

Space Race and Space Security

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Evolving Nature of Space Environment

Recently, the universe has transformed into a space where the Fourth Industrial Revolution technologies are directly implemented, and turned into an ‘expanded new complex’ where major space powers such as the United States, China and Russia accelerate security race in space. Major space powers are approaching the universe and competing from a convergent perspective of politics, security, economy, science and technology. Despite their official denial, the United States, Russia, China and others are accelerating competition to improve their war capabilities in space. On top of that, the space race has entered the diversification stage in fifty years, and the standardization of space security is raised and proceeded as an urgent issue in the United Nations. Meanwhile, the interests of the United States, the West, China and Russia remain sharply divided in various multilateral bodies. Under these circumstances, space powers are strengthening space security strategies and policies, militarizing and weaponizing space, and rapidly developing technologies for civil and military use.

Complexity and Diversification

The landscape of bilateral competition in space between the United States and the Soviet Union following World War II has intensified in recent years after China has aggressively expanded its presence in space. Moreover, space competition has been diversified and complicated since the 2000s as existing European space powers and East Asian countries including France, Germany, Canada, Australia, Japan, India, and South Korea have also entered full swing into the race. In other words, more than fifty nations are

currently participating in space development alone or through international cooperation, and over ten of these nations are known to be operating their own space military security programs. Moreover, with the global space market exceeding \$400 billion, major space powers are making huge investments in strengthening space military capabilities, showing a huge increase from spending 30% of the entire military budget in the early 1990s to over 50% since the 2010s. Currently, 80 countries have satellites, and more than 5,000 satellites are properly functioning in space. With the recent development of 6G, platform giants are competitively pushing for the commercial use of thousands of small low-orbit satellites.

With the acceleration of space development competition, the proportion of the space industry for commercial purposes is rapidly increasing, and this trend poses a new threat to space security. Commercial activities in outer space are likely to presuppose or involve military activities, and most space technology is a dual-use technology that can immediately be used for military use. While the military and government of all nations are increasingly becoming dependent on the commercial space industry, the rapid space development is causing various problems such as space congestion, development of anti-satellite weapons, space junk collision, electronic interference and cyber hacking. This security issue of outer space has entailed common usage of expressions like “overcrowding in space” and “dispute localization of the universe”.

Space security is not an established concept yet, but is still in the process of formation. In other words, claims of sovereignty over territory in outer space have not been recognized in a traditional sense, but more and more nations are gradually recognizing development benefits or “exclusive possession” for commercial use. Within this changing context, it is more appropriate to approach space security in terms of comprehensive security or complex security, rather than applying the realist concept of security. The discussion on space security varies between countries, from space powers who identify them as an explicit security threat, to space middle powers who see them as a new security threat. This fundamentally reflects differences in space capabilities of states and is attributed to differences in their perception of new security, security of new technology in particular. In the same context, when space powers are dealing with preoccupation of outer space, development of space resources, and commercial use of the universe, they are establishing and responding to national strategies in terms of comprehensive security.

Intensified Competition for Norms Building in the Context of Space Security Governance

Discussions on governance of outer space in the context of comprehensive security are currently facing intense confrontations between camps over the details of governance such as Δ formation of new discussions and regimes, Δ expansion of actors including multiple stakeholders, Δ trust building to reduce threats in space, and Δ creation of new norms. In particular, international laws and norms applied to existing outer space are gradually revealing their limitations in practice. Moreover, in the case of recent international norms of space security, it is necessary to create integrated international norms considering all factors of security, safety, and sustainability; however, conflicts among camps are intensifying on various detailed issues and on the creation of international law itself. While states led by China and Russia insist on the creation of comprehensive international law, the U.S.-Western states emphasize the application of the existing space-related treaty system and the standardization of measures to build trust and transparency. Under this conflicting circumstance, it is premature to create comprehensive international law at this point. Nevertheless, normative responses are needed to various security challenges such as Δ instability in international relations due to increased feelings of insecurity in space activities, Δ risks and threats to safety and security in the space environment, and Δ international interest in the peaceful use of outer space. In the end, 'space operation' is implemented in connection with a nation's territorial security threat, and is thus related to problems such as the scope of sovereignty and jurisdiction in space, peaceful use of space, armed conflict in space, and competition and export control of space technology.

