

International journal of  
**military affairs**

2019 4(1)

<Index>

1. International legal Review on the Withdrawal of UN Forces and USFK in terms of Termination of ARMISTICE Regime of the KOREAN Peninsula.

**/ Noh Dong-young**

2. MILITARY-Industry Partnership in Space Militarization: The Art of Contemporary Space-Based "Sensing, Command & Control".

**/ Julianne Oh**

3. Factors of the Job STRESS of Non Commissioned Women Officers.

**/ Lim Yeo-jin, Bang Won-seok, Park Gyun-yeol**

4. A New Approach to Moral Injury of Soldiers during WAR.

**/ Park Gyun-yeol, Seo Eun-sook, Shin Hee-jeong**

5. Study on the Improvement of Resource Management for the Establishment of A Smart Operation System for the Future WAR.

**/ Moon Hyeon-cheol**

Publication state: Japan  
ISSN: 2423-8775

Publisher: J-INSTITUTE  
Website: <http://www.j-institute.jp>

Corresponding author  
E-mail: [noicjj@hanmail.net](mailto:noicjj@hanmail.net)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

<http://dx.doi.org/10.22471/military.2019.4.1.01>

© 2019 J-INSTITUTE

## International legal Review on the Withdrawal of UN Forces and USFK in terms of Termination of ARMISTICE Regime of the KOREAN Peninsula

Noh Dong-young

*Gangdong University, Eumseong, Republic of Korea*

### Abstract

*NORTH KOREA has claimed about dissolution of UN forces and withdrawal of USFK to induce early withdrawal of USFK by proposing a peace agreement with the United States. If a peace agreement is concluded to establish the peace regime on the Korean Peninsula, will the purpose of UN forces be disappeared and it be dissolved? There is a low possibility that UN forces will be dissolved in the armistice agreement regime, but if dissolved, how does it affect the parties of the armistice agreement? In addition, North Korea possibly demand the dissolution of US forces as well as the withdrawal of USFK if peace agreement is concluded. So we have to prepare for what logic we should respond to this.*

**[Keywords]** *UN Forces, USFK, Military Enforcement Action of the Security Council, Armistice Resime, Peace Agreement*

## 1. Dissolution Issue of UN Forces command

### 1.1. Review on dissolution claims

NORTH KOREA actively advocated the dissolution of UN forces by urging the US to sign a peace agreement since they claimed about the withdrawal of foreign troops in the Geneva political conference in 1954 after armistice agreement. Recently on January 14, 2013, they called for the dissolution of UN through the memorandum of the Ministry of Foreign Affairs and NORTH KOREA Ambassador Sin Seok-ho said that UN must be dissolved and armistice agreement should be converted to peace agreement in the press conference on June 21 of the same year[1].

Main duties of UN force which was joined by the UN mandate during the early Korean War was to enforce and supervise the armistice

agreement through activities of military armistice commission after armistice agreement and to continue to secure the right to use Japan's UN rear base while carrying out re-entering war and control duties of member states in preparation for emergencies. During the war, the largest number of war troops were about 700,000 and Korean troops were 300,000 among them. Currently, most of them are withdrawn and there are only about 300 soldiers. They are mainly the US militaries which are advisors of the UN and the rest are liaison officers who serve guard of honor and military officer<sup>1</sup>.

First, if US forces are dissolved in the armistice agreement regime prior to the peace agreement, will the armistice agreement be terminated, or is it not related to the continuation or implementation of the armistice agreement? Since the UN forces are responsible for the compliance and enforcement of the treaty on the armistice

agreement, the dissolution of UN forces is a matter directly related to the implementation of the armistice agreement. Because binding force of the agreement shall be substituted only by mutual agreement under the clause 61 and 62 of the armistice agreement, the armistice agreement shall not be invalidated or terminated by the dissolution of UN forces. UN forces are an institution for compliance and enforcement of the agreement. So the dissolution of the UN forces and the continuation of the armistice agreement are separate matters.

Second, UN forces will not necessarily be dissolved even if peace agreement is concluded. UN forces can be continued by converting its function, which was to restrict southward invasion, to conduct peacekeeper activities to prevent disputes on the Korean Peninsula[2]. Given that the role of UN in contributing to the Korean War and future role of UN in building a peace regime, the UN forces restricted the war along with USFK(US Armed Forces in Korea) by the US-ROK alliance. And it seems clear that they will provide justification for building a peace regime on the Korean Peninsula. In particular, in the midst of a shift in wartime operational control, the abolition of CFC (combined forces command) will likely expand the role and function of UN force command if Korea returns the wartime operational control<sup>ii</sup>. Even if REPUBLIC OF KOREA is to head north, the mission and role of UN forces will be necessary according to the Resolution 376 of the General Assembly on October 7, 1950 as described above.

Third, we opened the possibility that SOUTH and NORTH KOREA and US are making efforts to declare the termination of the war before the peace agreement to end the armistice regime of the Korea Peninsula, which is unusual thing for over 65 years. If the declaration of the termination of war is made, there would be a symbolic effect. But it is only a political declaration, so the state of war in the Korean Peninsula is still not legally terminated by the armistice agreement. If the declaration of termination of war is made in the future, it became legally a ceasefire state(state of the war)and politically a peace

state of termination of war. Therefore, as long as the conclusion of peace agreement is not guaranteed immediately, there may be a confusing order on the Korean Peninsula, where laws and facts are inconsistent. Since the declaration of termination of war before a peace agreement shall not be legally binding, it can't affect on the discussion of UN forces and USFK withdrawal.

## 1.2. Considerations for dissolution

If UN force command is dissolved, we need to consider who is subject to dissolution and how it will be dissolved. We also think about the changes in defense system of the Korean Peninsula since the commander of USFK also had served as UN force commander(three caps).

It is possible and clear to think that US Security Council Resolution is necessary for the dissolution of the US forces, which was established by the Security Council Resolution at the early stage of the Korean War. But if we think that the UN force is not a subsidiary body of the UN, UN can be abolished through agreement between KOREA and US without the resolution of Security Council based on the facts that UN forces is not operated with the UN's budget unlike the UN's peacekeeping activities, that it has not been listed as a subsidiary body of the UN in the UN yearbook since 1950, and that UN Security Council and other UN agencies do not recognize it as UN subsidiary body[2].

UN forces participated in the Korea War was established and operated by the US during periods when military enforcement action of Chapter 7 of UN Charter was not enforced as prescribed. So the budget of the UN was not used, and each participating nation and KOREA and the US could pay the cost. On November 3, 1950, 'Uniting for Peace', which is No. 377 of UN General Assembly resolution, emphasized the responsibility of the General Assembly to respond to the functioning of the Security Council. Based on this, UN forces was established with the military enforcement action by the resolution of the Security Council to realize the collective security assurance. And it has the right to use UN forces

and reports activities of UN forces to the Security Council. Given that the above facts, it is quite difficult to deny the institutional nature of the UN on the grounds of the above facts. In the end, it seems that at least the UN's intervention in the dissolution or abolition of UN force command is necessary such as decision of Security Council and approval of UN after consultation between KOREA and US.

On the other hand, JAPAN decided to provide facilities and services for the UN forces which support KOREA through JAPAN-US. Security Treaty and exchange of note between Atchison and Yoshida in 1951. Accordingly, they provide six major bases in JAPAN[3]. This obligation is due to expire within 90 days of UN withdrawal from KOREA. So the dissolution of UN forces will lead to serious disruptions to the US military reinforcements in case of emergency. If the UN is dissolved, the US and JAPAN will have to new agreement on the use of base. Even if it is not a matter SOUTH KOREA directly involved, but we should ask US to take measures based on the ROK-US alliance.

## 2. Withdrawal Issue of USFK

NORTH KOREA has claimed about dissolution of UN forces and withdrawal of USFK to induce early withdrawal of USFK by proposing a peace agreement with the UNITED STATES. This is because the commander of USFK serves as the commander of the UN force. If the peace treaty is concluded, NORTH KOREA is likely to stick on this issue. Currently, US forces do not have substantial forces, and it is fact that USFK commander also serves as commander of UN force command and USFK is actually taking over that role. Without the USFK, there will be no guarantee of security on the Korean Peninsula because the function of UN forces which will restrict the war and supervise armistice agreement can't be supported.

USFK was stationed by ROK-US alliance, that is the ROK-US Mutual Defense Treaty[4], which

was concluded on October 1, 1953 and entered into force on November 18, 1954. UN was stationed by the UN Security Council Resolution No. 84 on July 7, 1950. Therefore, two forces are legally separate entity. Even if the UN force is dissolved, USFK will not necessarily be withdrawn. There is a case in which US forces were withdrawn from VIETNAM by specifying withdrawal of foreign troops in the VIETNAM Peace Agreement in January 1973. But US force didn't withdraw from JAPAN by 1951 San Francisco Peace Treaty, and 1960 US-JAPAN Mutual Cooperation and Security Treaty explicitly allows the presence of US forces. In addition the peace treaty was not concluded with Allies in GERMANY, but US forces have been stationed in GERMANY as part of the NATO army.

Claims of NORTH KOREA for withdrawal of USFK violates the principle of respect for the sovereignty of the UN Charter or the non-intervention of domestic matters. It also violates the mutual trust under the Article 2 and Article 3 of Inter-Korean Basic Agreement which are "The South and North shall not interfere with the other's internal affairs." and "The South and North shall not slander or smear other party". This should be clearly recognized by NORTH KOREA.

## 3. Conclusion

The US also thinks that the USFK serves a role as a balancer to ensure peace and stability in Northeast Asia[5]. The USFK will serve a certain role as the main body of UN forces as well as KOREA-US combined power in building peace regime of the Korean Peninsula. There is also a possibility that its position can be changed as a peace management armies of the Korean Peninsula by the reduction of US army and allied forces. The armistice regime and declaration of termination of war on the Korean Peninsula can't affect the status of UN forces and USFK. It is clear that the conclusion of the peace agreement is a legal factor affecting the status of UN and USFK (armistice agreement was abolished by the

peace agreement). But the role of the UN forces for security and peace in the international community and on the Korean Peninsula should be stressed.

## 4. References

### 4.1. Books

- [1] Ministry of National Defense, Defense White Paper (2014).
- [2] Je SH. Security and international law of the Korean Peninsula. KIDA (2010).

### 4.2. Journal articles

- [3] Baek JH. Conversion Issues of the Armistice Regime of Ceasefire Regime. *Law Journal of Seoul National University*, 41(2), 25-36 (2000).
- [5] Joseph S & Nye JR. The Case for Deep Engagement. *Foreign Affairs*, 74(4), 91-102 (1995).

