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The Development of U.S. Multi-Domain Operations and Its Implications for R.O.K. Armed Forces

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Exercise Solo Flight

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**The Development of U.S. Multi-Domain Operations and
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INTRODUCTION

A key issue in the recent international situation is the rise of China and the challenge of Russia's international order. For about 20 years after the end of the Cold War in 1991, the U.S., the only superpower in the world, has maintained a rule-based international order, including democracy, market economy, and respect for sovereignty in the era of unipolar systems.

However, China has greatly increased its defence spending over the past 25 years, building on its rapid economic growth since 2000, increasing its military strength extensively and rapidly. China is comprehensively developing military organization/structure, weapons, and equipment, promoting full modernization of military with a target year of 2035, and developing theories and concepts for world-class military by 2050¹. In addition, China emphasizes its sovereignty and territorial integrity, clearly declaring that the South China Sea is an integral part of China's territory². In this context, China claims sovereignty over the South China Sea with its powerful naval power, and has been building infrastructure and deploying necessary defence capabilities on the Spratly and Paracel Islands since 2014 until recently to further solidify its sovereignty³.

In addition to the territorial dispute in the South China Sea, the hegemonic U.S. and China consider each other as the biggest security threat, and conflicts between the U.S. and China, including the Indo-Pacific Strategy and the Belt and Road Initiative, the anti-Huawei strategy, and the U.S. support of Taiwan, are expanding in all directions.

¹ Edmund J. Burke, Kristen Gunness, Cortez A. Cooper III, and Mark Cozad. "People's Liberation Army Operational Concepts." Santa Monica, CA: RAND Corporation, 2020, 9-23.

² The State Council Information Office of the People's Republic of China. "China's National Defense in the New Era." 2019. Accessed on 19 Apr 2022 at: China's National Defense in the New Era (mfa.gov.cn).

³ BBC News, "Why is the South China Sea contentious?" 12 Jul 2016. Accessed on 19 Apr 2022 at: Why is the South China Sea contentious? - BBC News.

Russia boldly implemented military and non-military measures to expand its influence through the Georgia war in 2009 and the Ukraine crisis in 2014, rejecting the U.S.-centred international order and openly expressing its intention to expand Russia's influence. Based on his political ambition to regain the status and glory of the former Soviet Union, Putin criticized the system of a unipolar power and heralded a transition to a multi-polar order⁴. Meanwhile, Ukraine's willingness to join the NATO and Ukraine's strategic importance led Putin to declare an order to launch a special military operation on February 24, 2022. Russia invaded Ukraine, and the U.S. still supports Ukraine with large-scale military weapons, and the war is unfolding as a proxy war against Russia's invasion⁵.

As such, the rise of China and Russia, their military capacity expansion, and the intention to reorganize international political order are perceived as serious challenges and security threats to the U.S. and neighbouring countries⁶, and the possibility of a war between great powers is expected to prevail with the revival of international politics between great powers.

In this context, this essay aims to understand the U.S. Multi-Domain Operations (MDO) and derive implications for the R.O.K. Armed Forces (ROKAF). Therefore, this essay will first look at the background and core concepts of the MDO through the lens of the CAF operational design, and then will draw its implications for the ROKAF. In

⁴ Cato Institute, "Did Putin's 2007 Munich Speech Predict the Ukraine Crisis?" 24 Jan 2022. Accessed on 28 Apr 2022 at: [Did Putin's 2007 Munich Speech Predict the Ukraine Crisis? | Cato Institute](#).

⁵ The Guardian, "Russia's war in Ukraine: complete guide in maps, video and pictures," 21 Mar 2022. Accessed on 28 Apr 2022 at: [Russia's war in Ukraine: complete guide in maps, video and pictures | Ukraine | The Guardian](#)

⁶ United States. The White House. *Interim National Security Strategic Guidance*. 2021, 1-23.

conclusion, this essay will summarize the main contents and emphasize that more diversified efforts are needed for the Korean acceptance of the MDO.