Recently, discussions on the formation of space security regimes and international norms have been actively debated around the United Nations and multilateral bodies and councils. These discussions have clearly revealed sharp differences in positions between the United States on one hand and China and Russia on the other. The United States argues that the Outer Space Treaty of 1967 is sufficient, and that, in order to eliminate security threats in space, it is important to strengthen the implementation of non-coercive, voluntary measures such as action guidelines or traffic regulations, and measures for transparency and trust building in space. On the other hand, China and Russia claim that preventing arms competition in space is an urgent task, and it is necessary to adopt a new legally binding

international treaty, for there is a limit to the existing space treaty to cope with the rapidly changing space environment. Meanwhile, the EU, Japan, India, Australia, and South Korea, which have officially joined the space race, support the establishment of international norms in principle, but express different views on specific subject and scope of application, and whether they are legally binding. In the end, there are China, Russia and non-aligned states that support the inclusion of space security in the discussion on the creation of space norms and the creation of legally binding treaties. On the other hand, there are the United States and the West, which exclude discussions on creating legally binding treaties and prioritize transparency and trust-building measures. These evident disagreements and confrontations are eventually accelerating the differentiation and segmentation of the universe regime.

With regard to the creation of international norms for space security, discussions are mainly led by COPUOS and Conference on Disarmament(CD) at the UN level, and these two multilateral bodies are recently diverging in their roles. Since its establishment by the UN General Assembly in 1959, COPUOS has led five treaties and five resolutions that have become the basis of international space law. In recent years, however, COPUOS tends to induce joint agreements between nations rather than adopting international treaties. For instance, COPUOS established the Working Group on the Long-Term Sustainability of Outer Space Activities in 2010 to establish guidelines for creating a long-term space environment by internationally unifying different practices and regulations on space activities. The guidelines are non-binding for all space actors, but they are spreading and inducing various sustainability-oriented space operation policies to the international community through sharing current practices, best practices and implementation statuses by country. These guidelines come from the awareness of the needs to regulate the state actions at a time when the international law of outer space is unlikely to be created as a product of compromise between the conflicting camps. Meanwhile, the CD has been negotiating for the enactment of comprehensive space law in accordance with the annual UN General Assembly resolution(122v.4) on the Prevention of Arms Race in Outer Space(PAROS), and in 2008, China and Russia jointly submitted PPWT(2014 Updated Draft) to the CD. In the end, the recent discussion of international norms for space security under the UN system has converged into two-tracks: COPUOS' promotion of a bottom-up joint agreement and the CD's creation of top-down international space law. In the midst of all the circumstances, the difference in position between the United States and China-Russia is still remarkable.

Space Powers' Reinforcement of Space Security Strategies and Policies

The United States has strengthened its space security strategies and policies based on the perception that outer space lies at the root of its military power and is essential for its national security and prosperity. In particular, the Space Policy Directive (SPD) in 「National Space Policy」, a document covering the entire U.S. space-related policies, presents the direction for comprehensive space security strategies and policies. The Trump administration particularly emphasized space security in the field of new technology security. After he took office, President Trump reestablished the National Space Council in June 2017, and promoted a series of space security strategies and policies such as △the announcement of National Space Strategy, △the announcement of Space Policy Directive (SPD), △the creation of the United States Space Force (USSF), △the establishment of Space Situational Awareness (SSA), △the maintenance of Space Traffic Management (STM) system, and △Export Control Reform (ECR). In addition, the newly announced National Space Strategy in March 2018 focuses on protecting the interests of the United States through strengthening military power in space and reforming commercial regulations in accordance with the aim of “America First” by restoring U.S. leadership. The U.S. is heavily dependent on the commercial space industry, and its national security strategy innovation relies heavily on the use of outer space for telecommunication, command, surveillance, reconnaissance and information. These services for military information purposes are provided by commercial entities in the private sector. While the U.S. recognizes the dual use of satellites as one of the threats to space security, investment in commercial or government-led space programs in the U.S. is focusing on space development technology, communication service technology, and electronic interference minimization technology, all of which are being used directly or indirectly to carry out the satellite's civilian and military duties. Moreover, the U.S. evaluates that due to Russia and China's strengthening strike capabilities, outer space is already transforming into a competitive battlefield. In response, the U.S. military is currently making organizational and structural changes by establishing space force and space command. The space force is acquiring and planning means to protect U.S. military assets, and the space command is working, and the space command is working on specific operations for these means.