### 4.3. Additional references

- [4] Article 4 of ROK-US Mutual Defense Treaty: By Mutual Agreement the Republic of Korea Shall Grant the Right to Place US Army. Navy and Air (2019).

#### Author

**Noh Dong-young** / Gangdong University Professor  
B.A. Chungbuk National University  
M.A. Chungbuk National University  
Ph.D. Chungbuk National University

#### Research field

- Brief Ideas on the Legislative-policy for the Law Education of North Korean Defectors, *Law and Politics Studies*, 18(3) (2018).
- Use of Force under International Law and Norm-harmonious Interpretation of the Constitution, *The Quarterly Journal of Defense Policy Studies*, 123 (2019).

#### Major career

- 2010~2015. Ministry of Defense, Military Intelligence Officer
- 2015~present. Attorney under Chungbuk District Bar Association

---

<sup>i</sup> Currently, UN member states are 18 countries including Denmark, Italy, Norway and Korea, which have provided medical support except Luxembourg and Ethiopia among 17 countries entered in Korean War. The US forces which serves the advisor of UN and secretary of military armistice commission, advisory group of military armistice commission(liaison officers of member state which serves military officer's duty) and guard of honor mainly made up of Thai and Filipino troops are remained.

<sup>ii</sup> He commander of USFK also serves as commander of

UN Command and ROK-US combined Forces Command which was established in November 1978. The wartime operational control of ROK force is exercised by the CFC, but the operational control over military activities related to the armistice agreement is exercised by the UN Command. Therefore, even if the CFC is abolished, the commander of USFK under the ROK-US alliance still serves as the commander of UN force, so the USFK will try to strengthen the re-entry and control duties of the member countries in preparation of emergencies.

Publication state: Japan  
ISSN: 2423-8775

Publisher: J-INSTITUTE  
Website: <http://www.j-institute.jp>

Corresponding author  
E-mail: [Julianne.Oh@rmc-cmr.ca](mailto:Julianne.Oh@rmc-cmr.ca)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

<http://dx.doi.org/10.22471/military.2019.4.1.05>

© 2019 J-INSTITUTE

## MILITARY-Industry Partnership in Space Militarization: The Art of Contemporary Space-Based “Sensing, Command & Control”

Julianne Oh

*Royal Military College of Canada, Kingston, Canada*

### Abstract

*Some leading spacefaring nations, like the United States(US), have been prioritizing missile defense for their homeland security by making the best out of the space infrastructure, which is believed to realize more effective, as well as proactive, defense. Technically, the space-based sensor layers play an indispensable role in the execution of the Ballistic Missile Defense System(BMDS). For instance, the US Space-based Kill Assessment(SKA) project, led by the Pentagon’s Missile Defense Agency(MDA), represents one of the latest attempts to strengthen the layered satellite sensor systems, and eventually to reinforce the American missile defense capabilities, such as the BMDS, by 2020.*

*The SKA experiment is noteworthy also in a sense that the kill assessment sensors will be piggy-backed on commercial satellites mainly for the cost-savings benefits. This reportedly first partnership of the MDA with commercial stakeholders for its space applications evokes the enduring debate over the dual-use objects as a potential aid to space weapons. It is true, to some extent, that the increasing cooperation between the defense and the commercial industry sectors permits more ‘economical’ investments in outer space, and facilitates its efficient use for national security interests. However, this approach may simultaneously generate the consequence of jeopardizing the current regulatory framework and norms that the international community had long been trying to establish in order to ‘peacefully’ preserve outer space as a common heritage of all mankind. Considering today’s paradigm shift from global harmonization to reverted nationalism, the sustainability of our civilization may, after all, depend on each national government’s choice; i.e., in which direction they would form their space policy and how far to go.*

**[Keywords]** *Space Militarization, Space-Based Missile Defense, Sensor-Layered Defense, Space-Based Kill Assessment(SKA), Military-Industry Alliance*

### 1. Introduction

For the most part, the term, “outer space,” suggests a field of adventure and unlimited possibilities; e.g., the mine of untouched natural resources and the next destination for civilization.

And yet, it has also been serving as a superb high ground from which to secure a military advantage since the inception of the Space Age in the 1950s, for example, via missile launches, spy satellites, and etc. Thus, unlike our usual – even ‘naive’ – projection of outer space being clear

\* This article is an outgrowth of the author’s conference presentation delivered at the 4<sup>th</sup> Seminar of the Korea Society of Global Air and Space Industry in Seoul, Korea on December 7<sup>th</sup>, 2018. For a more comprehensive discussion of the subject, see the author’s article entitled “The US Space-based Kill Assessment Program: A Military-Industry Alliance in Advocacy for Space Weaponization,” *The Journal of Global Air and Space Industry*, Vol. 1(2018). A relevant 20-minute presentation video may also be available upon request(if interested, please contact the author at the email provided above).

and quiet, the reality unfolds plenty of space weapons and debris congesting it. Some governments have been labeling it even as a 'sanctuary' providing various supports to their defense activities. From their perspective, the space systems and capabilities are just some integral elements augmenting the nation's military effectiveness, even though such belief and practices may often contradict the *Outer Space Treaty's* principle underlining "peaceful purposes" for its use[1].

In light thereof, this article intends to introduce some aspects of the latest development in space exploration for defense interests, such as space-based missile defense, which has been pushed forward, for example, by the American government valuing its critical role for the US homeland – and its allies' – security. It will thus address a sample case how the private industry and the military are cooperating in this venture, especially to build the cutting-edge and efficient sensor-layered defense system; *i.e.*, a review of the space sensor systems extends to an examination of the ongoing SKA experiment, which includes but not limited to identifying its major issues and assessing their implications. As part of evaluating the subject matter, the project's pros and cons will briefly be observed.

The major goal of the present discussion is, therefore, to provide its readers, especially a nation's industry leaders and policymakers, with an opportunity to ponder upon the future directions of their national aerospace defense, and further, the cost and benefit of forming a strategic civil-military partnership therein. Ultimately, the topic calls for the attention of all to the anticipated outcomes and more profound implications of such decisions.

## 2. Space-Based Missile Defense

Missiles are classic yet still widely-used weaponry in armed operations. For a discussion of

satellite-enabled missile defense and its implications on space weaponization, it may be a prerequisite to grasp how the missile technology and the militarization of outer space have interconnectedly been evolving given the thesis of rocketry; *i.e.*, how the technicality of missile defense raises the issue of space militarization/weaponization.

In a nutshell, a substantial portion of missile defense tasks should be carried out in and through the space domain, because a considerable part of Inter-continental Ballistic Missiles (ICBM)' trajectory is spent in space[2]. As most ballistic missiles, except for very short-range ones, travel in outer space, "space-based assets can play an important role not just in intelligence and early warning, but also persistent fight tracking to enable successful intercepts by ground-based systems,"[3] which would eventually amount to increasing the military-dominant space activities in exchange for the so-called 'more resilient' missile defense systems.

To conceptualize it in more technical terms, the lifecycle of missiles comprises of their boost/ascent, midcourse and terminal phases, and needless to say, missiles are mostly launched for an attack. Against such incoming threats, today's technology permits a counterpart's defense through three core processes: Sensing, intercepting, preemptive destroying before they reach an intended target. Given the above-mentioned phases of missile deployment, the continuous monitoring for launch detection, early-phase tracking for exoatmospheric mid-course intercept and precision in differentiating the missile parts would determine a more effective defense against incoming missile strikes over the territories to be protected. In sum, the current ballistic missile defense systems are largely aided by the space sensor systems, and they operate, in their entirety, by the ensemble of ground-based and overhead-satellite capabilities.

### 3. Space Sensors and Layered Defense

“No missile defense system is better than the [space] sensors and command and control systems that determine where the threat is and how to kill it,” according to the US’ *Missile Defense 2020*[4]. This statement seems to reflect the vision of the US military vis-à-vis space exploration, including their specific and immediate need for satellite sensing. Pentagon, the US Department of Defense(DoD), has always been seeking an integrated layer of space-based sensors as part of its overall missile defense capabilities like “launch detection, tracking, discrimination, intercept, and kill assessment,” as illustrated above. Indeed, the space sensor layers have been promoted as a must for a more solid missile defense, and the DoD has been placing sensor development on the top-priority in its space endeavors; *e.g.*, the Space Tracking and Surveillance System(STSS) demonstrators, dubbed as a blueprint for the forthcoming systems, had actively been tested between 2009 and 2013[5], followed by the announcement of the SKA sensor experiment in 2014.

Referring to the general ICBMs’ trajectory described earlier, the STSS is constructed to identify missiles in their boost phase, track reentry vehicles and provide tracking data to the BMDS in near real-time thanks to its sensors capable of detecting visible and infrared light, whereas the SKA sensor network mainly concerns the mid-course phase of the missile defense. The MDA, a section of the US DoD, provides a comprehensive list of sensing equipment enabling a layered defense, which includes ground- and sea-based radars in addition to satellite sensors[6].

Albeit such ‘dedicated’ attempts, the advocates of the idea, like some experts at Center for Strategic and International Studies(CSIS), believe that the current state is short for the real-life

needs, and therefore, the government should allocate more budget for this layered defense architecture.

### 4. SKA Constellation<sup>†</sup>

Kill assessment, assisted by Kill Vehicles on a missile interceptor, determines the success or failure of individual interceptor missions, and informs whether a second shot against an enemy ballistic missile should follow. The SKA sensors have been developed by the Johns Hopkins University Applied Physics Laboratory. They are the Kill Vehicle’s space component designed to operate by a network of small sensors(hosted on commercial satellites) and create a more robust communications network for more strategic interception of incoming threats, *e.g.*, by performing a battle damage assessment mission based on improved situational awareness.

In addition to empowering more technically upgraded defense communications, the MDA originally conceived of the SKA sensor network being able to ensure seamless ‘birth-to-death tracking’ of missiles from space, by closing the midcourse gap and sharpening discrimination [4][7]. Thereby, it would eventually contribute to a layered space sensor system as one of the ‘state of the art’ space-based surveillance and tracking tools, which, in brief, materializes the most widely-acknowledged perception of space-based missile defense[8].