UNDERSTANDING THE U.S. MULTI-DOMAIN OPERATIONS

The MDO is a new concept of operations created as operational environment and threats change to transform new strategic guidelines into military operations⁷, which can be seen as a product of operational design. Therefore, in order to draw a detailed picture of the MDO, a perspective of operational art is required. The commander and staff of joint task forces should use operational art to design, organize, and carry out campaign and major operations⁸, and create a common awareness by visualizing complex and confusing issues. The conceptual tools used at this time are the elements of operational design used as a common language. In other words, by looking at the MDO through the elements of operational design, it is possible to infer the conceptual logic of the MDO inversely. Of course, it may be difficult to say that all the elements have been applied because the elements would be selectively used according to characters of operational environment and problematic issues. However, these conceptual tools can provide a good analysis focus for understanding the MDO. Therefore, in this section, the main contents are reviewed focusing on the conceptual logic and core contents of the MDO by utilizing the elements of operational design.

⁷ United States. Congressional Research Service. *Renewed Great Power Competition: Implications for Defense - Issues for Congress*. 2022, 1-17.

⁸ Canada. Department of National Defence. B-GJ-005-500/FP-000. *The Canadian Forces Operational Planning Process (OPP) Change 2*. Ottawa: DND Canada, 2008, 1-3-1-4.

End state, objectives and lines of operation

The MDO demonstrate a shift from the existing concept of capability-based operations to the concept of threat-based operations, and were initiated by the need to respond to security threats from China and Russia. In particular, the threats from China and Russia expand the battlefield in four aspects: time, domain, geography, and actors⁹. In terms of time, the boundaries of peace and war are becoming ambiguous, and in terms of domain, domains from land, maritime, and air of the past to cyber and space are expanding. In terms of geography, adversaries' threats are expanding globally, including the homeland of the U.S., and in terms of actors, non-traditional actors such as mercenaries, proxies, and reactionaries are increasing by traditional actors to pursue their goals. Recognizing that conflict is not only a phase of armed conflict, but also a continuum of conflict before and after, the MDO is developed by dividing it into three phases: competition - below the threshold of armed conflict, armed conflict, and return to competition¹⁰.

Competition, which is also called the grey zone conflict, is the phase of deterring the armed conflict, refusing to achieve adversaries' strategic and operational goals, and quickly converting to the armed conflict if necessary. In other words, the purpose of carrying out the MDO in competition is to defeat adversaries' covert operations and to deter the spread of disputes. On the other hand, adversaries are expected to attempt to achieve their objectives before the timely intervention of the U.S. and the international community by conducting information operations, and electronic and cyber warfare,

⁹ United States. Army Training and Doctrine Command. The U.S. Army in Multi-Domain Operations 2028. TRADOC Pamphlet 525-3-1, 2018, 6-8.

¹⁰ Ibid. 24-26.

rejecting the U.S. space-based intelligence, surveillance, and reconnaissance (ISR) capabilities¹¹.

In armed conflict, adversaries are expected to attempt to separate friendly forces in terms of time, space, and function by employing the multi-layered anti-access/area denial (A2AD) systems such as long-range firepower, integrated air defence systems (IADS), irregular warfare, and electronic, cyber, and space warfare. Through the A2AD, the adversaries seek to inflict unbearable losses on the U.S. and its allies to achieve physical and military stand-off, and to achieve goals before the effective response and intervention of the U.S. and its allies¹². To this end, China and Russia are intensively deploying long-range systems such as hypersonic missiles¹³, and are developing various physical and non-physical anti-satellite weapons (ASAT)¹⁴ to gain an advantage in space domain in case of emergency.

Therefore, the end state of the MDO can be described as 'adversaries must give up a fait accompli attack before escalating to armed conflict, the U.S. and its allies must secure the freedom of action of multi-domain forces on the expanded battlefield, and maintain/return to competition from an advantageous position'. In particular, unlike the traditional form of armed conflict, objectives in grey zone conflict can be to defeat adversaries' covert threats to a host nation in cyber domain, electromagnetic spectrum (EMS), and information environment, protect friendly systems in such domains, and

¹¹ Ibid. 9-11.

¹² Ibid. 11-13.

¹³ Politico, "U.S. 'not as advanced' as China and Russia on hypersonic tech, Space Force general warns." 20 Nov 2021. Accessed on 28 Apr 2022 at: U.S. 'not as advanced' as China and Russia on hypersonic tech, Space Force general warns - POLITICO.

¹⁴ CNN, "War in space: Kamikazes, kidnapper satellites and lasers." 29 Nov 2016. Accessed on 28 Apr 2022 at: War in space: Kamikazes, kidnapper satellites and lasers | CNN Politics.

ensure that multi-domain forces are in readiness posture to project them timely into disputed areas.