China also recognizes space development projects as a key component of national

security and national development strategies, and is striving to narrow the gap with the United States in space security capabilities. China issued white paper on China's space activities in 2016, stressing the need to "build China into a space power". The white paper also emphasizes China's purpose "to explore outer space and enhance understanding of the earth and the cosmos, utilize outer space for peaceful purposes, promote human civilization and social progress, and benefit the whole of mankind". Specifically, it states the intent "to meet the demands of economic, scientific and technological development, national security and social progress; and to improve the scientific and cultural levels of the Chinese people, protect China's national rights and interests, and build up its overall strength". Ultimately, China has a vision to provide strong support for the realization of the Chinese Dream by developing the space industry and building China into a space power. Over the five years from the announcement of its first space white paper in 2011 to the end of 2015, China advanced significant space technology, including △space transport system, △artificial satellites, △manned spaceflight, △lunar exploration, △space launch site, △the Beidou(北斗) Navigation Satellite System, and △China High-resolution Earth Observation System(CHEOS). Based on these achievements, China announced that the second space plan(2016-20) would continue to carry on the first plan(2011-15) and emphasized new technology experiments. In particular, China is to enhance the service capacities of the Beidou-2, provide basic services to countries along the Silk Road Economic Belt, and provide all clients around the world with more accurate and more reliable services through a network of 41 satellites.

Russia, a traditional space power along with the United States, is pursuing space security and space technology development policies through key documents such as 「Law of the Russian Federation on Space Operations」 passed in 1996, 「The Military Doctrine of the Russian Federation」 in 2014, and 「The Russian Federal Space Program for 2006-2015」. The law suggests the key goals of Russian space activities are △to improve the welfare of the Russian people and promote the development of the national economy, △to strengthen and develop the potential of the space industry and its infrastructure, △to strengthen national defense and security, △to improve and accumulate scientific knowledge, and △to promote international cooperation for international security and economic development. In particular, the law presents the main principles of Russian federal space activities, the first of which is "the maintenance of peace and international security through the application of advances in space science and technology". This reflects how Russia regards outer space as a key area of security. The Military Doctrine of the Russian Federation, a policy document

that shows Russia's perception of outer space, clearly states that the "Prompt Global Strike" capabilities and space weapons pursued by the United States are major external threats to Russia. In addition, the document emphasizes the significance of multi-area operations that neutralize the enemy by simultaneously attacking the enemy from the ground, the sea, the air, the space and in the information areas. As such, Russia recognizes space as the most significant area of military security. Russia's strategic tasks to prevent military conflicts include △inhibiting other states' attempts to militarize outer space, △coordinating policies within the UN system to ensure the safety of space activities, and △reinforcing Russian national capabilities in the field of space surveillance. Moreover, the keys tasks of the Russian military include △providing space defense to national infrastructure, △responding and preparing for aerospace attacks, and △reinforcing and maintaining space technology capabilities that support military activities.

South Korea, Way Forward?

Discussions of the UN and multilateral councils concerning recent space security issues are expected to be stalled for the meantime due to conflicts of interest among major space powers. Yet, preparations and responses to major norms such as STM and ECR are essential as they are likely to be diversified, led by the United States. Moreover, it is unlikely that binding international treaties and norms of outer space will be created in a short period due to differences in positions between the United States-the West and China-Russia. Still, it is necessary for us to organize our position through review and analysis of each issue and to actively participate in presenting our basic position. In particular, awareness of the space situation for space security and overall space activities is a universal agenda. It is necessary for us to actively cope with the space situation and present ourselves as an active space nation that complies with obligations and contributes to the international community.

As the U.S. national space strategy is to build multi-layered and differential bilateral cooperation through partnerships, South Korea should also prepare a case-by-case cooperation program within a comprehensive space policy cooperation framework with the United States. Based on the trust built on successful space cooperation over the past 20 years, more advanced cooperative projects should be prepared and carried out in the implementation of the Artemis Agreement and export control of space rockets and parts. However, the general stance of the United States to establish a certain time gap in bilateral

cooperation between countries, as in the field of sensitive item transfer or strategic material transfer, should also be considered. It is necessary to establish and maintain a high-level space security dialogue channel between South Korea and the U.S. to share policy understanding between the two states. In the same context, the space strategy dialogue between South Korea and the U.S. is unitary and cannot produce practical results through discussions centered on specific fields. Thus, it is appropriate to proceed with space strategy dialogue between South Korea and the U.S. through an organized cooperative coordination system between related ministries of South Korea.

As of now, space cooperation will continue to be debated in multilateral discussions centered around the UN such as COPUOS, CD, and UNGGE. However, there exist certain limitations in these settings, and discussions between regional and similar-minded groups are likely to be activated in the future. Therefore, it is necessary to develop an agenda and cultivate a leading role in planning Transparency and Confidence-Building Measures(TCBMs) for peaceful usage of outer space and reduction of threats in discussions concerning states in similar positions. Against this backdrop, nations that promote the diversification of space competition are Asia-Pacific states such as China, Japan, South Korea, India, Australia, Mexico and Chile, and space security and space cooperation are likely to be included in the agenda of Asian regional security issues.

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