When the MDA announced the SKA experiment at the start in 2014, the first SKA payload launch was planned in FY 2016. However, due mainly to budget cuts and cost issues, it was rescheduled a few times and postponed until later[9]. In September 2018, MDA Director Lt. Gen. Sam Greaves concisely informed that the SKA sensors were finally getting ready, at the time, to be on orbit by the end of 2018, and to

---

<sup>†</sup> Last update of the SKA project in this article: May 2019.

be tested and fielded in the consecutive years. The (publicly-accessible) latest update was quoted in March 2019 when MDA's new FY2020 budget request for the SKA project was reported: MDA Deputy Director Rear Admiral Jon Hill then told that SKA sensors had been deployed throughout 2018[10], which upholds Lt. Gen. Greaves' preceding statement, "SKA sensors currently in place have conducted over 1,000 experimental observations" as of February 2019[11]. A limited number of specialized news services and think-tank platforms has occasionally released the SKA experiment progress only bit by bit during the first quarter of FY 2019. As a consequence, many details still remain unclear because no official statement from the MDA or the US DoD has been made available to the public: *e.g.*, the dates of initial payload launch as well as the final constellation of the intended batch; the number of deployed sensors; or the selected commercial-satellite hosts.

All in all, the MDA's approach to the project leaves an impression that the Agency expected the SKA network to surpass the existing technical capacity of a communications-sensor category and become a "game changer" capable of differentiating even the missile parts; *i.e.*, warhead, decoy, and other junks. According to MDA Director, Greaves, SKA is still an experiment and has no operational role yet. Its real-life operability is still being tested by the warfighter, and its current limitations and remaining issues are also being discussed among several key parties like MDA, the Government Accountability Office(GAO), DoD, NASA, and certain federally funded R&D institutions. While SKA's functional potential remains optimistic and ongoing, the MDA has already been moving along with its next project, which is a more complete, comprehensive and operable space-based sensor network called the Space Sensor Layer(SSL) – a missile defense tracking system launched in 2018[11][12].

## 5. Hosted Payload and "Dual-Use Object"

It has, by far, become obvious that one of the major issues associated with the SKA project was the 'money.' Hence, the MDA was undoubtedly content with an alternative of deploying the SKA sensors on *commercial* satellites, instead of the (newly-built) military ones. It benchmarked the US Air Force's Commercially Hosted Infrared Payload(CHIRP) experiment featuring a missile warning sensor hosted aboard a commercial telecommunications satellite. Because commercial space platforms would provide the power, data handling and other necessary functions worth multi-billion dollars, such a *hosted payload* concept promises a great cost advantage, as well as an expedited process, by making use of the existing space and ground system. Therefore, the MDA publicized, with pleasure, that the partnership would be a win-win for both the military and the industry[13].

Here, a question may be posed: Whether these commercial satellites with military-sensitive function, the so-called 'dual-use' objects, would raise the risk of militarizing outer space even further? The dual-use objects refer to space items, holding both technological potentials for civil and military uses, like spacecraft, and artificial satellites – the scope of the present discussion – are considered as a type of spacecraft[14]. The SKA sensors' payload – commercial communications satellites carrying military asset, *i.e.*, commercial resources attached to defense interests – seems to meet the definition of a 'dual-use' object. Then, should this be classified as a commercial property or a military issue?

The problem is this vague identity, which may enable them to make the best out of the loopholes in the current framework banning the Weapons of Mass Destruction(WMD) in outer space, and conveniently circumvent certain disciplines strictly applicable to arms control. The

deployment of more dual-use space objects increases the possibility of spreading armed goods[15], which would potentially and gradually congest the entire sphere of outer space with military dominance. The manipulation of space items for military applications becomes more hassle-free, considerably by the growing alliances between the defense and commercial sectors.

This type of space activities has intensified the debate between the needs for self-defense and the benefit of global cooperation, especially in light of the *Outer Space Treaty* principles, such as the 'peaceful uses of outer space.' Although it should be acknowledged that space exploration was initiated and propelled during the Cold War for the national security reasons, the military uses of outer space have constantly increased in numbers, scale and destructive nature since. The so-called 'weaponization strategies,' especially when applied to space, are expensive, provocative and even self-defeating in both military and political contexts. They are not "just a single-point solution"[16]. Our terrestrial experience shows that more advanced and expanded defense deployments to offset the opponents' threats are countered by more destructive and powerful weapons. The exchange of such retaliatory armed actions normally aggravates tensions, and apparently creates more sources of conflicts.

Arms races in outer space indeed congest space environment; *i.e.*, not only they generate more space debris, but they also end up transporting more nuclear substances from earth to space by launching ballistic missiles and the countermeasures. After all, the bottom-line of the space-based missile defense rationale is to explode a possibly nuclear-tipped enemy missile in outer space, and the interceptors are just another kind of missile, which is a weapon by nature, however they may be decorated.

## 6. Military-Industry Partnership

By far, the key concepts of the layered space sensor architecture and its latest materialization, the Space-based Kill Assessment sensor network, have briefly been discussed. The MDA calls the SKA project a "pathfinder" for its (continuing) collaboration with the commercial satellites industry[11][17]. The hosted payload model adopted in this experiment indeed presents the following gains out of a partnership between the military and the industry:

- Cost -/time-saving advantage;
- Optimal use of cutting-edge space technologies

And yet, quite a bit of criticism has also been identified in the process of assessing the implications of such a joint-undertaking as follows:

- Skepticism about militarizing outer space;
- Its potential destructive outcome against our humanity and terrestrial civilization

The above diagnosis demonstrates both the bright and dark sides of the military-industry alliance, posing a possibility of further militarizing outer space. This may hopefully offer the readers an opportunity of contemplating what *they* would like to do, insofar as their nation's space-based defense capabilities are concerned, and how far the two sectors should work together in a suitable and reasonable manner for the State of their own.

For example, national governments appear to have three alternatives, broadly speaking, in setting the course of their space policies and programs: First, they allocate more budgets and invest more in their space-based missile defense. Second, they can continue to increase more partnerships with the well-funded private industry. The third option may likely be an ordeal but could possibly be ideal in the long run: Disarmament, which seems to have been disregarded by most leaders of many spacefaring nations. What

would then be *your* choice?

The weight imposed on every single decision-maker – military, industry and government altogether – is certainly considerable, as their terrestrial judgment would eventually extend to the extraterrestrial forum, and *vice versa*. Besides, all their opinions should equally matter, because they often influence the decision-making process of one another.

## 7. Conclusion

Given the progressing speed of the MDA's SKA experiment between its initiation and now, the operability or 'fightability' of the space-based sensor systems like SKA may not be so dramatically boosted by the target year of 2020. Amid several influencing variables, this presumption may find its ground partly – if not wholly – from budget constraint. The approval and allocation procedure of defense spending, for instance, is a highly complex matter, especially within the US system; *i.e.*, even if the Senate approves, for a given year, all or most of the Pentagon's fiscal proposal for its space programs, the House may still oppose it, depending what they see as priorities at the time. By and large, *space* and *nuclear* may often be considered the areas of contention in defense bill subject to, *e.g.*, the nation's political waves and/or the global agenda of 'imminent' threats in a certain era. Though, these temporary, real-life and procedural hurdles do not necessarily mean that changes may occur to their fundamentally 'pro-military' perception about outer space. It may rather be more reasonable speculation that their unvarying enthusiasm for the so-called "Sensors and Command & Control" defense system will continue 'slowly but surely.'

On the one hand, all uses of military force should not be condemned as morally wrong, because the military capabilities are necessary for preserving civilization where conflicts persist,

like in many corners of the world even today. And universally, a nation's defense capability determines her fate, both during the peacetime and at war. On the other hand, we understand that outer space is declared to be a common heritage of all mankind where the ever 'sacred' national sovereignty does not extend, and for the preservation of such a common heritage, all of us are supposed to take responsibility for our shared ownership. Then, how can we approach this type of dilemma and find a balance?

In seeking the appropriate guidance for balanced decisions, the "element of time" may serve as a valuable point of reference, because decisions should not be made with the impulse to live only for today. A lot of science-fiction literature and films have shown what the destroyed Earth by nuclear power would unfold for humanity. The alarming signals communicated through the channels of pop culture may not be overlooked casually, because their earlier imaginations of the technologically advanced 'future' world had already been materialized in our life 'now.' Therefore, both the policymakers and the business leaders of today should recognize the weighty consequences of the current course of development for the generations to come.

## 8. References

### 8.1. Journal articles

- [15] Mineiro MC. The United States and Legality of Outer Space Weaponization: A Proposal for Greater Transparency and Effective Dispute Resolution Mechanisms. *Annals of Air and Space Law*, 33, 441-466 (2008).
- [16] DeBlois B. Space Sanctuary: A Viable National Strategy. *Airpower Journal*, 12(4), 41-57 (1998).

### 8.2. Thesis degree

- [14] Mineiro MC. The Dilemma of National Security and International Cooperation in Outer Space: Space Technology Trade and

Proliferation Controls and their Impact on Global Civil Space Cooperation. McGill University, Doctoral Thesis (2011).

### 8.3. Additional references

- [1] Article 4 of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (1967).
- [2] Karako T. Commentary: A Space Sensor Layer for Missile Defense. Space News (2016).
- [3] Harper J. Pentagon Wants More Missile Defense Capabilities in Space. National Defense Magazine (2017).
- [4] CSIS. Missile Defense 2020: Next Steps for Defending the Homeland. Rowman & Littlefield (2017).
- [5] CSIS. Missile Defense Project. Space Tracking and Surveillance System. Missile Threat (2016).
- [6] <https://www.mda.mil/> (2019).
- [8] Lodge F. Is Space the Next Frontier of Missile Defense?. The Cipher Brief (2017).
- [9] CSIS. Missile Defense Project. Sensors and Command and Control. Missile Threat (2018).
- [10] Wasserbly D. Pentagon Budget 2020: Space-based Kill Assessment Launches Ahead. Jane's International Defence Review-IHS Markit (2019).
- [11] Sherman J. Complete Space-based Kill Assessment Constellation Set to Be in Place, Online Next Month. Inside Defense (2019).
- [13] Gruss M. MDA Kill Assessment Sensors Would Be Commercially Hosted. Space News (2015).

#### Author

**Julianne Oh** / Royal Military College of Canada Doctoral Candidate

B.C.L. Sogang University

LL.M. McGill University

Ph.D. Royal Military College of Canada

#### Research fields

- The Korean Air 'Nut Rage' Incident, Annals of Air and Space Law, XL (2015).

- The US Space-based Kill Assessment Program: A Military-industry Alliance in Advocacy for Space Weaponization, Journal of Global Air and Space Industry, 1 (2018).