Indeed, in the Russia-Ukraine war, Russia carried out various cyber-attacks, including distributing malware to Ukraine's network and paralyzing websites of major organizations, even before conventional forces were deployed on February 24, 2022¹⁵. In addition, by disseminating false information through offensive information operations, and targeting broadcasting and Internet network infrastructure, it was intended to prevent the leakage of correct information from Ukraine to the outside, and to manipulate confusion and fear within Ukraine¹⁶. This is a typical Russian hybrid warfare, in which Russia supposedly set a strategic and operational goal to isolate Ukraine from the international community's network through cyber and information operations from the grey zone conflict to prevent timely response and support from the international community.

If Russia's covert operation had been successful in the grey zone conflict, combined with the deployment of powerful conventional forces in the ensuing armed conflict, Russia could easily take control of Ukraine and reach its desired end state. In this context, major military actions and milestones related to information, cyber, electronic, and space operations are expected to form major lines of operation in order to contain adversaries and refuse to meet their goals before spreading into armed conflict.

¹⁵ BBC News, "Ukraine cyber-attack: Russia to blame for hack, says Kyiv." 14 Jan 2022. Accessed on 28 Apr 2022 at: Ukraine cyber-attack: Russia to blame for hack, says Kyiv - BBC News.

¹⁶ The Washington Post, "Ukraine is winning the information war." 1 Mar 2022. Accessed on 28 April 2022 at: Zelensky and Ukraine are beating Putin's Russia in the information war - The Washington Post.

Assumption and centre of gravity

Changes in the operational environment and threats of the MDO will enable potential adversaries to challenge the U.S. in pan-domain, EMS and information environment, and the U.S. cannot be sure of its dominance¹⁷. In addition, the U.S. would be subject to many restrictions on carrying out its will in politically, culturally, technically and strategically complex situations. In particular, competitors with nearly equal capabilities to the U.S., such as Russia and China, are well prepared to engage in armed conflict, making it difficult to contain them, such as the ongoing Russia-Ukraine war. Moreover, as strategic partnerships between China and Russia increase, the U.S. emphasizes solidarity with alliance and security partners. The U.S. is cooperating with Europe/NATO and Indo-Pacific countries to curb and respond to Russia and China's actions, respectively, which ensures that the MDO is based on combined and joint operations.

By utilizing precision guided weapons, IADS, cyber weapons, ASAT and other technologies, adversaries seek to have the ability to compete or threaten the U.S. in an almost equal level in pan-domain. They can engage in limited periods of armed conflict to achieve limited strategic goals by surprise in expanded battlefield, seeking hybrid warfare to undermine systems of target states, gain international support, and prevent Western intervention from the grey zone¹⁸.

On the other hand, the U.S. and its allies/partners should deter the adversaries in pan-domain, and if deterrence fails, they should be able to defeat the adversaries across

¹⁷ David G. Perkins. "Multi-Domain Battle: Driving Change to Win in the Future." *Military Review* (July-August, 2017): 6-12.

¹⁸ Christopher Chivvis. "Understanding Russian "Hybrid Warfare" And What Can Be Done About it." RAND Corporation, 2017, 1-7.

vast seas and airspace in a timely manner. In addition, it could be difficult for the U.S. Joint Forces to secure freedom of action alone in a battlefield expanded into space and cyber domains, and because of its expanded geographical space, access to conflict zones itself can be difficult without the cooperation and support of allies/partners. Therefore, in the MDO, the source of friendly forces' power can be said to be the combined and joint operational capabilities, which can be seen as the centre of gravity (CoG) of friendly forces.

Another CoG of the U.S. Joint Forces would be multi-domain formations that can create windows of superiority¹⁹. Breaking through the multi-layered stand-off is the basis for the operation to proceed, and the stand-off can only be broken through by disabling the A2AD. In order to neutralize the A2AD, multi-domain formations that can create the windows should exercise joint capabilities and mobility in close and deep areas. This is because it is impossible to achieve campaign goals without the decisive manoeuvre of multi-domain formations.

Conversely, the adversaries CoG would be the A2AD ability to create a multi-layered stand-off. At this time, the A2/AD strategy and capabilities aim for the concept of pan-domain battlefields, strengthening its ability to destroy the other country's systems in case of a contingency through aggressive enhancement of cyber and space capabilities and ballistic missiles²⁰.

¹⁹ United States. Army Training and Doctrine Command. The U.S. Army in Multi-Domain Operations 2028. TRADOC Pamphlet 525-3-1, 2018, GL-9.

