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Space Engagement and Cooperation with the Democratic People's Republic of Korea - Is it Feasible?

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Introduction

The requirement to develop a framework for engaging the Democratic People's Republic of Korea (DPRK) in a strategic dialogue was brought about by the DPRK's development of its nuclear weapons and missile program. Since the 1980s, several United States (U.S.) presidential administrations have made it a goal to achieve denuclearization of the Korean peninsula and create incentives (economic and diplomatic initiatives) for the DPRK to quit further advancement on its nuclear weapons and missile capability. The U.S. engaged with the DPRK through several policy frameworks, including "the bilateral Agreed Framework (1994-2002), bilateral missile negotiations (1996- 2000), the multilateral Six-Party Talks (2003-2009), the bilateral Leap Day Deal (2012), and top-level summit meetings and letter exchanges between former President Donald Trump and North Korean leader Kim Jong-Un (2018-2019).[1]

Over the years, there were certain joint goals of U.S.-DPRK negotiations, including the Agreed Framework and the Six Party Talks, in regard to DPRK nuclear weapons and missile systems. These goals included the DPRK halting and/or destroying nuclear and other conventional missiles [a strategic goal specifically for the U.S., Republic of Korea-ROK, Japan]; economic aid to the DPRK, and the formal ending of the 1950-1953 Korean War. While the 1994 Agreed Framework and the Six Party Talks have collapsed, a very personalized level of dialogue was started under the former Trump Administration between former President Donald Trump and DPRK leader Kim Jong-un with Trump becoming the first sitting U.S. President to set foot in the DPRK by crossing the demarcation line. Trump and Kim held talks at the demilitarized zone (DMZ). ROK President Moon Jae-in stated that this event resulted in giving hope towards denuclearization to the 80 million people on the Korean peninsula.[2] Despite these efforts, the DPRK has not given up its nuclear weapons which the Kim Jong-Un regime views as strategic weapons for regime stability, and has in fact showcased its ability to launch intercontinental ballistic missiles (ICBMs). DPRK views the weapons of mass destruction (WMD) as a safety net vis-à-vis its conventional inferiority in an asymmetric strategic context, specifically the security partnership between the U.S. and ROK. The DPRK's national security strategy is to utilize WMD and its miniaturized nuclear weapons to have a second-strike capability if any threat is visible to the stability of the Kim Jong-un regime.[3]

Children's Palace, Pyongyang – A model North Korean space shuttle (Mark Fahey)

In July 2017, DPRK tested twice the *Hwasong-14* ICBMs with a range of over 10,000km which meant it could reach the continental U.S.[4] The strategic implication of this development is that the *Hwasong 14*, if paired with miniatured nuclear weapons, can hold U.S. territory at great risk, which improves Kim Jong-Un's strategic bargaining as was witnessed with the Trump Administration's engagement with the DPRK.[5] This was followed by a test of the *Hwasong-15* in November 2017, with a range of 13, 000 km.[6] The connection of the DPRK's space program, especially its space launch program in the development of ICBM technologies, is evident in the fact that its *Unha* (*Taepodong 2*) was involved in the launch of its missiles.

The 3 Revolutions Exhibition Hall - The DPRK's Unha-3 *rocket (Clay Gilliland)*

This brings us to the DPRK's space program and its space program capabilities, which are entangled with its missile program—any envisioning of strategic engagement with the DPRK has to account for this reality. This aspect becomes further relevant given that the Biden Administration approach to the DPRK is based on a "step-by-step" approach, which means sanctions relief depending on how DPRK behaves, deviating from the former Trump administration's total sanctions relief in response to DPRK's denuclearization. Biden instead appears to support an incremental strategy towards reaching the ultimate goal of denuclearization.[7] It is pertinent to note that Trump and Kim 2018 Singapore Summit resulted in a joint statement in which both Trump and Kim Jong-Un committed to better U.S.-DPRK relations; the DPRK committed itself

to the April 27, 2018 Panmunjom Declaration to work towards complete denuclearization of the Korean Peninsula, and to hold follow-up consultations.[8] ROK President Moon Jae-in has urged Biden to support the Singapore joint framework, which, in his opinion, will create incentives for Kim Jong-Un to come to the negotiating table.[9] President Moon stated that "by starting over from the Singapore Statement and proceeding with dialogue and negotiations to develop more concrete plans, we can achieve North Korea-US dialogue and inter-Korean dialogue more quickly…Once dialogue begins, negotiations should follow an approach of 'step-by-step progress' with a give-and-take to match the other side's pace".[10]

It is in this context that understanding DPRK's space program and prospects for engagement and/or cooperation can be located. This paper offers data on the DPRK's space capacities and its consequences. This is followed by an exploration of how space cooperation based on the dialogue mechanisms supported via a Korean unification framework can actually be operationalized, as well as estimating what the plausible financial costs of such cooperation could be. Finally, the paper ends with a scenario-based explanation of the cost of the DPRK's space militarization and its impact on the world beyond just the Asia Pacific.