#### Major careers

- 2009~2011. Université de Montréal (École Polytechnique), Visiting Lecturer

- 2016~present. Korea Society of Global Air and Space Industry, Board Member

Publication state: Japan  
ISSN: 2423-8775

Publisher: J-INSTITUTE  
Website: <http://www.j-institute.jp>

Corresponding author  
E-mail: [pgy556@daum.net](mailto:pgy556@daum.net)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

<http://dx.doi.org/10.22471/military.2019.4.1.12>

© 2019 J-INSTITUTE

## Factors of the Job STRESS of Non Commissioned Women Officers

Lim Yeo-jin<sup>1</sup>

*Navy Leadership Center, Changwon, Republic of Korea*

Bang Won-seok<sup>2</sup>

*Gyeongsang National University, Jinju, Republic of Korea*

Park Gyun-yeol<sup>3\*</sup>

*Gyeongsang National University, Jinju, Republic of Korea*

### Abstract

*This study aims to examine what difficulties and task stress factors the actual female soldiers have in carrying out their duties. Now is the time to come up with qualitative development and improvement measures for women soldiers. So the scope of this study was actually interviewed by non-commissioned women officers, especially the 125 female staffs of the Navy and Marine Corps. Interviews have led to the biggest job stress factor, aimed at identifying and improving what factors exist.*

*Interviews showed that the biggest job-stress factors are stereotypes about women, male-centered military culture, professional anxiety caused by unpredictable long-term service problems, and other problems of job stress from soldiers and their relationship with their successor, as well as pregnancy and child care from marriage. These job-stress factors have led to a relatively large drop in job satisfaction.*

*The study shows meaningful results that it can be used as a reference to understand job stress factors of non-commissioned women officers. And this research will give some implication to making defense policy focusing on the women officers and non-commissioned office.*

**[Keywords]** Job Stress, Non-Commissioned Women Officers, Military Culture, Stress Factors, Leadership

## 1. Introduction

As many issues related to the military and women have recently become issues, statistics from the 2010 census show that the population of elderly people is increasing while younger people continue to decline, and that the discussion on whether to secure proper active military service by the Defense Reform 2020 will be possible, and that the revival of the military occupation system, which has been suspended since 1999 due to the Constitutional Court's ruling on the constitution.

In addition, people living in the modern society are in a complex social environment that is not in traditional society through business and social life in an environment surrounding them,

resulting in various stress, illness and psychological pressure. This is a phenomenon in which people living in all modern times are treated, and the women in our army are no exception. The background of this study is as follows.

First, Korean women have a short history of more than 60 years and plan to gradually increase the proportion of women to 5.7% by 2020. Qualitative satisfaction is also important, not just the increase in number of women. This is meaningful because it is a research that can be used as a useful reference material to investigate what job stress factors that petty women officers feel in their skin actually and to find out the development plan for the women soldiers with the results in them.

Second, in this social environment, where the female soldiers continue to increase and the role of the women soldier is increasing, the women soldiers are satisfied with their jobs and if they are not satisfied with the job, the concept of stress is generally regarded as a negative beginning.

The definition of stress in this paper is a psychological definition for petty women officers from a general point of view. It is defined as a cognitive concept that causes physical illness and problems and plays a negative role in job satisfaction. The results of this study can be summarized as follows. More active and practical efforts are being made in our society to improve women's social participation more actively than ever before in areas where their roles and status are relatively small.

In the military, women soldiers' workforce is gradually expanding, and the Ministry of Defense and each army are already planning to expand the use of long-term women soldiers. The proportion of women soldiers (officers and non-commissioned officers) in our armed forces is 3.9% in 2009 and plans to gradually increase to 5.7% by 2020. Nonetheless, there are relatively few studies on women soldiers who are the foundation for the growth and development of the ROK military.

But now the women soldiers are growing steadily.

So the purpose of this study is to investigate the job stress and job satisfaction of petty women officers and to analyze the characteristics of job stress factors felt by petty women officers (navy and marine corps) in this study.

In order to be a women soldiers are capable of contributing to the upbringing of 21st century advanced elite. There is a reason to purpose to help them.

The scope of this study was mainly focused on female navy and marine corps' petty officers who were between 1 and 3 years, which are considered to be the lowest rank among the female navy and marines.

And the research was limited. The women servants felt that they were in a poor environment compared to the officers of the women's

army, and that there was a great difference in the sense of distance.

They felt when they actually chose to be first women. It is the result of an interview with actual navy (80 petty women officers) and marines (45 petty women officers). If you have more than 3 years after your appointment, you are applying for a long term application and one year of service extension. Many of the petty women officers who came in with dreams of a professional soldiers were hoping for a discharge. If so, why? We will analyze and study whether the cultural and environmental factors of the armed forces cause job stress to make them unable to fulfill their job satisfaction.

In this study, data on job stress and job satisfaction were made by using exploratory method focusing on the literature. In addition, actual interviews were conducted with the sergeants of the Navy (80 persons) and Marines (45 persons). As a result of the interviews, what was the job stress felt by the women in their actual job and how this job stress affected the job satisfaction. And this study reveals that the women themselves are the reference materials to help them to re - recognize the environment and situation of women and to be able to cope more wisely in the new generation soldiers and changing military culture. It is still a small number of females, but it is helpful not to leave the army because it is vague and difficult, but to find out what the root cause is and how to overcome such a cause.

Finally, the expected effect of this study is to help women find out what their job stress factors are and to find ways to overcome such conflict factors.

In addition, the strength of their inherent leadership qualities will become a reference study material that will help them to demonstrate and improve their leadership as female petty officers by further developing and weakness.

## **2. Theoretical Consideration of Job Stress**

### **2.1. Significance of job stress**

According to the World Health Organization(WHO), the stress is a physiological phenomenon that occurs in the minds of the mind. Each body of the body has stressed that it does not bear the burden of stress, and by imposing excessive burden on the body function. Stress was called an abnormal phenomenon of function caused by.

The word stress came from the Latin stringer, "Draw Tight," which was first used in the 14th century.

In the 17th century, it was often used to mean hardship, straits, adversity, or affliction. In the 18th century, pressure, pressure, strain). Or a lot of effort(strong effort), etc. However, by the 20th century, I began to study the effects of stress on human physical and mental health. In the 1920s, Walter Cannon looked at the balance of life, the reverse function of decay, the effects and collapse of stress. Humans tend to keep a circle about external stimuli, which is called homeostasis. When external stimuli strike a balance, it causes a sensitive response to the adrenal medulla and sympathetic nervous system, which leads to changes in the body[1].

In recent years, it has been argued that stress can't be regarded as negative or positive in itself. However, when we look at the overall concept definition above, it can be said that stress is a mental or physical negative influence that people feel from the outside.

In the 20th century, the stress of modern meaning became the domain of psychology and medical research. Cannon and Selye tried to define stress as an external force acting on a system[1][2][3].

It is largely due to the pioneering work of Cannon conceptualizes stress as a mechanism that interferes with the maintenance of homeostasis for the first time using the concept of "emotional stress", and Selye refers to a set of physical defenses organized against some form of noxious stimulus[3].

This stress and job stress are mainly studied in fields of medicine, physiology, psychology, etc., and they become a general concept as they are systematically studied in the field of business administration, industrial psychology, and behavioral science.

Job stress has been regarded as a main area of interest in organizational behavior research because it directly and indirectly influences organizational performance as well as organizational behavior and performance. In the early stages of job stress research, the focus was on defining the concept of job stress.

As the study was activated, studies have been conducted to derive the causes and the outcome variables of task stress and to establish the relationship between these variables.

Researchers such as Margolis(1974) define task stress as a negative result caused by overwork, role conflicts, role-playing, poor working conditions, and job environment that threatens individuals, among other things, by destroying their psychological and physiological constancy[4]. Hellriegel & Slocumm conceptualize task stress as a physiological and psychological reaction of individuals caused by environmental factors[5]. Cha & Won defined task stress as an unbalanced condition that results from differences between organizational desires and the ability of individuals to perceive the subject[6].

French & Roger & Cobb defined a task stress as a state in which an individual's characteristics and abilities are inadequate to the needs of the environment and the job environment is not suitable for the needs of the individual[7].

In this context, Han also defined task stress as a psychological and physical tension that results from a mismatch between an individual's ability to meet the demands of a job performance and the degree to which the job environment can satisfy an individual's needs[8].

Ha & Kwon argued that by summing up prior research on task stress, task stress can be understood through the concept of external stimuli affecting individuals, personal physical and psychological reactions to the external environment, and perception or evaluation that organizational members have about interactions with the internal and external environments of the organization[9].

## 2.2. Theoretical Model of Job Stress

The theoretical models that shed light on the nature of task stress have been developed in a wide variety of ways, since task stress is linked to task satisfaction or organizational immersion, and the choice of a theoretical specific model of stress in the study of how stress affects organizational task satisfaction or immersion can result in different outcomes in explaining task stress and task satisfaction[10].

Therefore, among the theoretical models of stress, we will look at the occupational model of House, the traditional research model that can be used in relation to organization, and the social environment model of French & Kahn, the process model of McGrath and the integrated model of Ivancevich [11][12][13].

This research will refer to the integrated model of Ivancevich among each model. It is because although the job model, social environment model, and process model of a house have contributed greatly to the development of stress model as a traditional stress research model, there is also a limitation. In this paper, researchers will look at the causes, processes and results of task stress through the integrated model of Ivancevich, which is evaluated as the most representative model of stress among them[13].

First, House(1974) developed a stress model that focused on the consequences(physical/cognitive, just/behavior) arising from the response of interaction between social conditions and personal characteristics. The solid lines in the figure below represent the assumed causal relationship between each variable. And the dotted lines that are coming out of condition variables (personal characteristics/social conditions) mean that they interact with the variables of the solid and the dotted lines at each stage where the stress occurs[10].

House argues that the degree of stress is determined by the ability or desire of each individual and the interaction of values and social environments with their peers, and that the consequences resulting from stress-inducing social conditions and stress are controlled by the perception of the individual's situation. And perceived stress depends on both personal and so-

cial variables that are context variables. The result is that they exhibit physiological, cognitive, and behavioral reactions caused by perceived stress, not only a specific framework for the variables on task stress but presenting models at a general level[10].

Second, with the model presented by French & Kahn(1962), the relationship and hypothesis with each variable are arrowheads, and the direction of causal relationship is indicated. The anomaly, consisting of six sub parameters, well describes the health effects of tasks, and suggests that relationships between objective and subjective environments, subjective environment and tension, and reference to tension and health are all coordinated by personal characteristics and social support[11].