²⁰ United States. Army Training and Doctrine Command. The Operational Environment and the Changing Character of Warfare. TRADOC Pamphlet 525-92, 2019. 5-17.

Decisive points

In the MDO, the U.S. competes with adversaries in pan-domain, EMS, and information environment, sharing the perception that the U.S. dominance has become uncertain. Therefore, by concentrating friendly capabilities on selected time, space, domain, and environment, it is necessary to gain temporary and local control, or to prevent adversaries from exercising control, creating the conditions necessary for the success of the operation. Windows of superiority, which means these temporary and local conditions, can be created through cross-domain synergy²¹. This is because it is possible to achieve the effect of overwhelming adversaries by simultaneously integrating and optimizing capabilities in pan-domain, EMS, and information environment. In other words, the friendly forces can create the synergy by simultaneously integrating the capabilities of land, maritime, air, cyber, and space, rather than any single domain, and have the flexibility to selectively employ multiple options.

On the other hand, because adversaries have to prepare for pan-domain, complexity increases and effective response becomes difficult²². This can collapse, degrade, or destroy the adversaries system, and create windows of superiority in which friendly forces can effectively use their initiatives. Therefore, according to the framework of the MDO, major situations in which windows of superiority are created, or the desired cross-domain synergy is achieved could be selected as representative decisive points.

²¹ United States. Army Training and Doctrine Command. The U.S. Army in Multi-Domain Operations 2028. TRADOC Pamphlet 525-3-1, 2018, 20.

²² Ibid. 20-21.

Operational reach

The U.S. evaluated that the existing battlefield formation is limited to visualizing the complex operational environment and responses to threats in pan-domain.

Accordingly, the U.S. announced a new framework spaces which is a new battlefield formation expanded globally. The U.S. divides the battlefield into seven areas: strategic and operational deep fire areas, deep manoeuvre area, close area, and tactical, operational, and strategic support areas²³. In other words, it seems that the strategic and operational deep fire areas presented in the framework are within the operational scope of the whole world.

What is noteworthy here is that the area from the support to the deep manoeuvre is specified as a friendly area. This is believed to be because the disputed area is assumed to be an ally/partner of the U.S. In other words, if an ally/partner country is invaded by an adversary, it takes a certain amount of time for the U.S. military to deploy, so it is assumed that a certain area of the ally/partner country has been penetrated and secured by the adversary at the time of the U.S. military deployment. This can be easily understood considering 2014 and the current situation in Ukraine.

Another peculiarity is that battlefield formation is not limited to land, and it is trying to include not only maritime and air, but also cyber and space domains, EMS, and information environment in the one framework. The battlefield formation is based on physical space, but each area is not defined by a fixed geographical relationship or dimension, but by operational circumstances, interaction between friendly forces and

²³ Ibid. 8.

adversaries, and terrain, so in the MDO, the operational reach has been extended in various aspects.

Evaluation of the MDO from the ROKAF's point of view

The MDO aims to curb countries that challenge regional hegemony in areas where the U.S. national interests exist and defeat them if necessary. In the Indo-Pacific region, where R.O.K. belongs geopolitically, China could emerge as a hegemonic state in the region. However, it is difficult for the U.S. alone to secure freedom of action against China's almost equal level of threat in the extended geographical space and domain. Therefore, the U.S. emphasizes solidarity with allies and regional partners such as R.O.K.²⁴, and in this context, the combined and joint operational capabilities have been previously presented as the CoG of friendly forces in the MDO. However, in the era of great powers competition, the CoG can be difficult to protect and there would be inherent critical vulnerabilities, as each country has different situations and national interests.

In particular, it seems difficult to form a consensus with countries in confrontation, such as the Korean Peninsula, where R.O.K. and Democratic People's Republic of Korea (DPRK) are directly and militarily confronting each other. In the confrontation, the enemy in front of R.O.K. is a more serious challenge than threatening regional hegemony, and especially R.O.K. also needs political support from China and Russia, which can exert considerable influence on the DPRK, to improve relations with the DPRK.

²⁴ United States. The White House. *U.S.-ROK Leaders' Joint Statement*. 21 May 2021. Accessed on 29 Apr 2022 at: U.S.-ROK Leaders' Joint Statement | The White House.