DPRK's Space Program and Capabilities

DPRK's space program is led by the National Aerospace Development Administration (NADA) found on April 1, 2013, succeeding the Korean Committee on Space Technology (KCST). In a 2014 statement, NADA indicated that "The DPRK has pushed ahead with space development projects to turn the country into a space power, fully exercising its rights to peaceful development of the space on a legal basis. The National Aerospace Development Administration (NADA) is the country's central institution organizing all the space development projects. Its mission is to put into practice the idea and principle of the DPRK government to develop the space for peaceful purposes…"[11] The DPRK also passed a national space legislation to regulate its space activities and has been a signatory to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space or the 1967 Outer Space Treaty (OST) since 2009.[12]

The DPRK suffers from acute food shortages due to faulty policy as well as lack of satellite data to help its farmers plot better crop yield.

Civilian Space Capacities

Space plays a critical role in augmenting agriculture, fishery, and monitoring weather based on remote sensing and Geographic Information Systems (GIS) as well

as satellite imagery. As per the United Nations Food and Agriculture Organization (FAO), the DPRK suffers from acute food shortages due to faulty policy as well as lack of satellite data to help its farmers plot better crop yield.[13] In a 2018 article in *Nature,* Jong-min Yeom and colleagues indicated that they could offer a "a grid-based crop simulation model integrated with satellite imagery" that could monitor crop productivity in the DPRK based on "solar insolation, and air temperature data…obtained from the Communication Ocean and Meteorological Satellite (COMS), including the reanalysis data of the Korea Local Analysis and Prediction System (KLAPS)".[14] This could assist an adjusted model crop simulation conducted at DPRK-ROK border at Cheorwon and Paju based on four years of data from 2011 to 2014. Results from the study indicated positive crop growth based on remote sensing data.[15]

The DPRK has historically made attempts to invest in developing its electronics, including semi-conductor technologies, information technology software, and hardware. In this, the DPRK reached out to the United Nations Development Program (UNDP) for financial assistance. The DPRK's mining sector could also be developed with the help of satellite support, for example, "a satellite phone at the minehead office and at the export facility combined with telecommunications connectivity with the external joint venture partner would suffice."[16] The DPRK has looked to develop remote sensing data as it helps with flood management, something that the DPRK has suffered with annually, causing widespread destruction. This year alone, thousands of homes were destroyed at Hamgyong Province due to flooding, and Kim Jong-un called on the DPRK's military for disaster relief.[17] China and the DPRK, under their 1961 "The China-DPRK Treaty of Friendship, Cooperation and Mutual Assistance", which was reaffirmed for all-time in July 2021, identifies "the legitimate and reasonable concerns of North Korea, and support inter-Korean reconciliation and cooperation", as per China's Ministry of Foreign Affairs spokesperson, Wang Wenbin.[18] The DPRK has expressed desire to join China's Belt and Road Initiative (BRI) of which its Space Information Corridor that utilizes the BeiDou navigation system as part of its space diplomacy will prove vital for the DPRK.[19] China has invited representatives from the DPRK to its BRI summits.[20] Once a member, the DPRK could aspire for BRI investments, including in its civilian space sector.