This model attempts to integrate medical and behavioral approaches through task-stress research, and is a model that attempts to validate against people with different jobs present in industrial sites. However, Lee is criticized for not having detailed discussions on how the family environment affects the model, including the economic conditions of individuals, performance parts that are important to non-organizational variables such as general social economy and managers.

Third, McGrath viewed the occurrence of stress as a four-step cycle, focusing on the individual's process in recognizing the causes and consequences of stress, whose model stems from conditions or circumstances in the social and physical environment. If the situation or condition is perceived to result in undesirable features if not corrected, the situation becomes a stress situation[12].

Therefore, individuals who perceive stress react to change their environment. Immune types are identified as a series of processes in which individuals interact with the environment, and contribute to stress research, especially by defining the objective situations that cause stress and placing importance on the individual's cognitive and evaluation processes. However, there is no effort to integrate medical and behavioral variables, and the problem is that it overlooks

the factors that affect the overall process of forming the model.

Fourth, Ivancevich et al. presented a stress model that incorporated the existing model from an administrator's perspective. They constructed variables such as interpreting or evaluating the extent to which the preceding factors in a stress situation, called stressors, the effects or reactions of the actions of the stressor, and concluding (performance) of these results, and also adjusting variables that affect the interaction between stressors, perception, results, and performance. Immortals include all theoretical, intuitive, and empirical fields. It also includes the physical environment and individuals, groups, and organizational variables as variables within the organization. This means that neither variable is more important or less important than the others. While immovable figures have so far failed to give clear results on the relationship between physiological and behavioral outcomes, or on the relationship between behavioral outcomes and various health criteria, the interrelationships between the two are important in terms of management[13].

This is because it is available as a framework for dredging that can maintain or develop the state of the tissue that can reduce inefficiency stressors.

The theories that have so far described stress cannot be fully explained because they have been discussing it exclusively on a biological basis or on a psychological and cognitive level. However, the overall occurrence, recognition, outcome and response to stress will require an explanation of each step to develop a discussion of the correct task stress.

Therefore, Ivancesvich, & Matheson referred to the integrated stress model of Ivancevich that accommodates those parts as much as possible. Let's take a look at some of the stress-causing factors that cause job stress for female Navy, Marine Corps, and female officers, and how task stress as a result affects job satisfaction[13].

### 3. Research Methods and Results

This study was conducted one to three years after the non-commissioned officers(so-called petty officers) of the navy(80 persons) Marine Corps(45 persons), and 120 single women's age were 20 to 31 years old and twelve among them were married. This research was to show the task stress factors of military members. The interview was conducted on one of the methods of qualitative research. Interviews were conducted to find out what cognitive job stress factors naval, marine, and female soldiers felt and how satisfied they were. The interview period is from 8<sup>th</sup> March 2016 to 26<sup>th</sup> September 2018. In fact, the interview showed that the first and most influential factor among the job stress factors of female soldiers was stereotyping women, the second was male-centered military culture, and the third thought of anxiety about the future due to unpredictable long-term military service bias as the biggest task stress factor.

Moreover they included job-stress and marriage-related pregnancies with soldiers and their successors. I want to focus on this because most of the comments and interviews were stereotypes about women.

Due to this task stress, female staff members interviewed for this study were relatively less satisfied with their duties. Are you satisfied with your current job among 125 people? (Very agree - agree - so so - disagree -very disagree) 83 persons answered agree, 21 said disagree, and 10 said very disagree, and only 11 said very agree they were satisfied with their job. Of course, he asked questions about female soldiers between one and three years after his appointment, so he revealed that there could be limitations in answering because it is a time when he is beginning to learn his job.

The job stress factors of female noncommissioned officers who analyzed the results of the interview. Through the actual interview, the stereotypes about female soldiers were the biggest task stress factor that female noncommissioned officers felt, and if you analyze them, they were able to come up with seven major tasks.

And petty women officers are considered weak leadership. As a soldier, petty women officers who show characteristics such as "bare" and

"same" leadership tend to be considered relatively weak because leadership is often judged to have leadership when it shows traditional leadership of masculine style, such as charisma and strong authority.

And also it was lacking in military spirit. In a common saying, "The military is out." Even if the South Korean military is given orders that seem difficult to implement, it says, "Yes, I see it," and then it lives and immediately executes the instructions. Later, facing with difficulties, she asked her seniors and colleagues how she could overcome the difficulties, but she was often told that she had a tendency to consider the environmental (given time, manpower, resource elements, etc.) conditions to carry out the task at her command, which made her feel "lack of military spirit" compared to the South.

It's not organized. With the stereotype that organizations place more importance on individuals and their own family life than on the thoughts and actions of organizations, departments and units, the women tend to think that they are weaker when it comes to the question of whether they can put down what they are and devote themselves to the organization.

Loyalty goes down. The female soldier felt it was difficult because there was a stereotype about the South Korean military's lack of loyalty to its superiors and organizations. It is not able to cope with a crisis. The petty women officers themselves were aware that they believed that the women were less able to cope with emergencies, such as crisis situations, war and war-like situations. A weak mind leads to a relationship with a person and the break-up is not accurate or strict. Women themselves recognized the stereotype that when their subordinates did something wrong, they could not discipline or scold them strictly and decisively, and that when they face each other despite knowing what they did, they were too weak to provoke them. As a practical person, they believed that while their work skills were outstanding, the more they were promoted, the less their organization's non-provisioning capabilities, including required load management.

And also they have a vague fear of the future

and this has emerged as a job-stress factor which has made female noncommissioned officers unable to satisfy their duties. It went further, and 45 of 125 female soldiers were found to have participated in interviews to decide to be discharged from the military and prepare to move. Because of the peculiarity of military culture consisting of male-centered class society, there were times when they were given task stress because they could not adapt to military culture.

As suggested in Ivancevich's integrated stress model, job stress is the leading cause of stress, resulting in higher blood pressure, physical symptoms such as indigestion, chronic headache and lower blood pressure, and, as a result, lower overall satisfaction level of the life was felt by the women. The solution suggested by the female soldiers themselves[13].

During the interview, the female soldiers interviewed talked about the job-stress factors but also recognized their own solutions. The solutions are as follows.

First, stereotypes are also an opportunity to change people's minds. Through dialogue with the South Korean military, they should talk first, talk to soldiers, and try to attend the meeting without missing out on the general affairs. In other words, they said that it would be better to show a hard-working attitude and gradually discredit stereotypes about women.

Second, we should try to find out for ourselves what the strengths of a female soldier are and really display them as their own strengths. In other words, he should not give up his personal relationship, being unconvinced by rumors or other people's views.

Third, try to have a positive mind that tries to laugh rather than cry. They say that it is important to be able to discard the prejudice that women lack interpersonal relations, to show that they recognize each other and act on their own, and to live faithfully.

Fourth, women themselves should not be tied up in stereotypes about women who they think they are. They should avoid negotiating with themselves, which naturally limits their work by acting as assistants to the South Korean soldiers,

and they need aspirations to present their opinions broadly and be confident of their will.

Finally, he did not forget his initial thoughts, saying that he could alleviate much of the job-stress he felt as a female soldier if he thought about why he chose the path of a female soldier, thought about it, and tried to have a positive attitude with a vision of the future as a female soldier. He also expressed his opinion that it is important to abandon the sense of damage and act confidently.

#### 4. Conclusions and Suggestions

While increasing the number of female soldiers is important, it is time for the military to look at the difficulties and job stress factors in the actual performance of female soldiers and come up with qualitative development and improvement measures for female soldiers. At this point, the study is meaningful in that it is the beginning of this study.

The scope of this study was actually interviewed by women, especially the 125 female staff of the Navy Marine Corps. Interviews have shown that the biggest job-stress factors are stereotypes about women, male-centered military culture, professional anxiety caused by unpredictable long-term service problems, and other problems of job stress from soldiers and their relationship with their successor, as well as pregnancy and child care from marriage. These job-stress factors have led to a relatively large drop in job satisfaction.

Kim investigated and researched the perception of the qualitative effects of the increase in the number of female soldiers in the special organization of the military. According to the analysis by distinguishing it from the qualitative aspects of the increasing number of female soldiers, namely functional, cultural, and compensatory effects, many of the respondents said that there was no more positive or change than negative answers on all indicators. But parts of functional effects, such as confidence in victory or mental strength, that could achieve the origi-

nal goal of the military organization or contribute to a "strong military," turned out to be negative perceptions. These results mean that while the views and efforts that our military should have a democratic and open atmosphere continue to be made, stereotypes about women still remain an issue that needs to be improved[14].

The limitations of this study include interview groups. They did interviews with non-commissioned officers of the Navy and Marine Corps for one to three years after their appointment, so they cannot represent the entire female military. Therefore, there is a limit to what the female military as a whole feels is a task stress factor, and there is a possibility of errors in the answers. However, the study may be meaningful in that it can be used as a reference material to help good talent advance the career path by identifying what job stress factors women are actually feeling at a time when the numbers are increasing.

It is also necessary to establish objective indicators to make interview groups more diverse and to clearly identify causality, and to study causality through them, to the extent of female task stress factors, task satisfaction and relationship to task immersion. Also, the various angles of development in which women can grow and develop in our military will have to be studied in the future.

#### 5. References

##### 5.1. Journal articles

- [1] Selye H. Stress and the General Adaptation Syndrome. *British Medical Journal*, 1(4667) 1383–1392 (1950).
- [4] Margolis K. Job Stress, An Unlisted Occupational Hazard, *Journal of Occupational and Environment Medicine*, 16(10), 659-661 (1974).
- [8] Han KH & Kim HS. A Theoretical Study on Factors Affecting Job Stress, *Industrial Development Research*, 10, 83-104 (1991).
- [9] Ha MS & Kwon YS. A Study of Antecedents and Consequences of Job Stress in the Korean Public Sector, *The Korean Journal of Public Administration*, 11(3), 214-245 (2002).
- [11] French JRP & Khan RL. A Programmatic Ap-

proach to Studying the Industrial Environment and Mental Health, *Journal of Social Issues*, 18, 1-47 (1962).

- [12] McGrath JE. Small Group Research, *American Behavioral Scientist*, 21(5), 651- 674 (1978).
- [13] Ivancevich JM & Matteson MT. Occupational Stress, Type A Behavior, and Physical Well Being, *Academy of Management Journal*, 25(2), 373-391 (1980).
- [14] Kim W. Analysis of the Effectiveness of Korean Women's Increase, *Journal of Government*, 13, 192-193 (2007).