For a nation that aims to destroy its main enemy forces and reunify itself, competition among the great powers may be seen as a factor that increases regional security instability, including excessive arms race and economic retaliation from anti-allies. Indeed, the deployment of the U.S. Terminal High Altitude Area Defence (THAAD) in the R.O.K. caused serious economic retaliation by China²⁵, and Japan emphasized its role in countering China in the U.S.-Japan alliance, and promoted military construction and revision of the peace constitution²⁶, encouraging arms competition among neighbouring countries in the region. In addition, because many countries share economic dependence and interests with China and Russia, the MDO may be criticized for focusing on maintaining the U.S. status as a world hegemon rather than on the national interests of allies/partners.

In terms of operational reach, the U.S. has the ability to project expeditionary forces around the world, but to carry out offensive operations in conflict areas, allies/partners in the region should first provide forward bases and protect the whole process of reception, staging, onward movement, and Integration (RSOI). In addition, strategic line of communications in maritime and air domains should be provided and protected by allies/partners for sustainment during operations.

R.O.K. is an ally of the U.S. located inside the 1st island chain of China's island chain strategy, and is also located in the close area in the newly proposed battlefield

²⁵ Reuters News, "South Korea complains to WTO over China response to missile system." 19 Mar 2017. Accessed on 29 Apr 2022 at: [South Korea complains to WTO over China response to missile system | Reuters](#).

²⁶ Hankyoreh News, "Japan takes first step toward amending its "peace constitution"." 7 May 2021. Accessed on 29 April 2022 at: [Japan takes first step toward amending its "peace constitution" : International : News : The Hankyoreh \(hani.co.kr\)](#).

formation in the MDO. Thus, in the event of an armed conflict between the U.S. and China in the Indo-Pacific region, for example, against Taiwan, R.O.K. would be forced to make difficult choices in the face of deadly security tensions, including the possibility of war spreading to the Korean Peninsula, and in the security-autonomy dilemma. Therefore, allies/partners which have different national interests may hesitate to actively be involved in armed conflicts and support the U.S., and even if they do, in this situation, it would not be easy to carry out effective combined and joint operations with them.

Much preparation must be made in advance to conduct combined and joint operations. Cross-border operations are difficult, but each country has different ways and abilities to operate military forces. In particular, in the MDO, friendly forces should create cross-domain synergy and windows of superiority by concentrating military capabilities and functions of allies/partners to converge on the required time, space and domain. However, this work would be very difficult to achieve without deviating from the different military structures, capabilities, and mindset of each country. In other words, the limited interoperability of the U.S. joint forces and allies/partners can be a critical vulnerability to the CoG of friendly forces. Therefore, it is important for the U.S. and its allies/partners to develop and maintain sufficient interoperability to carry out combined and joint operations to deter and defeat adversaries.

IMPLICATIONS FOR THE R.O.K. ARMED FORCES

On how to fight against future operational environments and threats and what military capabilities to build, the U.S. has created a new type of operational concept called the MDO and is in a hurry to have the capabilities to implement it. The process by which the world's most powerful U.S. develops concepts to envision future wars and

create appropriate capabilities provides lessons for many countries, and this change in the U.S. also means a lot to its ally, Korea. In this section, the implications of this change in the U.S. military will be addressed for R.O.K.

Change in the perception of threats

It can be said that the MDO began with a change in the perception of threats in the U.S. As the era of great powers competition enters, the core background is the development of the operational concept and modernization of military power that can overwhelm in competition with challenging countries such as Russia and China. However, it is true that since the Korean War, the R.O.K. has been preparing all military readiness for the DPRK. In response to the DPRK's large-scale conventional military capabilities, the R.O.K. has expanded its military capabilities over the past 70 years to deter the DPRK's aggression and to defeat it in case of emergency.

On the other hand, it is also true that preparations for neighbouring countries in the region such as China and Russia are somewhat insufficient. The ROK need to maintain close diplomatic relations with the countries as they are expected to exert great influence on the process of reunification of the Korean Peninsula, but R.O.K. should not be indifferent to their growing threats.

China's A2AD strategy and military capabilities are aimed at the concept of pan-domain, and China is strengthening its ability to destroy the other country's system in case of emergency through offensive enhancements in cyber and space warfare. In addition, efforts are being made to secure world-class technologies in core technologies of the 4th

industrial revolution such as AI, drones, and autonomous systems²⁷. Based on this military build-up, China is actually showing its willingness to project military power in many forms. Representative examples include territorial disputes in the South China Sea, aggressive actions against Taiwan, and military expansion linked to the Belt and Road Initiative²⁸. In addition, China is also showing aggressive behaviour, such as entering the Korea Air Defence Identification Zone (KADIZ) set by R.O.K. without prior notice or cooperation²⁹.

