

T1-4

宇宙倫理×宇宙開発＝宇宙ベンチャー “新結合の価値”

Space Ethics × Space Development

＝ Space Entrepreneurs “Value of New Combination”

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1. Overview

I will participate in JASMAC-36 and speak at the Special Programme, ‘Space Ethics x Space Development = Space Venture’ on 10 September. By doing so, I would like to exchange opinions and share information from the viewpoint of how important international legal policy and ethics are in solving social issues and business in space development, including system safety aspects.

2. Space as a treasure trove of comprehensive knowledge

Diverse players are essential for sustainable growth of the Japanese space sector. The diversity includes the following items, which is why systemic thinking and integration are important. Future advances in technology, performance and IT, as well as manned space and planetary exploration, will require space development to be more versatile, including in familiar life-related areas.

- Social problem-solving and business areas
- Japanese as well as international projects
- Projects in space and as feedback from space to Earth
- New entrants from non-space, start-ups, emerging countries, etc
- Research, development and utilization

On the technical side, there are a variety of items, as exemplified below.

- Safety and risk and its management
- State-of-the-art or new technologies and conservative reliable technologies and their systematic design

In other words, space development is a treasure trove of comprehensive knowledge where these intersect, and space development as a comprehensive art and the organizational and human skills to deal with it will be put to the test.

3 . Trust and trustworthiness(or credibility) required for space entrepreneurship

Entrepreneurs in Silicon Valley ask simple questions such as why they can't turn what they like and want into products themselves, and why they are not given a fair chance, and they try to find solutions to these questions. In doing so, they take on challenges with a kind of hungry spirit that the American economist Keynes called "animal spirits," along with the agility and rational mind befitting an entrepreneur, and the most talented of them will be able to demonstrate their creativity and dominate the market.

These entrepreneurs need to receive investment from investors to take on these challenges. In doing so, they need to persuade investors that they are better than others in the following areas.

- Evaluation of the value of the business, organization, and president
- Trust in the business, the organization and the President

And for the sustainable development of the space industry, including these entrepreneurs, literacy on the part of investors is important, as follows.

- What everyone agrees on is rejected. Rather, investment in businesses and products that individuals are smitten with and responsible commitment by those investors (the idea being that what everyone agrees with does not create innovation or added value).
- Sustainable and responsible investment in response to social issues such as ESG and impact investing.

These ideas of sustainability and responsibility required of both entrepreneurs and investors are largely related to trust and trustworthiness(or credibility), and are increasingly predicated on these ideas.

On the technical side, there are various laws, regulations and standards. In addition, on the management side, there are aspirations that lead to value and trust, i.e. the presentation of a future world view, vision and values. Entrepreneurs are required to present that they are going to change the world. Additionally, entrepreneurs are asked to present the connections, networks, and communities they have that will help them achieve their future goals. On top of this, the entrepreneur is required to be strategic, with a roadmap to the future.

In this globalized society, it is necessary not only to understand individual technical constraints, but also to grasp larger directions and trends that include them. For example, it is necessary to have an insight into the legal culture, and the ethnic, religious, cultural, legal policy and political conditions that underpin that legal culture, not to mention the individual laws and regulations.

4 . A case study of the future legal culture in space orbit

The following two cases related to the International Space Station should be presented as examples in space orbit that can be used as suggestions for the future of legal culture in space development as described so far.

For information, JAXA has established the Safety Standard For on-orbit Servicing Missions (JERG-2-026) and the JAXA Space Debris Mitigation Standard (JMR-003) as a response to these on-orbit issues, and is working on environmental protection in space orbit.

- Religious considerations in the ISS ¹⁾

In 2007, Sheikh Muszaphar Shukor, the first Malaysian to go into space, was also the first Muslim to spend the month of Ramadan/fasting on the International Space Station. The Fatwa (precepts) Council of Malaysia had issued a guide on how Muslims should spend their time in space. Muslims kneel on the ground in the direction of Mecca five times a day to pray and have a fasting period. Fasting was allowed to be postponed and the direction, posture and space diet were left to the astronauts' judgement.

- Fallout from the ISS ^{2,3)}

Part of a battery pallet that was ejected from the International Space Station ISS in 2021 re-entered the atmosphere, did not burn up and fell cylindrically and weighing 0.7 kg (10.1 cm long and 4 cm wide) onto a house in Florida, USA, on 8 March 2024. It penetrated the roof and hit the floor, causing a hole. Fortunately, no one was injured. According to the Convention on Liability for Damage in Outer Space, which entered into force in 1972 by United Nations General Assembly Resolution 2777, the launching country is responsible for damage caused by space objects, but the disposal of objects once they have been placed inside the spacecraft is unknown. It should be noted that the pallet was manufactured by Japan and disposed of by the USA.

To sum up these discussions, as space exploration progresses in the future, it will become increasingly important for new players to be created by the new combination of space ethics and space development, and for these players to change the game and the mindset.

References

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