July 2012, South Hamgyong Province – Villages destroyed by flash floods (Devrig Velly EU/ECHO)

On its own, the DPRK has made attempts to reach Low Earth Orbit (LEO) since 1998. After years of trying, it was only in December 2012 that the DPRK saw the first successful launch of its satellite *Kwangmyongsong-3* into orbit on an *Unha-3* rocket, from the Sohae Satellite Launch Station. The *Unha-3* launch was viewed as a test of long-range missile technology by the U.S., Japan, and ROK, with the UN Secretary General at the time, Ban Ki-Moon, stating that it was a violation of UN Resolutions[21] that banned the testing of such long-range missile technology by the DPRK.[22] In a meeting at the UN Security Council (UNSC) on January 22, 2013, after months-long negotiations following the test, ithe UNSC passed Resolution 2087, condemning the DPRK's utilization of its ballistic missile technology which was in violation of Resolutions 1718 and 1874.[23] In defiance of the UN, DPRK went ahead and tested a nuclear weapon on February 12, 2013. There were concerns at that time that the DPRK was developing missile technology capable of reaching the western coast of the U.S. This was of course well before the DPRK's ICBM tests of 2017 that established such a range to the U.S. mainland. In 2016, the DPRK successfully launched another satellite, the *Kwangmyongsong-4,* into orbit from the Sohae Space Centre in North Pyongan province. While the size of the satellite was only about 200kg, the fact that it was launched on the *Unha* rocket, which was also viewed as a missile test, created deep-seated anxieties in the U.S., ROK, and Japan at the time; strategic concerns with truth to them given DPRK's ICBM tests in 2017.

The Kwangmyongsong-3 and Kwangmyongsong-4 satellites failed to beam back signals to receiving stations on Earth.

While the launch of the *Kwangmyongsong-3* and the *Kwangmyongsong-4* were displays of technology in that they did reach orbit, these satellites failed to beam back signals to receiving stations on Earth.[24] This means that the DPRK does not have satellite support services such as weather forecasting, climate monitoring, navigation, communications, helping farmers and fisheries with satellite data, disaster response, e-medicine, e-banking, e-education, and e-commerce. These are areas that can be reflected in any future space cooperation framework between the ROK and the DPRK, especially through their unification efforts. ROK Unification Minister Lee In-Young highlighted the basic thrust of Korean unification as "one country, two systems," or similar to the European Union where countries maintain their sovereignty but have open borders and trade.[25] Space as a high-end technology could be viewed as an area of cooperation within that framework, especially with a bilateral agreement signed between NADA and the Korea Research Aerospace Institute.[26] The ROK has advanced satellite technologies and has launched its own military satellite. Its 2021 space budget is $553.1 million, and the ROK plans to build its own indigenous launch system with the KSLV-2, a three-stage rocket with the capability of sending a 1.5-ton satellite into LEO. The KSLV-2 will launch a mock payload in October 2021 and a real satellite in 2022 from the Naro Space Center in Goheung.[27] This is an area where cooperation and de-escalation are possible, and this paper offers a roadmap of how a DPRK-ROK dialogue on these issues can be conducted in a later section.

The DPRK's *Unha* rocket built upon its ballistic missile, *Taepodong-2*, is a three-stage rocket. The rocket is similar in design to China's DF-4 two-stage missile, and CZ-1 orbital launcher.[28] The *Unha-2* and the *Unha-3* are capable of over 0.1 ton to LEO. As per the Federation of American Scientists (FAS) analysis, *Unha-3,* launched in December 2012, was powered by four *Nodong* engines and four small control engines. It reflects old Soviet Union's Scud technology and has similarities with Iran's Shahab 3 engines.[29] FAS points out that:

> The reconstruction [simulation of the Unha] is consistent with all the available data. It clearly shows that the Unha-3 is designed as a satellite launcher. The low-thrust engines in the second and third stage prevent the need for free-coast flight phases in the satellite launcher role, but in a ballistic missile role, they lead to significant gravity losses that result in a high performance penalty. A different second stage propulsion unit –a throttled engine, for example, or a simple Nodong engine – would offer range gains in the order of 1,000 km or more. In a missile role, the three-stage Unha-3 offers around 8,000 km range with a 700 kg payload. With different propulsion units, this could have been extended, perhaps putting the U.S. East Coast into range.[30]

The DPRK has announced intentions to launch a remote sensing satellite and send an unmanned mission to the Moon.[31] In its Moon mission, which it hopes to achieve in the next decade or so, one can see potential collaboration with China and its advanced lunar program.

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The China-Russia Memorandum of Understanding (MoU) to establish a research station on the Moon could draw in the DPRK, given that China wants to showcase leverage over a regime that other countries like the U.S., ROK, and Japan aspire to negotiate with. We witnessed such leverage demonstrated by China during the U.S.-DPRK meetings under between Trump and Kim, when Kim travelled to China prior to the Singapore Summit.[32] In regard to its lunar ambitions, the DPRK wants to engage in technology demonstrations similar to its ICBMs and space launch demonstrations.

