RESEARCH ESSAY

Fashion in Space: A Driver for Space Popularization and Commercialization

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ABSTRACT

Fashion in space is a new phenomenon that has just come about as a result of the start of commercial human space flight. Space wear of government astronauts has been strictly practical based on safety and reliability even space casual wear on board has been just simple catalog ones, but now is the very age of space tourism. The general public can go to space to have an once-in-a-lifetime space experience. Naturally, these people will want to wear their “Sunday Best” or their favorite or unique designer garment that both enhances the space flight experience and expresses their personal enthusiasm. Fashion charms the general public and could make a huge market in addition to the original space market. Space development could become more fun using fashion power, so that popularization and commercialization of space will catch fire and be driven to greater success and mainstream awareness and enthusiasm.

Keywords: Commercial Space Flight, Fashion, Space Development, Space Fashion, Space Tourism

SPACE TOURISM AGE

Transportation has been one of the most important fundamental things from ancient days such as horse, boat, cart and so on, and even more so nowadays. Also, every transportation system has created unique cultural aspects following its original purpose to transport. Ship, car, train, plane, subway, etc. all have their particular culture and style. Transportation has such a big power to change our lives to enrich and to contribute to economic activities enormously in any age.

Now, it is the space age. We have expendable rockets and orbital vehicles regularly operating even though they occasionally tend to have some trouble. Space-based telecom services have brought the world together. Expendable rockets have also made it possible to enrich our lives and let us know the condition of the Earth continuously, though they are expensive. Furthermore, it has made it possible for astronauts to go to space, as well as space tourists whose destinations is the International Space Station (ISS). We can hear about the Overview Effect experience from the more than 500 flown government astronauts and 7 paying passengers (by Soyuz) so far.

Space commercialization has been accelerating for the last few years. Especially, commercial human space flight including space tourism is remarkable to create new space markets. The US space policy has been drastically changed

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to open for commercial companies to develop human space vehicles after the Space Shuttle is retired to get into the commercial human space flight market where Russia has dominated since 2001 when Dennis Tito flew to space as the first commercial customer as well as NASA’s ISS crew and cargo flight purchases. Also, orbital commercial space facilities including space hotels have developed targeting commercial operation in 2015. While suborbital space vehicle development is turning a corner; Virgin Galactic has conducted test flights and other companies are also on the race aiming to get into the market within a few years. Commercial spaceport development has been active all over the world focusing on both the near-term tourism and research suborbital flight markets the next generation of Point-to-Point space flight.

As for orbital space tourism, commercial space tourism staying in orbit has begun since 2001 after the ISS had been first manned in November, 2000. 7 people and 8 tourist flights have been to space by the Russian Soyuz rocket and a stay at ISS costs about $35 M and more for space tourists since then. Charles Simonyi flew to space twice as the world’s first repeat customer. It shows us that space tourism is a great experience even it costs many millions of dollars. However, it is difficult to continue commercial space flight because of Space Shuttle retirement and the increase to 6 astronauts staying on ISS. Commercial Crew Development program which is called CCDev Round 2 was announced in the US the end of last year after CCDev 1 of successful 9 months development. Several companies have bid CCDev2 such as CST-100 by Boeing, Dragon Crew Capsule by SpaceX, Dream Chaser by Sierra Nevada, Prometheus by Orbital Scince, and others including ATK and tSpace. These companies are targeting to complete their vehicles to get into commercial operation in 2014 and 2015 time frame.

So far the ISS is the only space destination for human space flight and for space tourism as well. Commercial human space flight which is called space tourism has begun since 2001. In addition to ISS, initial development of commercial space facilities has been conducted for the last ten years. The American company, Bigelow Aerospace (BA) is developing commercial space facilities using inflatable space structures which had originally been developed by NASA. BA launched two Genesis test modules in 2006 and 2007 and they are still operational in Low Earth orbit. BA has recruited NASA astronauts, performed manned closed system tests, signed lease contract with 6 countries and so on toward commercial space facilities operation in 2015. Other companies such as Galactic Suite in Spain and RSC Energia / Orbital Technologies in Russia have been under design of commercial space facilities including space hotel.

Regarding suborbital space tourism, there are several companies that are now completing a true commercial vehicle which is able to go to space regularly, safely, and in compliance with regulations after the X Prize achievement in 2004 by Spaceship One developed by Scaled Composites. There are different styles of suborbital vehicle such as vertical takeoff and landing, horizontal take off and landing, vertical takeoff and horizontal landing, and air launching. However, any style of vehicles has about 4min microgravity and 1,000Km horizon view from the 100Km maximum altitude (and more above) at a price of $100,000~200,000 per seat (Figure 1).

Virgin Galactic’s Spaceship Two (SS2) has begun glider test from the mother ship White Knight Two. More than 40 test flights of the carrier aircraft and several glider tests of SS2 has been done, and SS2 will start powered test flights beginning in 2011. Virgin has announced that commercial flight operations are expected in 2012. XCOR is developing the Lynx and has finished its engine tests and wind tunnel experiment milestones. Other commercial suborbital companies are Armadillo Aerospace, Masten, Blue Origin, Rocketplane and so on in the U.S. Also, there are several companies which are developing suborbital vehicles in Europe including EADS Astrium, Dassault, Star Chaser and so.

To realize commercial space activities, commercial space ports are the places that
Challenges Ahead for European Air Traffic
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