Japan is trying to expand the role of the Self-Defence Forces by changing its constitutional interpretation of the exercise of collective self-defence rights³⁰, causing conflicts with the R.O.K. over Dokdo sovereignty and historical issues³¹, and Japanese patrol aircraft flew low-altitude threatening flights to the R.O.K. naval vessels, causing military tensions between the two countries³². Japan is also increasing its power to realize cross-domain defence capabilities, especially in the cyber and space domains, and EMS, and is seeking to establish a cyber-defence unit, an electronic warfare unit, and a specialized space force³³.

²⁷ United States. Chamber of Commerce. *Made in China 2025: Global Ambitious Built on Local Protections*. 2017, 9-17.

²⁸ The Wall Street Journal News, “China to Build Naval Hub in Djibouti.” 26 Nov 2015. Accessed on 29 Apr 2022 at: China to Build Naval Hub in Djibouti - WSJ.

²⁹ DW News, “South Korea scrambles jets to respond to Russian, Chinese warplanes.” 19 Nov 2021. Accessed on 29 Apr 2022 at: South Korea scrambles jets to respond to Russian, Chinese warplanes | News | DW | 19.11.2021.

³⁰ Hankyoreh News, “Japan takes first step toward amending its “peace constitution”.” 7 May 2021. Accessed on 29 Apr 2022 at: Japan takes first step toward amending its “peace constitution” : International : News : The Hankyoreh (hani.co.kr).

³¹ The Diplomat, “Will Japan-South Korea Relations Ever Get Back on Track?” 25 Nov 2021. Accessed on 29 Apr 2022 at: Will Japan-South Korea Relations Ever Get Back on Track? – The Diplomat.

³² Mainichi Japan, “Japan releases ‘final’ statement on S. Korea radar lock-on incident”. 21 Jan 2019. Accessed on 29 Apr 2022 at: Japan releases 'final' statement on S. Korea radar lock-on incident - The Mainichi.

³³ The Diplomat, “Japan’s Emerging ‘Multi-Domain Defense Force’.” 18 Mar 2020. Accessed on 29 Apr 2022 at: Japan’s Emerging ‘Multi-Domain Defense Force’ – The Diplomat.

Given these trends and threats from neighbouring countries, R.O.K.'s military strategy should not be limited to the DPRK, but should include efforts to monitor and respond to threats from neighbouring countries. Of course, it would be possible to physically respond to threats from neighbouring countries with current military capabilities, but in the event of an armed conflict between the great powers, it should be prepared to develop various scenarios and review appropriate countermeasures in advance. In other words, it is time to establish a dual military force construction direction and operation concept in preparation for the direct threats from the DPRK and neighbouring countries according to the characteristics of the Korean Peninsula.

Also, it is necessary to prepare for future threats from the DPRK by newly analysing the threats in the perspective of hybrid warfare. The DPRK has used irregular, information, electronic, and cyber warfare to present various covert attacks to cause political, economic, military and social chaos in the R.O.K.³⁴ Unlike in the past, as the DPRK is unlikely to dominate the Korean peninsula with conventional forces due to R.O.K.'s tremendous military build-up, the DPRK is expected to seek to achieve locally limited goals through surprise in pan-domain before the U.S. forces increase, and make those a *fait accompli* or pursue political negotiations.

The DPRK would also provoke as a proxy for China and Russia, as shown by the way Russian-sponsored Ukrainian rebels and mercenaries wage war in the 2008 Georgia War and the 2014 and 2022 Ukraine crises³⁵. Therefore, it is necessary to further improve

³⁴ Anthony H. Cordesman, et al. "DPRK: Cyber, Electronic Warfare, and SIGINT Capabilities." *Korean Special, Asymmetric, and Paramilitary Forces*, Center for Strategic and International Studies (CSIS), 2016, 25–35.

³⁵ Cristopher Chivvis. "Understanding Russian "Hybrid Warfare" And What Can Be Done About it." RAND Corporation, 2017, 1-7.

deterrence against the DPRK by predicting the pattern of the DPRK hybrid warfare, securing military capabilities accordingly, and developing the operational concept.