Military Space Capacity

The integrated nature of the DPRK's ballistic missile and space launch development capacities are of concern.

In regard to the DPRK's military space capacity, the integrated nature of its ballistic missile and space launch development capacities are of concern. The DPRK has not offered a military doctrine around space operations or demonstrated an Anti-Satellite (ASAT) weapons test. However, given that the ROK and Japan are investing in Space Situational Awareness (SSA) and counter space capacities, the DPRK might wish to develop jamming technology (which includes mobile jammers that could block GPS signals), blinding, and the ability to detonate a High-Altitude Nuclear Detonation (HAND) that could fry satellites in LEO. In developing its counter space capacities, the DPRK could get help from China, Pakistan and Iran. While the DPRK has not tested an ASAT weapon, it has the ballistic missile technology to go forward with a rudimentary kinetic ASAT test if the need arises. This could be a crude variant with the ability to detonate close to an adversary satellite (if not hit the satellite directly) due to lack of expertise and capability on optical, infrared or radar-based technology for direct targeting of a moving object in space. A detonation close to a satellite in LEO, for instance, would result in debris that could render satellite pathways difficult.

An area of growing strategic concern is a future scenario where the DPRK could detonate a nuclear device above the atmosphere that could result in an electromagnetic pulse (EMP). Peter Pry, Executive Director of the EMP Task Force on National and Homeland Security, warned of such an eventuality especially if a country like the DPRK views it as an advantage.[33] Given that the DPRK is not part of the 1963

Partial Test Ban Treaty which bans the testing of nuclear weapons in space, it could well engage in such a test in orbit or upper atmosphere. Open-source statements from two Russian EMP experts that a Russian EMP warhead capable of generating high intensity EMP fields of 200,000 volts inadvertently made its way into DPRK,[34] and a Chinese PLA General stated in 2013 that the DPRK has advanced EMP capabilities.[35] The effects of an EMP can be felt across a wide geographic area of thousands of miles and disable critical infrastructure such as power supply. DPRK nuclear tests, including its 2006 test, have demonstrated EMP capabilities that could disable electronics and related technologies. Moreover, an EMP could also be detonated by DPRK's *Kwangmyongsong-3* and/or *Kwangmyongsong-4* satellites in LEO by locating a small EMP device within them.[36]

The combination of the DPRK's space launch, ballistic missile, and GPS-jamming capabilities are issues to keep in mind. In 2016, ROK ambassador to the UN, Oh Joon, stated that electronic jamming signals coming from five North Korean regions—Haeju, Yonan, Pyongyang, Kumgang, and Kaesong—targeted GPS signals and threatened civilian flights.[37] The DPRK continues to possess these capabilities. Since military space activities are rising within China, ROK, and Japan, the incentives to demilitarize space might be low for the DPRK, especially given Kim Jong-Un's need for regime survival and stability. Despite that context, and given that there is a framework for Korean unification that is ultimately focused on the denuclearization of the Korean peninsula with implications for ballistic and space weapons proliferation, is it possible to engage with the DPRK on plausible space cooperation resulting in de-escalation? If so, how can that be accomplished?

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Dialogue Towards Space Cooperation Under the Korean Unification Framework

The development of the DPRK's augmented civilian and military space capacities makes the establishment of an institutional framework under which an ROK-DPRK dialogue could occur an urgent need. The framework could limit the consequences of the development of military space capacity while stressing civilian space cooperation. The ROK Ministry of Unification was set up on March 1, 1969, to tackle inter-Korean relationship where the two Koreas have remained divided since the end of the Korean War in 1953. In 1975, a peace and unification institute was established; in 1980, a

dialogue mechanism was set up; in 1990, a South-North Exchanges and Cooperation Bill (Law 4239) was enacted and a South-North Cooperation Fund Bill (Law 4240) was enacted as well. Over the years, unification efforts have been supported by economic cooperation and cultural exchanges, with the latest initiative being the establishment of the Inter-Korean Exchange and Cooperation Office on February 2, 2020.[38] The ROK Minister of Unification Lee In-young supports a dialogue process between ROK, the U.S., and the DPRK on a range of issues not limited to denuclearization but also encompassing humanitarian assistance and pandemic support. [39] The U.S. special envoy to Pyongyang under the Biden administration, Ambassador Sung Kim, has also expressed support for the restart of dialogue with the DPRK. So, the conditions are ripe for such a process. As per the Korean Central News Agency (KCNA), Kim Jong-Un has expressed openness for "dialogue and confrontation" with the U.S., especially after his review of Biden's DPRK policy which is based on a practical calibrated approach and a move towards diplomacy.[40] By saying that it is considering both dialogue and confrontation, the DPRK is putting pressure on the U.S. to leverage its own bargaining position in regard to dialogue.