## 5.2. Books

- [2] Canon W. Bodily Changes in Pain Hunger, Fear, and Rage. Appleton Century Crafts (1914).
- [3] Selye H. The Stress of Life. McGraw-hill (1976).
- [5] Hellrigel D & Slocumm JW. Organizational Behaviors. St. Paul: West (1986).
- [7] French JRP & Rogers W & Cobb S. Adjustment as a Person Environment Fit. Coping and Adaptation. Basic Books (1974).
- [10] House JS. Occupational Stress and the Mental and Physical Health Factor Workers, the Institute for Social Research. The University of Michigan (1980).

## 5.3. Conference proceedings

- [6] Cha YJ & Won HS. Casual Analysis of Job Stress in Local Public Officials. Winter Conferences of Korean Association of Public Administration (1997).

### Lead Author

**Lim Yeo-jin** / Navy Leadership Center Professor  
 B.A. Busan University of Foreign Studies  
 M.A. Busan University of Foreign Studies  
 Ph.D. Gyeongsang National University

#### Research field

- A Study on the Factors about the Job Stress of Military Women, *Naval Leadership Studies Journal*, 5 (2013).
- A Study on the Military Personality Education in Terms of Mental Education, *Journal of Spiritual & Mental Force Enhancement*, 51 (2017).

#### Major career

- 2005~2010. Defense Leadership Center, Research Professor
- 2010~present. Navy Leadership Center, Professor

### Co-Lead Author

**Bang Won-seok** / Gyeongsang National University Lecture  
 B.A. Republic of Korea Air Force Academy  
 M.A. Sogang University  
 Ph.D. Gyeongsang National University

#### Research field

- Effect of CSR on Customer Loyalty: Moderating Effect of Authenticity, *International Journal of u-and e-Service, Science and Technology*, 9(5) (2016).
- The Source of Competitive Advantage: Internal Marketing, *Journal of Information*, 20(4) (2017).
- ROK's Deterrence Strategy against North Korea's Nuclear & Missile Threat, *Unification Strategy*, 18(1) (2018).

#### Major career

- 2012~present. Gyeongsang National University, Lecturer
- 2018~present. N. Noble Value Research Institute, Research Fellow

### Corresponding Author

**Park Gyun-yeol** / Gyeongsang National University Professor  
 B.A. Gyeongsang National University  
 M.A. Seoul National University  
 Ph.D. Seoul National University

#### Research field

- Emotional Expression and Communication of Netizens in Specific Event Situations, *Argos*, 36(72) (2019).
- A Study on the Way to Verify Effectiveness of Character Education in Moral Education of South Korea School, *Journal of Moral & Ethics Education*, 63 (2019).

#### Major career

- 2010~present. Gyeongsang National University, Professor
- 2015~present. International Society for Military Affairs, Vice President
- 2017~present. Evaluation Member of Prosecutor, Korean Bar Association
- 2018~present, The Korean Association of Ethics, Vice President

Publication state: Japan  
ISSN: 2423-8775

Publisher: J-INSTITUTE  
Website: <http://www.j-institute.jp>

Corresponding author  
E-mail: [fusco@daum.net](mailto:fusco@daum.net)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

<http://dx.doi.org/10.22471/military.2019.4.1.20>

© 2019 J-INSTITUTE

## A New Approach to Moral Injury of Soldiers during WAR

**Park Gyun-yeol<sup>1</sup>**

*Gyeongsang National University, Jinju, Republic of Korea*

**Seo Eun-sook<sup>2</sup>**

*Dongguk University, Seoul, Republic of Korea*

**Shin Hee-jeong<sup>3\*</sup>**

*Gwangju National University of Education, Gwangju, Republic of Korea*

### Abstract

*This study aims to inquiry the moral injury or some moral wounds in military situation. In addition, this research presents new approach to overcome moral injury in military war, illustrating the conflict between the performance of his mission and the damage of civilians, and a problem solution to treatment method of the moral injury. Recent research has provided compelling evidence of mental health problems, including post-traumatic stress disorder(PTSD), related to the war-experience.*

*In the theoretical background, we also looked at some previous research on approaches to moral injury. Then this is going to approach to moral injury, while sharing some soldiers' experiences attended in battles. A healing program for soldiers who are morally hurt by future wars should go beyond the existing psychological-based PTSD(Post Traumatic Stress Disorder) healing program. The moral injury of each soldier should be explained in a series of moral conflicts throughout whole lives. This paper shows some soldiers real testimony of moral injury caused by war experiences are presented as cases. These cases, including Vietnam Veterans who reported killing were twice, are well-understood examples to represent the moral injury of psychological trauma related to war-experiences.*

*In this article, we propose a possible solution for moral injury-related psychological trauma in military based on the concept of moral injury. As a result, this research will contribute to give an implication to create a general community made by civil and military mutual understanding.*

**[Keywords]** Moral Injury, War, Soldiers, Community, Psychological-Based PTSD

### 1. What is the moral Injury?

The moral injury refers to the severely damage to self-esteem that is morally worn away as a kind of wound. The level and depth is much severe than the very serious psychological injury in the face of certain situations. In other words, moral wounds are otherwise "transgressively deeply held moral beliefs and expectations"[1].

In order to clarify the concept of moral injury, it is necessary to define morality. The morality has to hold the whole concepts as follows: 1)as human being, 2)universally desirable, 3)complex

competence that could be regulated by himself or herself to the situation of the problem. The moral injury is a serious self-rebuke to the outcome of moral reasoning that he or she chooses in this encountered the moral dilemma situation. Because the moral reasoning is a kind of verification of well function of human brain, moral injury is a kind of breaking the chain of moral reasoning process. In moral education, to protect the expected moral injury and to promote the moral competence, moral education teachers have tried to mobilize critical thinking. Critical

thinking is that mode of thinking about any subject, content, or problem in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing and reconstructing it. As critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking, it is very helpful to support and keep morality or moral competence of himself or herself.

In the midst of war, soldiers start with many moral conflicts. Individual soldiers may have anti-warism thoughts, and participate in war due to various multi-level reasons in the house. In an individual war, a soldier has a fate to determine the death of his enemy as result of his or her own duties. This fate provides an inevitable environment when individual soldiers experience a moral dilemma. This composition ultimately leads to individual soldiers being morally hurt regardless of their success or failure.

## 2. Approaches to Moral Injuries in Previous Studies

Previous researches generally have understood moral injury as a kind of general psychological behaviors. So the moral injury has been understood as measures to avoid PTSD (Post Traumatic Stress Disorder). Moral injury has been posited to result in the re-experiencing, emotional numbing, and avoidance symptoms of PTSD[1][2]. Several studies demonstrate an association between killing in war and mental and behavioral health problems, which may be proxies for moral injury[2][3][4][5][6][7][8].

Examples of these extension lines are as follows.

- Across eras(for example Vietnam, Operations Desert Storm and Desert Shield, Operation Iraqi Freedom[OIF], Operation Enduring Freedom [OEF]) those who kill in war are at greater risk for a number of mental health consequences and functional difficulties, including PTSD, after accounting for a number of demographic variables and other indicators of combat exposure[2][5].

- In returning OIF Veterans, even after controlling for combat exposure, taking another life was a significant predictor of PTSD symptoms, alcohol abuse, anger, and relationship problems[3].

- Vietnam Veterans who reported killing were twice as likely to report suicidal ideation as those who did not, even after accounting for general combat exposure, PTSD and depression diagnoses. In OIF Veterans, the relationship between killing and suicidal ideation was handled by PTSD and depression symptoms[2][5].

- Killing in war may be an important indicator of risk for developing frequent and severe PTSD symptoms. Those who endorsed killing a non-combatant or killing in the context of anger or revenge were more likely to belong to the most symptomatic PTSD class, compared to those who did not kill[2][9].

In this regard, the latest solution comes from psychological approach. It has two approaches. The first intervention is a six-session module called Impact of Killing in War(IOK), developed to augment existing EBT(Evidence-Based Treatment) or PTSD(for example, IOK is used in conjunction with existing EBT for PTSD interventions, in those who have conflict related to killing in war). Preliminary data from pilot testing demonstrated significant improvements for participants on overall psychiatric symptoms, anxiety, and depression, compared to a control group, as well as greater community involvement and increased ability to share personal thoughts/feelings with others[2][10][11].

The second treatment is Adaptive Disclosure (AD), an eight-session intervention that takes into account unique aspects of the phenomenology of military service in war in order to address difficulties such as moral injury and traumatic loss that is explicitly not addressed in EBTs[2][12].

Thus, therapeutic measures for moral wounds have proceeded as if they were surgical treatments for physical wounds. In this case, the object of treatment is limited not only to the wounded individual soldiers but also to the level

of suturing, rather than overcoming the moral wounds of individual soldiers without solving the fundamental problem.

### 3. A New Approach to Moral Injury

The war has many aspects like the god of Hindu Shiva. This research would like to give four examples of the psychological situation that individual soldiers could have an experience in such a war. These examples have been somewhat abridged for research purposes. The blind name was anonymously processed. The first example comes from the testimony of a veteran who fought as a communication soldier in the Korean War in 1950. This example illustrates the conflict between the performance of his mission and the damage of civilians.

- [Example 1] I was hiding in the woods for a long time, and I was worried about the comfort of a comrade-in-arms. I first had to know the current situation and it seemed to be possible that I could respond to whether or not to save him. I was afraid, but I felt that guilty would disappear a little. If I had shot them then I would have killed innocent civilians. I just recalled myself who was really ready to shoot them and who was ready to pull the trigger. The ugliness of the war seemed to regenerate within me, and I did not know what to do[13: 80-81].

This first example contains the attitude of one's performance of duty and conflicts in peer relations. It is a story of a soldier who died soon after leaving a handwriting. And here next we have second example that can show some implications in terms of moral injury of soldiers during war.

- [Example 2] My comrades killed dozens of enemies, but they are proud of it, but I kill one person, and I am amazed at my dreams. I feel myself poor, being in the midst of my own stupidity. "Have not we already a few dozens of our brothers die? It is a shameful thing for a fellow man to kill one enemy such a hand." However, if I reminisce about the enemy, shooting, hit, kill, check,

dream, and ghost that does not exist headless, I am an innocent student until now. I can only think that I am a young man who has not been able to go to the other's cheek once. I was born in a quiet village in the sea, sun and evergreen South Jeju 20 years ago. I spent my childhood in my dreams. I spent my youth as a boy in longing for something. My destiny who kill anyone in war is the same to anybody's destiny[14: 94].