Balanced military capability development in pan-domain

The MDO means competition and conflict with adversaries in pan-domain. Thus, the ability to create windows of superiority through concentration of all capabilities and functions in pan-domain should be secured. The U.S. established the Space Force³⁶ after the Army, Navy, Air Force, and Marine Corps, as well as the Cyber Command, which was promoted to be its own combatant command³⁷.

However, the R.O.K. still lacks military capabilities in the expanded domains, especially in space and cyber. There is no military-only space asset and command/unit to operate space power. The R.O.K. Cyber Command, established in 2010, has all its functions focused on cybersecurity, while its integrated combat capabilities are weak to support other military actions in pan-domain. As such, the absence of proper military capabilities in space and cyber domains would be very limited to create cross-domain synergy in the future. The R.O.K. currently has no real point in setting up combat domain in space due to its weak space power, and cyber capabilities with limited integrated combat capabilities would not be so helpful to support operations, or strengthen the level of joint cooperation. Therefore, in the future, balanced military force generation in pan-domain, including space and cyber, would be needed beyond the development of weapon systems based on land, maritime and air.

³⁶ Stephen M. McCall. *Defense Primer: The United States Space Force*. Congressional Research Service In Focus IF11495, 2022. Accessed on 29 Apr 2022 at: Product Details IF11495 (congress.gov).

³⁷ Catherine A. Theohary. *Defense Primer: Cyberspace Operations*. Congressional Research Service In Focus IF11495, 2021. Accessed on 29 Apr 2022 at: Product Details IF10537 (congress.gov).

As a starting point for this, it is urgent for the R.O.K. to establish a dedicated unit preparing for future wars. The establishment of the U.S. Future Command has great significance in that it is possible to simultaneously promote the modernization of military power and the development of future operational concepts. The U.S. has organized eight cross-functional teams and AI task forces under the Future Command to promote the Future Force Modernization Enterprise (FFME). Under the FFME, the U.S. Army has selected the top six tasks to achieve operational capabilities in pan-domain, while at the same time selecting and researching nine military science and technology to have the ability to overwhelm in future operational environments³⁸.

In the ROKAF, the Training and Doctrine Command (TRADOC) is responsible for preparing future wars for the Army, Navy, and Air Force, respectively, but because it has a variety of tasks, such as researching doctrines and developing education and training systems, it is of course less concentration and efficiency. Regarding the future war work, each service's separated TRADOC is limited to the level of presenting the future warfare concept that each service should pursue based on its environment, respectively. On top of the process, each service headquarters has the authority to raise demands on force development by suggesting required operational capability (ROC) to decision-makers.

In other words, conceptual research on future warfare and suggestion of the ROC are being promoted by two different units, and even this is independently carried out by each service – the Army, Navy and Air Force. Therefore, structurally, there may be discrepancies between future warfare concept studies and force generation, and the focus

³⁸ United States. Army. Army Modernization Strategy: Investing in the Future. 2019, 1-12.

on weapons systems and modernization centred on each service may also limit integrated force generation to create future cross-domain synergy.

Therefore, the establishment of an integrated future command in fully charge of preparing for the future war is considered necessary in the ROKAF for balanced capabilities development in pan-domain from the service-integrated perspective beyond the self-interest of each service, as well as for conducting conceptual research on future warfare and suggesting the ROC in the same unit from another integrated perspective of ways and means.

Formation and command/control structure

The MDO emphasizes the convergence of capabilities and functions of the Multi-Domain Task Forces (MDTF) to create cross-domain synergy in expanded domain and geographic space³⁹. Therefore, the MDTF should not limit the battlefield to a specific domain unique to each environment, but should be structured to simultaneously support each other in pan-domain. This is very similar to the characteristics required for the Joint Task Forces of the ROKAF.

The U.S. Army has organized and is employing the MDTF for the development of the concept of the MDO and combat experiments, and in January 2019, the I2CEWS Battalion was established. It is a new type of task forces combined of intelligence, information operations, cyber and electronic warfare, space and signal unit that enables

³⁹ United States. Army Training and Doctrine Command. The U.S. Army in Multi-Domain Operations 2028. TRADOC Pamphlet 525-3-1, 2018, F-1.

effective ISR and simultaneous integration of lethal and non-lethal firepower in cross-domain⁴⁰.

In this way, in order to realize cross-domain synergy in the MDO, future multi-domain forces of the ROKAF should be organized to basically employ combat powers in various domains, including space, cyber and EMS, and in terms of functions, they should have ISR, firepower, and mobility. In particular, considering the characteristics of the security environment on the Korean Peninsula, the multi-domain forces of the ROKAF should be organized in a flexible structure that can be expanded or reduced according to various military threats from the DPRK and neighbouring countries and missions.