Meaning of Dialogue

For a genuine and constructive dialogue on space to occur between the ROK, DPRK, and the U.S., specifically within a unification framework, one has to consider the avenues for space cooperation, how to mitigate the risks relating to technology and intellectual property theft, the geopolitical situation of a rising China and its impact on the Asia-Pacific, as well as China-DPRK relations which can act as a lever of influence.

While we all talk about dialogue, what does dialogue really entail?

The word "dialogue" is a combination of the Greek words *dia* meaning "through" or "across" and *logos* meaning "word" or "reason." Dialogue therefore implies "a sense of creating meaning through talking or reasoning together."[41] Dialogue suggests bringing diverse groups with different perceptions, experiences, and even a history of conflict between them, together through a participatory process. Hal Sanders of the International Institute for Sustained Dialogue specifies that "Dialogue is a process of genuine interaction through which human beings listen to each other deeply enough to be changed by what they learn. Each makes a serious effort to take others' concern into her or his own picture, even when disagreement persists. No participant gives up her or his identity, but each recognizes enough of the other's valid human claims that he or she will act differently toward the other."[42]

The various components of dialogue are inclusiveness; joint ownership; listening, learning and adapting; empathy and humanity; notion of the self and the other; understanding of context; transparency; and a vision for the future.[43]

Let us analyze how these dialogue components will play out in the case of ROK-DPRK space cooperation efforts.

Inclusiveness

Inclusiveness is a process of dialogue that is based and informed by a problem-solving framework. Despite divergent views, interests, and strategic purposes, the stakeholders in a conflict come together to work out a map of conflict prevention, mitigating, for instance, space weaponization, and instead focusing on what could be mutually beneficial. Inclusiveness entails that once an agreement is actually reached, it is grounded on a legitimate basis of participation from all those affected by a scenario of conflict, and thereby limits the possibilities of spoilers. It plays a critical role in enabling resolution in a situation plagued by historical differences and insecurities, yet still includes prospects for peace.

In the plausible scenario of ROK-DPRK space cooperation, issues that would have to be addressed include the dynastic seize-of-power basis of the Kim regime and Kim's fear of potential democratization pressure from the ROK if the two Koreas were to unify. The latter would push Kim to retain his ballistic missile program for regime security and maintenance. The incentive structure for ROK-DPRK dialogue would also have to include the U.S., a vital cause of Kim Jong-Un's insecurity, and China, a neighbor who has its own deep-seated incentives to continue supporting a Kim-led DPRK for strategic reasons. In the case of Korean unification, 28,500 U.S. troops and "90 combat planes, 40 attack helicopters, 50 tanks and some 60 Patriot missile launchers"[44] stationed in the ROK as per the 1961 Status of Forces (SoF) Agreement will have access to Korea-China border. As is well documented, the DPRK views U.S. military presence as a threat and has utilized the jamming of GPS signals to disrupt the annual Key Resolve/Foal Eagle drills.[45] Whether the DPRK's GPS-jamming efforts actually work is not the question—the key signal from the DPRK is that it views the drills as a threat. This context reflects a security puzzle as the DPRK's testing of its missiles and nuclear weapons poses a threat to both the ROK and the U.S., hence creating a security dilemma that eventually leads both the DPRK and the ROK to invest in military space capacities. The ROK launched its own independent military satellite, ANASIS-II (Army/Navy/Air Force/Satellite Information System), built by Airbus and launched

The DPRK views U.S. military presence as a threat and has utilized the jamming of GPS signals to disrupt the annual Key Resolve/Foal Eagle drills.

on a SpaceX Falcon 9 in 2020.[46] The ROK has also tested its first submarine launched ballistic missile with President Moon stating that it has "sufficient deterrence to respond to North Korea's [DPRK] provocations at any time."[47] Hours earlier on the same day, in violation of United Nations (UN) resolutions, the DPRK test-fired two ballistic missiles for around 800km at a maximum altitude of 60km.[48] The removal of a 42-year restriction on ROK rocket/ballistic missile development in May 2021 created an environment for ROK's own rocket, missile, and space development.[49] In a fluid security situation of this nature, problem solving through meaningful dialogue is critical.

