm and Markkanen (2011) discuss a trip to space can be a type of tourism due to its cost and its preparations. The exclusivity and uniqueness of a space adventure: only six people to date have taken a trip to the ISS, paying between $20 million and $30 million for a duration of one to two weeks. A space trip is the most expensive 'holiday' in the world. The activities during a space trip are closer related to those of an astronaut rather than those of a tourist - hence, the term 'space mission' is used frequently when referring to public flights to the ISS. The development and evolution of space tourism will be subject to several forces and constraints (Peters, 2000). Technology and the costs of it will significantly impact competition and determine the most efficient and competitive forms of space flight for commercial purposes. The viability of a market for space tourism will also require health and medical criteria and physical training requirements which can be met by at least a sizeable segment of the general public. Legal

and regulatory requirements will significantly constrain and govern the nature and potential for commercial space tourism.

At this time, the US Federal Aviation Administration has responsibility for ensuring the control and safety of the new industry. Various international treaties covering jurisdiction, liabilities, insurance, and rights and responsibilities will also play an important role in shaping the nature of space tourism. In Space Law, there is no such being as a "person" in outer space. There are only astronauts and personnel. It must be noted that the first "space tourist" Denis Tito was called a space tourist for purposes of public reference by the media. He was called a "guest cosmonaut" by the Russians and an amateur astronaut by the Americans (Abeyratne, 2011: 43).

4. CONCLUSION

Space tourism was a dream for mankind for a long time, this dream became a real phenomenon when American Investor Tito paid 20 million $ to Russian Space Agency for a journey to orbit.

The concept of space tourism is used by the public to buy tickets for going in and out. For many people, this idea is perceived for the future and beyond. Space tourism is a dream for some people and a realistic goal for some people. When first space tourist Tito traversed in 2001 with a 20 million-dollar ticket, the number of people who believed that travel could be increased.

With technologic developments and big investments, space tourism will be captured trips to the hotel in a lunar system and orbit after fifty years. Commercial-purpose space travel, now a science fiction film, will be an activity that can be reached by anyone, perhaps for necessity, or for tourism purposes within fifty years.

Even though space tourism is among the alternative tourism types, it will become an activity that can be done by some amount of people after about fifty years when it is a kind of tourism that rich people will attract in line with the existing technologies and facilities. Demand studies for space tourism have increased investment in commercial space travel. Studies in Japan and North America, in particular, have shown how people are willing to participate in space tourism.

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