The protagonist in this second example can be guessed that he was mobilized as a student. This protagonist reveals the conflict between his appearance as a soldier and his appearance as a natural person. Then we want to show the 3<sup>rd</sup> example. The participant joined to the war as a student by voluntary conscription. In his mind, there were so many relationship with his family or friends. Those variables were the reason why he joined the war.

- [Example 3] The sick enemies appeared before my eyes. He seemed to lift his hands with a gun. I was out of my mind. I pulled the trigger in unison. He fell. The battle is over. It was painful. The appearance of the dead enemy in my gun has come up. 'Would not he have been trying to surrender?' If I were calm, I would not have shot him ... ' It was to kill the enemy soldiers who pretended to be injured or dead. If there were some strangers in the dead who were lying down or sitting on the trenches, they kicked their feet and pulled the trigger. Then the mouth turned white. It is dead. ... .. It was a long time after dinner that normal human beings returned to their eyes. Then it was regrettable that the wounded enemy soldiers were killed. 'Then I would have been able to live if I had sent it back. Now, come and look back, if you said, "throw your weapons down and put your hands up," they may have. At that time, hostility was also hostility, but I was scared too. ... .. In the battle on the Imjin River, I think I really killed many enemies. He crouched in his head and killed innumerable enemies who could not resist. I had never seen such an enemy. It was a terrified eye. I just pulled the trigger. It was my age when I saw the fallen enemy. At the moment, I went to school immediately after 6.25

and thought that I was going to go to the military without knowing my hand. I thought, 'He might be a similar person to me,' and he thought, 'Does his parents know he's dead like this?' As I grew older, my thoughts always hurt my mind. In retrospect, killing a person who is not willing to resist is not murder, but murder[15: 207-212].

Now we are going to show the 4<sup>th</sup> example. The example came from old film *Gladiator*. This paper will focus on General Maximus in the film. He participated to the war based on good relationship with old king and his family. The book, *Gladiator*, was written by Dewey Gram. The screenplay by David Franzoni, John Logan, and William Nicholson was made into a very successful movie. The movie stars Russell Crowe as Maximus and Joaquin Phoenix as Commodus. British actor Oliver Reed(Proximo) died before the movie was finished, although almost all his scenes had been completed

- [Example 4] General Maximus, Commander of the Roman Army of the North, fights his last battle in the war against Germania. Then, he hopes to return to his farm and his family in Spain. But there are many serious problems in Rome and Emperor Marcus Aurelius knows he will soon die. Maximus realizes that he must perform another duty for the Emperor before he can go home. He knows it will not be easy, and he is right. Soon he is fighting for his life again, first as a prisoner, then a slave, and finally as a gladiator. One thought keeps Maximus alive: that he will finally meet and kill the man he hates most—the new Emperor, Commodus[16].

Through above 4 examples, we can understand what all participants joined the war. So we can think that all participants' moral injury could be come from different base and reasons. The moral injury experienced by the soldiers through the war has revealed various aspects and types of surgical wounds that remain as traces in the body. The types of moral injuries are diverse and it is very limited to explore the solution on the extension of the existing psychological basis of

PTSD. In other words, every soldier in a war situation experiences various forms of moral conflict regardless of the circumstance. We have a conflict on the choice of doing this or that. All options are based on value. Often, it is not moral conflict that we have a conflict over hamburgers and spaghetti. Moral conflict must be based on value of each option. A healing program for soldiers who are morally hurt by future wars should go beyond the existing psychological-based PTSD healing program. The moral wounds of a soldier in a war are not damaged by the trauma of a single blade or a psychological mechanism. The moral wounds of a soldier should be understood in a continuum of moral conflicts throughout life[17].

## 4. Conclusion

War is a paradoxical friend of happiness. War is not presentation of evil by itself. War includes all kinds of human disaster. However, quite paradoxically, the war originates from the assumption of all human happiness naturally. This paradoxical relationship is the cause of the moral dilemma experienced by the soldiers. All the soldiers are in the dilemma between two vivid values during the battle.

During war, all soldiers inevitably the moral injuries caused by the very complicated cause of the stratum from the disgust in the forgotten war to the friendship and humanity. Because of complicated reason of itself, the moral injury could not be cared by simple surgical operation or general psychological caring.

Therefore, we propose the implications of our conceptualization for current and emerging treatments for moral injury by presenting a kind of solution. The moral injury of the soldiers through the war should be regarded in the context of moral community of a particular war, and its measures for healing or caring must be taken in the process of general public attending ordinary citizen and soldiers of the own sides, and ordinary citizens and soldiers of the opposing

parties.

## 5. References

### 5.1. Journal articles

- [1] Litz BT & Stein N & Delaney E & Lebowitz L & Nash WP & Silva C & Maguen S. Moral Injury and Moral Repair in War Veterans: A Preliminary Model and Intervention Strategy. *Clinical Psychology Review*, 29, 695-706 (2009).
- [3] Fontana A & Rosenheck R & Brett E. War Zone Traumas and Posttraumatic Stress Disorder Symptomatology. *Journal of Nervous and Mental Disease*, 180, 748-755 (1992).
- [4] Fontana A & Rosenheck R. A Model of War Zone Stressors and Posttraumatic Stress Disorder. *Journal of Traumatic Stress*, 12, 111-126 (1999).
- [7] MacNair RM. Perpetration-induced Traumatic Stress in Combat Veterans Peace and Conflict. *Journal of Peace Psychology*, 8, 63-72 (2002).
- [9] Maguen S & Lucenko BA & Reger MA & Gahm GA & Litz BT & Seal KH & Knight SJ & Marmar CR. The Impact of Reported Direct and Indirect Killing on Mental Health Symptoms in Iraq War Veterans. *Journal of Traumatic Stress*, 23, 86-90 (2010).
- [10] Maguen S & Luxton DD & Skopp NA & Gahm GA & Reger MA & Metzler TJ & Marmar CR. Killing in Combat, Mental Health Symptoms, and Suicidal Ideation in Iraq War Veterans. *Journal of Anxiety Disorders*, 25, 563-567 (2011).
- [11] Maguen S & Madden E & Bosch J & Galatzer Levy I & Knight SJ & Litz BT & Marmar CR & McCaslin SE. Killing and Latent Classes of PTSD Symptoms in Iraq and Afghanistan Veterans. *Journal of Affective Disorders*, 145, 344-348 (2013).
- [12] Maguen S & Metzler TJ & Litz BT & Seal KH & Knight SJ & Marmar CR. The Impact of Killing in War on Mental Health Symptoms and Related Functioning. *Journal of Traumatic Stress*, 22, 435-443 (2009).

[14] Steenkamp M & Litz BT & Gray M & Lebowitz L & Nash W & Conoscenti L & Amidon A & Lang A. A Brief Exposure-based Intervention for Service Members with PTSD. *Cognitive and Behavioral Practice*, 18, 98-107 (2011).

[17] Kwon CM. Moral Injury in Combatants and Its Challenge to the Korea Military. *Journal of Military History Studies*, 465, 453-476 (2018).

### 5.2. Books

- [5] Lee JT. 6.25 Korean War Veterans' Handwriting. Unchon (2016).
- [6] Lim YS. Standing at the Border of Life and Death, the Journey of Life through the Front: Korean War and Vietnam War Veterans Testimony Book. Eunbich (2017).
- [15] Min BD. 60 Years Ago, 6.25 War. Josun (2010).
- [16] Gram D. Gladiator Onyx. First Edition (2000)

### 5.3. Conference proceedings

- [2] Burkman K & Madden E & Bosch J & Dinh J & Neyla T & Maguen S. Preliminary Findings from a Pilot Study of a Novel Treatment among Veterans with PTSD Who Have Killed in War. International Society for Traumatic Stress Studies 29th Annual Meeting (2013).
- [8] Maguen S & Burkman K. Killing in War and Moral Injury: Research and Clinical Implications. Invited Lecture Presented at 17th Annual VA Psychology Leadership Conference (2014).

### 5.4. Additional references

- [13] <https://www.ptsd.va.gov/> (2019)

**Lead Author**

**Park Gyun-yeol** / Gyeongsang National University Professor

B.A. Gyeongsang National University  
M.A. Seoul National University  
Ph.D. Seoul National University

**Research field**

- Emotional Expression and Communication of Netizens in Specific Event Situations, *Argos*, 36(72) (2019).
- A Study on the Way to Verify Effectiveness of Character Education in Moral Education of South Korea School, *Journal of Moral & Ethics Education*, 63 (2019).

**Major career**

- 2010~present. Gyeongsang National University, Professor
- 2015~present. International Society for Military Affairs, Vice President
- 2017~present. Evaluation Member of Prosecutor, Korean Bar Association
- 2018~present. The Korean Association of Ethics, Vice President

**Co-Lead Author**

**Seo Eun-sook** / Dongguk University Professor  
B.A. Seoul National University  
M.A. Seoul National University  
Ph.D. Seoul National University

**Research Field**

- Asian Cultural Identity in Korea's Multicultural Society: Focus on Philippines, *Journal of Ethics*, 98 (2014).
- Development of Immigration Policies and Social Integration Programs for International Students -Focus on Korea and the Case of OECD Countries-, *Journal of Korean Moral and Ethics Education*, 52 (2016).

**Major Career**

- 2006~present. Dongguk University, Professor
- 2019~present. Institute for Multicultural Integration, Director

**Corresponding Author**

**Shin Hee-jeong** / Gwangju National University of Education Lecturer  
B.A. Gyeongsang National University  
M.A. Korea National University of Education  
Ph.D. Korea National University of Education

**Research field**

- Examples and Character of Buddha's Dialogue in the Early Buddhism, *Journal of Eastern-asia Buddhism and Culture*, 36 (2018).
- Description Structures and Contents Analysis on Buddhism in High School Ethics Textbooks based on the Revised National Curriculum of 2015, *Journal of Moral & Ethics Education*, 63, (2019).