Joint ownership

It is vital in a strategic dialogue between the U.S., ROK, and DPRK that the dialogue process is not dominated by the most powerful actor.

It is vital in a strategic dialogue between the U.S., ROK, and DPRK that the dialogue process is not dominated by the most powerful actor. Parties should also beware of engaging in delaying tactics as could be adopted by the DPRK. Instead, there must be a joint ownership of the process in order to address problems and issues which have brought about division between those involved. There are several avenues for dialogue and plausible future collaboration between the DPRK and ROK in space. These could include collaboration in regard to remote sensing, weather forecasting, communications, (state-controlled) satellite internet, data on agriculture for food shortages, and disaster relief.

Another area of collaboration could be space exploration. ROK has a lunar exploration program with investments in its Korea Pathfinder Lunar Orbiter, and is now a signatory to the U.S.-led Artemis Accords.[50] Lunar development and exploration is part of its Korea Lunar Exploration Program (KLEP), which aims to develop an orbiter, lander, deep space communication, and scientific experiments for the Moon.[51] In 2016, the DPRK has also announced its intentions to send an unmanned probe to the Moon within a decade. Hyon Kwang Il, NADA's director of scientific research, stated that "even though the U.S. and its allies try to block our space development, our aerospace scientists will conquer space and definitely plant the flag of the Democratic People's Republic of Korea on the Moon."[52] Is lunar exploration a possible policy item for joint ownership? The DPRK has scientific skills for space development, but developing a rocket capable of escaping Earth's orbit is not an easy gamble. The ROK could collaborate with the DPRK on this front, but both sides have to assure the other that such developments would not lead to threats given the fusion of the DPRK's space and missile programs. The ROK is currently investing around $553 million annually on its space program, with about half of that budget to be spent on communications, weather forecasting, and environmental observation.

Another 30 per cent of the budget is being spent on developing ROK's first indigenously built rocket. Including the DPRK to augment its civil space capabilities such as weather forecasting and environmental observation would imply a further 30 per cent increase in ROK's space budget if any real-time impact is to be felt in DPRK's civilian space capacities. Alternatively, the DPRK could go alone in developing space capacities with deep-seated implications for military space developments. This would imply the ROK having to spent a large part of its space budget on augmenting Space Situational Awareness (SSA) and its own military space capacity, which might end up being much more than 30 per cent of $553 million 2021 annual space budget. In fact, a recent report by Defense News indicates that the ROK intends to spend about $13 billion over the next decade (2021-2031) for the expansion of its military defense space capacities.[53]

Listening, learning, and adapting

A vital component of dialogue which seems obvious but is rarely operationalized in practice is to engage in listening, learning and adapting. This helps form a genuine understanding of the issues at stake, the geopolitical implications of the DPRK's escalation in missile and space military developments, the geographical location in which this plays out (with the presence of the U.S. and China), and the impacts of the disputes at hand (e.g. island disputes, Chinese ASAT test). Preconceived notions about how differences or disputes will play out may be harmful to developing policy understanding of the issues at stake. For example, if demilitarization and denuclearization are end goals, what factors are stopping said goals from being reached?

Empathy and humanity

In addition to history and geography, differences in worldviews can create conflicts. The ROK and the DPRK clearly have different worldviews—the former is democratic, while the latter is an authoritarian dynastic rule with little freedom for its population. In this situation, the ROK will necessarily gravitate towards the U.S. while the DPRK will gravitate towards authoritarian China and Russia. Given that such systemic alignments exist, it is critical to consider the well-being of DPRK's population as part of the unification framework and include the impact of civilian space development on their lives.

Notions of 'Self' and the 'Other'

Dialogue helps in bridging gaps between identities, especially the binary "Self" and the "Other." This helps in focusing on the common rather than differing aspects of identities, which will in turn bring about tolerance and inclusion. The idea and philosophy behind Korean unification are based on finding common ground, as can

be seen from the website of the ROK Unification Ministry as well as public statements. Whether the DPRK has similar objectives is unclear, but its participation and conditions for unification (e.g. a formal ending to the Korean War) implies interest in bringing about some level of reconciliation, based on both values and strategic interests (e.g., avoiding sanctions and receiving economic aid).

