A02

The Removal of Space Debris and International Law-Making Process

Yurika Ishii (National Defense Academy of Japan)

This presentation considers possible options of international law making considering the regulation of the space debris removal activities. Space debris may bring about various problems such as the contamination of the orbit and harmful interference against other states' activities. From the legal point of view, relevant issues include (1) the jurisdiction of the removing state (e.g., on what conditions the removing state is entitled to destroy the debris); (2) the responsibility of the launching state (e.g., to what extent the launching state should bear the cost of the removal of the debris; what sort of standards should the launching state adopt when it launches the satellite); (3) the property rights of the owner. Yet, there is neither legally binding treaty which directly deals with these issues nor customary international law, and it is expected that soft-law instruments will play an important part.

This presentation will explain what sort of types of law-making instruments are available, taking into account the law-making in the field of space law as well as other areas such as law of the sea and environmental law.

Biography

Yurika Ishii
Associate Professor at National Defense Academy of Japan

Yurika Ishii's areas of interest include general public international law, space law, law of the sea and international transnational criminal law. She achieved Ph.D from the University of Tokyo, Graduate Schools for Laws and Politics with a thesis on international regulation of economic crimes, which was published as International Regulation of Transnational Crimes (Yuhikaku, 2017)(Japanese). She stayed at Max Planck Institute for Comparative Public Law and International Law (Heidelberg, Germany, 2008, 2010), Max Planck Institute for Foreign and International Criminal Law (Freiburg, Germany, 2011) and Harvard Law School (Cambridge, the United States, with Fulbright Scholarship, 2014-15) as a guest researcher.
THE REMOVAL OF SPACE DEBRIS AND INTERNATIONAL LAW-MAKING PROCESS

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STUDY GROUP OF LEGAL ISSUES ON THE ADVANCED ORBITAL ACTIVITIES
JAXA’S MID- / LONG-TERM OBJECTIVES (2018-2025)

To support government activities to establish the legal basis which is required to develop and implement policies concerning the advanced space activities, including space resource exploration and on-orbit satellite servicing.

THE GOAL OF THE STUDY GROUP OF LEGAL ISSUES ON THE ADVANCED ORBITAL ACTIVITIES

To examine legal issues related to JAXA’s future activities.

Active Debris Removal (ADR) among On-Orbit Satellite Servicing.
WHAT WE DO

- Identify the possible legal systems to implement the ADR
- Examine pertinent legal issues concerning ADR mainly from international law perspective
- Make proposals to the Japanese Government concerning the domestic law on ADR

The Study Group

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National Space Policy Secretariat, CAO,
Space Policy Division, MOFA
Space Industry Office, METI
Space Development and Utilization Division, MEXT

Slide prepared by Akihiro Iwaki
ACTIVE DEBRIS REMOVAL

An Overview
Business As Usual

(c) European Space Agency

Implementation of Space Debris Mitigation

(c) European Space Agency
Identification and formulation of legal systems for supporting the ADR

- JAXA is planning to experiment an active removal of a large-size debris.

The Experiment of Core Technology for ADR

- Recognition of on-orbit situation
- Proximity operation
- Advanced onboard image processing

Toward the World’s first Active Large sized Debris Removal

Target (TBD): The upper stage of a Japanese rocket

Approach/ Capture/ Orbit transfer/ Controlled reentry

Source: Presentation by Yasushi Watanabe at 1st meeting of the Study Group, modified and translated by Akihiro Iwaki
軌道投入されたデブリ除去衛星は
太陽電池パネルを太陽方向に向けた後、
除去するデブリに向かいます

デブリ除去衛星のデブリへの非協力接近
デブリは運用中の宇宙機と異なり、自らの
位置を示す電波などを発信しないため、
デブリ除去衛星側で探し出す必要があります

ターゲットデブリ
（例：ロケット上段部）
デブリ除去衛星はデブリの
状態を確認した後、デブリへ
最終接近します

導電性テザーを5〜10km伸展します
デブリは大気圏に再突入し除去されます
THE NEED FOR INTERNATIONAL STANDARD ON ADR ACTIVITIES

To promote industrial development by encouraging private parties to develop technologies

To secure the safety and a clean environment at the outer space
Current Legal System in Japan

For ensuring the mission safety and licensing the activities, new technical standards and certification system for the safety are required.

Outer Space Treaty (International treaty)
Space Activity Act (Domestic law)
ADR Operator
License
Active Debris Removal (Japanese Debris)

Licensing Conditions
- Lawful purpose and method
- The structure of the satellite shall comply with the standards specified by a Cabinet Office Ordinance
- Collision Avoidance
- Appropriate Post Mission actions

Inform the result of the ADR

Criteria
- When combine with other satellites, it is prohibited to interfere with the operation of other satellites.

ISO IADC

Source: Presentation by Yasushi Watanabe at 1st meeting of the Study Group, modified and translated by Akihiro Iwaki

THE RESEARCH PROJECT

- Practices in analogous areas (ex. law of the sea, law concerning disaster)
- Practices in other countries
- Private initiatives
THE LEGAL PROBLEMS OF ADR UNDER PUBLIC INTERNATIONAL LAW

RELEVANT ISSUES

- The Ownership and Jurisdiction
- Standard of the ADR
- International Cooperation
DEFINITION OF DEBRIS

Space debris are all man made objects including fragments and elements thereof, in Earth orbit or re-entering the atmosphere, that are non functional. (IADC Guideline, 2007)

THE OWNERSHIP OVER THE DEBRIS

- The prevention of harmful interference with space activities
- The state of registry
  - The term "space object" includes component parts of a space object as well as its launch vehicle and parts thereof.
AN ISSUE OF THE OWNERSHIP AND THE JURISDICTION

State A conducts ADR against an object registered to State B

- The conditions when State B may not be able to claim its jurisdiction against State A?
- The doctrine of abandonment?

WHAT IF ADR CREATES ANOTHER DEBRIS?

- Liability principle?
- The calculation of the damage?
THE NEED FOR INTERNATIONAL COOPERATION

- Designate the ADR target
- Implement the ADR operations
- Monitor the ADR operations
- Allocate the ADR costs

POSSIBILITY OF AN INTERNATIONAL REGIME?

- Information Sharing and Dispute Settlement
- Dispute Settlement
- International Funding for ADRs
A POSSIBLE SCENARIO

Identification and formulation of legal systems for supporting the ADR

Domestic level
New technical standards and certification system for Safety are required

Bilateral level
Common technical standards and certification system for Safety are required

Global level
Global technical standards and certification system for Safety are required
CONCLUSION

The need for common technical standards

- To secure the environment of the orbit.
- To promote industrial development.

The challenges for establishing international rules

- The difficulty in establishing a new treaty.
- The merits and disadvantages of soft-law rules.