However, in addition to independent multi-domain operational capabilities, agility to integrate distributed forces and capabilities to achieve concentration at the desired time and place should be a prerequisite. In the expanded domain, setting priority of selection and allocation of domains for the use by multiple friendly forces should be complex, and various units could be mixed in one domain to perform their respective tasks, so they may not be concentrated in the desired time and place, and may collide with each other.

In particular, the tempo of the MDO would be faster in the future due to the development of military science and technology linked to the 4th industrial revolution and the nature of cyber and space domains, and EMS. Moreover, the establishment and alteration of command relationships would become more complicated because the delegation of responsibility and authority to the operational domain and area would have to be frequently diverted according to threats, missions, and operational phases.

⁴⁰ Kyle Borne. "Targeting in Multi-Domain Operations." *Military Review* (May-June, 2019): 60-67.

Therefore, it is important to determine the essential components of command/control systems based on a common understanding of the future operational environment, potential problems to be solved, and the existing capability gaps⁴¹, which should be accompanied by the design of a better integrated communication system and more flexible command/control systems. This is of course an important issue in the sole operation of the ROKAF, but at the same time, it could be another critical vulnerability in the combined and joint operation with the U.S. and allies in response to threats from China and Russia.

CONCLUSION

After the Sept. 11 attacks, the U.S. was immersed in the so-called irregular warfare on terrorism, and the concept of military operations was focused on this. As a result of long-standing immersion in the war on terrorism, the U.S. ability to carry out large-scale regular warfare has been relatively weakened⁴². The situations such as Russia's annexation of Crimea in Ukraine in 2014, the expansion of China in the South China Sea became a turning point for the U.S. to recognize threats.

The new operational concept of the U.S. Army, the MDO, which describes how the U.S. will fight and win against the adversaries in an international conflict, has a cycle of competition, armed conflict, and return to competition, based on combined and joint operations with its allies/partners.

⁴¹ David G. Perkins and James M. Holmes. "Multidomain Battle: Converging Concepts Toward a Joint Solution." *Joint Force Quarterly*, no. 88 (Jan 2018): 54-57.

⁴² National Defense Magazine, "ASC NEWS: U.S. Military Re-Emphasizing Large Warfighting Exercises (UPDATED)." 14 Sep 2020. Accessed on 29 Apr 2022 at: ASC NEWS: U.S. Military Re-Emphasizing Large Warfighting Exercises (nationaldefensemagazine.org).

In the MDO, the MDTF first defeat hybrid threats that separate allies from the U.S. and destabilize the region, and deter escalation into armed conflict. If armed conflict occurs, the MDTF breaks through the multi-layered stand-off, including A2AD, and concentrates its capabilities and functions to achieve goals, creating windows of superiority through cross-domain synergy.

Thus, the balanced military capability in pan-domain and the combined and joint operational capabilities are essential to achieving operational goals, from the grey zone conflict to the armed conflict. To this end, the U.S. established the Future Command to comprehensively develop all processes, including conceptual research, formation, combat experiments, and advancement in weapon systems, and this whole change in the U.S. has a lot of meaning for the ROKAF.

First is the need to prepare for various threats. It is necessary to re-evaluate and respond appropriately to the DPRK threats from a hybrid warfare perspective, monitor the trends and threats of neighbouring countries, and take countermeasures, and gradually increase the military capabilities required. Second, in order to prepare for the future war, balanced forces development is required from a pan-domain perspective, away from land, maritime, and air power-oriented thinking, and it is urgent to create a dedicated unit preparing for the future war to be effective. Finally, it is necessary to organize Korean-style multi-domain forces that can employ combat power in multiple domains and concentrate its capabilities in the desired time and space. It should be able to flexibly respond to various threats from the DPRK and neighbouring countries in pan-domain, and take a comprehensive approach that considers command and control systems to enable the forces to operate agilely in future complex operational environments.

In the U.S. MDO, the Korean Peninsula is in a close area to the U.S. in relation to the threat of China, and the threat of the DPRK in direct confrontation is increasing day by day. Therefore, it is necessary to continuously examine the development of the MDO directly related to the R.O.K. security, and various research and efforts will be needed in the future to accommodate and apply the MDO to the security and defence situations of the R.O.K.

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