Understanding of context

Dialogue participants must have a deep-seated, realistic understanding of context, without which no meaningful dialogue could be conducted. This includes history, understanding of political and strategic culture, as well as the social context. For example, developing an intuitive understanding of the power dynamics of who within the DPRK can engage with space capacity building, which is also dependent on Kim Jong-Un's blessing, is critical. A clear-headed assessment of ROK interests in adopting a space cooperation framework, public opinion towards it, and the interests of political parties in it, will help sustain the process, the end goal of which is the de-escalation of conflict in the Korean Peninsula.

Transparency

There is a high level of "trust-deficit" between the U.S., ROK, and DPRK at the state and societal level due to effective propaganda by the DPRK targeting its own population. Transparency could help mitigate this challenge, but the question of how to create open systems of information within the DPRK where such information is tightly controlled by the regime remains.

A vision for the future

Engaging in dialogue is usually based on identifying a vision for the future, including a unified Korea; economic development; denuclearization; and mitigating the harmful effects of space militarization. These visions have to be shared by all parties, but that can prove difficult considering factors of DPRK's regime insecurity, viewing space infrastructure as "assets" that will strengthen the Kim regime, U.S. military presence in ROK, and the DPRK's conflicting signals of threat. Recognizing these difficulties within a problem-solving approach could help find a common policy vision. A vision for space cooperation with the DPRK was presented by former U.S. National Space Council Executive Secretary Scott Pace in Berlin as part of a workshop in 2011 (Pace was not part of the NSpC at the time).[54] In that

The DPRK is a member of the International Telecommunication Union (ITU) and has signed the Outer Space Treaty (OST), which provides some leverage for space cooperation.

presentation, Pace highlighted the fact that the DPRK is a member of the International Telecommunication Union (ITU) and has signed the Outer Space Treaty (OST), which provides some leverage for space cooperation. He specified "certain areas of discussion" for any framework of space cooperation between the U.S. and the DPRK with some conditionalities: that the DPRK abandon testing missiles beyond a 700km range (a condition that was not met with the testing of Hwasong-15 in 2017) and halt space launches; that the DPRK could participate in the China-led Asia Pacific Space Cooperation Organization (APSCO) of which it is not a member; and that the DPRK should demilitarize both its missile and space launch facilities and hand it over to civilian use for international space cooperation to proceed. As of now, the DPRK has not shared this vision and has gone ahead with space launches as well as testing of its long-range ICBMs, complicating efforts in space cooperation. However, the thinking on enabling space cooperation does exist. Pace highlighted avenues for cooperation with the DPRK to include GIS, remote sensing, disaster relief, weather monitoring, satellite communications resilience, an authorized LANDSAT, and NOAA Advanced High-Resolution Radiometer (AVHRR) data from its Polar Orbiting Environment Satellites (POES). One way of establishing a joint vision between the U.S., ROK, and DPRK is to specifically deal with climate change issues through Group on Earth Observations (GEOSS) and UN-SPIDER.[55] The DPRK has publicly stated its desire for "satellites for communications, resource exploration, weather forecasts and the like which are essential for the country's economic development."[56] Pace anticipates the participation of a DPRK astronaut on the Chinese space station in 2024, or the launch of a payload on a ROK or Chinese satellite. This 2011 analysis by Pace was of course conducted prior to the DPRK launching its own satellites. Given the Kim Jong-Un regime's need for regime assurance, the vision that would be most difficult to achieve is for the DPRK to demilitarize all space launch facilities, a condition set forth by Pace. A potential joint vision for the ROK and DPRK, with support from the U.S., could be the development of satellite-based climate change studies for the Korean Peninsula,[57] or capacity building for civil space development and satellite data sharing through nodes like "Sentinel Asia," especially for early disaster warnings.[58]

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While strategic dialogue is helpful in highlighting ways and means to achieve some level of space cooperation between the ROK and DPRK, the absence of any such dialogue could result in a scenario fraught with negative consequences for the Asia-Pacific region and beyond. Let me craft such a likely scenario to draw out some strategic consequences.

Future Scenario: The Road to Conflict Escalation in the Korean Peninsula

The strategic dialogue and nuclear negotiations conducted in October-November 2021 between the Biden Administration, Kim Jong-un regime, and the ROK fell apart due to hard stances and lack of common understanding of what constitutes key dates for denuclearization and ending the continuing U.S. sanctions on the DPRK. . In order to salvage its foreign policy reputation after a disastrous withdrawal from Afghanistan, the Biden administration takes a hard stand on the DPRK and further imposes crippling economic sanctions. This hard stance continues and spills over to 2022 with both sides engaging in public statements degrading the other. During the 77th anniversary of the DPRK ruling party's regime on October 10, 2022, the DPRK tests a high-altitude direct ascent ASAT weapon test (similar to China's 2013 geosynchronous research test interpreted as an ASAT test in GEO by the U.S.). The U.S. interprets the DPRK's ASAT test as a direct threat to its satellites. When the Biden administration and other world leaders criticize Kim Jong-Un, he specifies through a statement published in the KCNA that the DPRK has the sovereign right to conduct a scientific test mission, as it is a great spacepower, and if the world interprets its scientific test as an ASAT test, then it is merely following the footsteps of the U.S., Russia, China, and India, who have all conducted ASAT tests. Kim Jong-Un asserts that the DPRK has the right to self-defense and challenge adversary space systems as they plan for a military intervention into DPRK. Kim Jong-Un asserts that a U.S. military intervention is imminent given the U.S. public statements threatening the DPRK. Kim Jong-Un reaffirms that his scientific test is strategic for the DPRK as the U.S. have utilized space systems to topple regimes in the past (i.e. 2003 U.S. intervention in Iraq). China and Russia are muted in their criticisms of the DPRK ASAT test at the UN Security Council (UNSC). The Biden administration responds by stating that the DPRK ASAT test is a violation of international legal regimes and states that it is drawing a line: ASAT tests that threaten U.S. space infrastructure including its satellites are unacceptable. ROK Prime Minister Moon Jae-in supports Biden's stand. The U.S. proposes a UNSC resolution that the DPRK should be banned from conducting further ASAT tests. The DPRK asserts that the U.S. is not allowing the DPRK to be a spacefaring nation and is trying to put sanctions and create a hostile international legal regime aimed at denying DPRK its ability to launch to space. On November 1, 2022, the DPRK issues a notification to UNOOSA of its intention to leave the OST (similar to the DPRK leaving the Nuclear Non-Proliferation Treaty). A year after DPRK issues its intention of leaving the OST to the UNOOSA, it is released from its OST obligations, including the obligation to not locate WMDs in space. On November 5, 2023, the DPRK launches six military satellites. U.S. intelligence expresses concerns that these satellites are consistent in size with those that might be capable of hosting a nuclear payload. The Biden administration uses Voice of America (VoA) broadcasts over Starlink satellites to persuade the DPRK population that the

Kim regime must be replaced. Kim Jong-Un warns the Biden administration that the VoA broadcasts are a provocation and that they need to cease immediately. As the VoA broadcasts continue, the DPRK detonates a HAND over the South Pacific Ocean far from populated areas. The Starlink constellation starts to degrade as a result of this HAND. The DPRK issues a statement via KCNA that the U.S. has received appropriate punishment for VoA broadcasts and escalatory rhetoric. The DPRK reminds the U.S. that any military intervention on its soil will be met by a high altitude EMP over the U.S. by the DPRK satellites.

Strategic Consequences

This scenario has four potential long-term consequences.

First, detonating a HAND creates a huge debris hazard rendering LEO inhabitable for all nations. Second, a regime like the DPRK can easily exit from international treaty obligations and engage in activity such as the placement of WMDs in space, which has consequences for geopolitical security communities on Earth by removing the nuclear weapons taboo in space. Third, the development of EMP can have societal implications for countries like the ROK, Japan, and the U.S., and China might look the other way if it happens. Fourth, the insecurity and instability of the Kim Jong-Un regime, especially the severe food shortages the country has felt due to the COVID-19 pandemic, can turn Kim Jong-Un desperate to secure his regime's security.

This is the kind of scenario we need to keep in mind as we formulate policy in regard to space engagement between the U.S., ROK and DPRK. While the different factors involved in dialogue as highlighted in this paper offer us a framework to address both opportunities and challenges, the absence of serious engagements with the DPRK can result in the "worst case" scenario described above. In light of that, it is pertinent to formulate an institutional level of strategic engagement with the DPRK, while at the same time keeping in mind the real-time challenges of intellectual property theft and replication of stolen high-end space technology for military purposes.

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