**Major career**

- 2002 ~ 2006. Shinuh Middle School, Teacher
- 2007 ~ 2014. Jinyoung Middle School, Teacher
- 2015 ~ present. Changwon-Jungang High School, Teacher
- 2019 ~ present. Gwangju National University of Education, Lecturer

Publication state: Japan  
ISSN: 2423-8775

Publisher: J-INSTITUTE  
Website: <http://www.j-institute.jp>

Corresponding author  
E-mail: [gistmoon@naver.com](mailto:gistmoon@naver.com)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

<http://dx.doi.org/10.22471/military.2019.4.1.26>

© 2019 J-INSTITUTE

## Study on the Improvement of Resource Management for the Establishment of A Smart Operation System for the Future WAR

**Moon Hyeon-cheol**

*Chodang University, Muan, Republic of Korea*

### Abstract

*In the era of the Fourth Industrial Revolution, where Aegis destroyers, stealth fighters, robot fighters and smart cities are located, smart operating systems are being built by smart weapons systems. In addition, the aspect of future wars is expected to become unclear on military non-military boundaries, and so on, so-called hybrid warfare, which is a mixture of non-regular, asymmetric, cyber warfare and electronic warfare, and so on. With the advent of a new aspect of war, we want to diagnose the problems of mobilization supplies, equipment management and the current situation to prepare for future war. Next, we are going to propose an alternative to smart resource management, which is the basis for smart military operations by utilizing the Internet of Things (Internet of Things) and applying it to the era of the fourth industrial revolution based on connectivity and convergence.*

*To establish a smart operational system for future warfare, two major alternatives are to improve the production, management, and transport of mobilization materials, equipment and resources management. One is to utilize technologies that are discussed as a category of the fourth industrial revolution based on the ongoing IOT, and the second is to utilize and connect excellence in logistics, which is the resource management of private companies. Such smarting could enhance the co-operation between ground, air and sea operations and streamline joint operations with allies, thus enhancing the efficiency of the smart operational system against future warfare. As a comprehensive system of the above-mentioned alternative proposals, the system should enhance the systematic link between the laws applied during the war and the ordinarily written ones.*

**[Keywords]** *Future War, Hybrid War, Fourth Industrial Revolution, IoT, Smart Military Operations*

## 1. Introduction

In the era of the Fourth Industrial Revolution, where Aegis destroyers, stealth fighters, robot fighters and smart cities are located, smart operating systems are being built by smart weapons systems. In addition, the aspect of future wars is expected to become unclear on military non-military boundaries, and so on, so-called hybrid warfare, which is a mixture of non-regular, asymmetric, cyber warfare and electronic warfare, and so on[1]

In the event of a state of emergency, such as a real war, terrorism, or a massive disaster, extreme social confusion and fear appear[2]. In this case, in order to achieve the purpose of military operations and protect the lives and property of the people, a well-prepared national crisis management system should be activated quickly in peacetime[3]. The national crisis management system should prepare human and material resources well on a normal basis. It is thought that its operability is guaranteed if that is the premise[4]. After all, how do we build resources on a normal basis? And how to provide the correct

amount at the right time in line with the military-led operation system is very important[5]. These are the most important capabilities of a national leader to protect the lives and properties of the nation, as well as the lives and properties of the people, and the lessons of war history[6].

With the advent of a new aspect of war, we want to diagnose the problems of mobilization supplies, equipment management and the current situation to prepare for future war. Next, we are going to propose an alternative to smart resource management, which is the basis for smart military operations by utilizing the IoT(Internet of Things) and applying it to the era of the fourth industrial revolution based on connectivity and convergence.

## **2. A Study on the Environmental Change of War and the Resource Management in Preparation for War**

As a result of the change in the war environment, the ground forces will become part of the joint forces, and in future wars such as the fourth generation war and the hybrid war, the ground forces will play the role of the omnipotent combined ground forces and the overall solver in preparation for the future merger crisis[7]. Therefore, the future war is expected to be a united war and a national total war. In this period of change in the environment of the battlefield, we will diagnose the current state of and problems in resource management compared to wartime.

### **2.1. A review of the environmental change of war and the resource management system**

As mentioned earlier, the environment of war is showing a different phenomenon from that of the past. The reason is that there is rapid development and change in technology that forms the basis of various weapons systems[7]. Of course, science and technology are actively used in

places where war is prepared and executed, such as arms development and war supplies management[1]. It is thought that the United States' dropping of a successful atomic bomb on Japan during World War II disproves this.

In modern and future wars, where advanced technology is used, military and non-military distinctions become difficult[7]. In the field of management of mobilized goods and equipment, which guarantees the success of military operations and the performance of military operations, a different system was required. Operations that require human and physical resources have been advanced, and if resources management that provide the purpose of the need are operated in an analog way, military operations will be less efficient. This will make it virtually impossible to protect national security and national interests through smart operations against future wars and protect the lives and property of the people.

### **2.2. A study on the status and prospect of war response resource management**

In analysing the determinants of war victory and defeat, pre-World War I wars were determined primarily by their victory and defeat in the stage of the execution of war. However, after World War II, the research and preparation of the war determined the victory and defeat of the war. I think this emphasizes the importance of mobilization, which is the usual resource management[8].

If you look at the scope and purpose of the mobilized goods, the primary industry's products were mainly produced in the pre-modern war, including food such as munryangmi, and hay, which were food for horses and cattle. However, since World War II, the number of objects has increased dramatically, with various equipment, supplies, ammunition, and oil[8].

The need for resources during war is divided into peacetime assurance and wartime acquisition, and the scale and proportion of mobilization acquired in wartime are very high. In addition, it is analyzed that most transport and construction equipment are secured through mobilization, and 66% of the mobilization of the Korean Army in 2010 is analyzed. Among them, 95 percent of the resources required for industrial materials are based on mobilization, except for ammunition[8].

This analysis can be said to indicate how important the capacity of mobilization is in comparison to wartime, and in the end, if war breaks out, the operability of mobilization determines the outcome of the war.

The establishment of a perfect mobilization posture is necessary for the rapid transition to an emergency system in preparation for the National Total War and Short-Term Contingency War, which is characteristic of modern warfare. The perfect mobilization posture serves as an existing military force and a deterrent against war. It also contributes to the efficient utilization of national resources by maintaining the proper size of the required combat forces. Ultimately, a smart resource management mobilization system should be established so that it can respond quickly in the event of a national emergency.

It is expected that the supply and demand of troops will become more difficult in the future due to the current situation of reducing the service period and the decreasing birthrate. Based on the analysis of these realities, it is expected that the demand for high-tech equipment, such as robots, will surge as the number of soldiers who are lacking will be mobilized[9].

Next, analyzing the areas of securing supplies and equipment, there is instability in supply and demand due to the long-term need to secure raw materials for wartime. It is observed that the company's production capacity against

wartime losses, the mobilization fulfillment rate is only 60 percent, and the lack of building production facilities to meet the demand needed in times of war.

Due to the lack of production capacity of the resource management company, the company lacks the capability to provide rapid operational support. In addition, production processes are long and often have only facility management and some raw materials.

There are also insufficient contingency plans to secure the swift execution of the war budget, and insufficient regulations regarding the preparation of the war budget. Therefore, innovative measures should be taken to secure a production system for industrial mobilization against war[8].

### **3. Resource Management for the Establishment of Smart Operating System**

Changes in technology change the face of war. Because it brings about changes in the weapons system. Changes in the weapons system result in changes in the operational system. The smart weapons system, which reflects the technology of the fourth industrial revolution, will establish a smart operational system. Therefore, smart resource management systems will have to be involved. It is intended to present a plan for improving resource management to establish a smart operational system for future warfare.

#### **3.1. Smart logistics industry for resource management of smart operations**

The change in the world led by the fourth industrial revolution, an era of convergence and connectivity, such as Big Data, IoT, artificial intelligence and humanoid robots, is projecting a new future war[10]. As discussed earlier, the future of the logistics industry in the fourth indus-

trial revolution can be drastically improved in efficiency, including cost reduction and rapidity accuracy, by utilizing technologies that can be grouped into categories of the fourth industrial revolution centered on the Internet of Things.

Smart logistics can be described as a logistics system that seeks to improve its efficiency in all logistics areas, including storage, unloading, transportation, facilities, and distribution systems by utilizing symbolic technologies in the category of the fourth industrial revolution.

It aims to streamline logistics operations and reduce costs by applying sensors, information and communication, and control technologies[11].

We tried to apply the technology of the 4th Industrial Revolution to the field of war support resource management by summing up some changes in the logistics industry[12].

Countries around the world are actively pushing to establish infrastructure to introduce new technologies in order to strengthen national competitiveness. Germany is pushing for a smart port based on information and communications in Hamburg, and the EU has begun to make it mandatory for the U.S. to install inter-vehicle communication functions, which are the basis of autonomous vehicles[12]. These are considered examples of changes in ground, air, and sea operations.

The smart logistics system has greatly influenced the efficiency of the management, such as monitoring the current state of transportation, identifying the reduction of inventories, identifying the causes of soaring logistics costs, improving energy efficiency, eliminating logistics bottlenecks, and determining the proper amount of inventories[12].

It is assessed that these smart logistics systems provide an excellent model of smart resource management for smart operational systems.

### **3.2. A study on the smartening method of resource management for smart operations**

The logistics industry is most relevant if companies seek resource management areas such as mobilization, supplies and equipment management for war. Analysts say that the logistics industry, which has accumulated big data and utilized the technologies of ICT, IOT, and fourth industrial revolution, is in practice under pressure from the market, which is bound to transform into a smart logistics industry.

In order to find efficiency in the field of mobilized goods and equipment management in the war preparation and resource management, we need to observe changes in logistics industry, a similar task. The aforementioned logistics industry should enhance its efficiency by applying the technologies within the category of the Fourth Industrial Revolution, focusing on the Internet of Things IOT, which is utilized for the transformation into smart logistics industry, to the field of resource management in preparation for war.

Smart logistics industry technologies are intended to present areas that can be utilized for smart resource management[12].

First, technical application of materials and equipment is possible in the field of information provision in the field of mobilized goods and equipment management. Information on transport costs is provided, information provided by different management entities, such as sea, air, rail, and land transport, is collected and used to identify information, such as tracking the location of goods and equipment, and comparing routes.

Second, information collection of real-time stockpiles and equipment will be possible. Information on the IoT-based smart scale system, which provides information such as management and disposal, and the forklift management system, which uses RFID and IoT to identify the location of forklifts, information and quantity of goods transported in real time, will be available.

Third, it is possible to analyze big data on equipment and materials loss, management cost reduction, and to identify information that reduces the period of use, transport, and management costs of goods and equipment. In addition, the management network of platform-based mobilization equipment will be possible.

Fourth, it can improve efficiency in managing supplies and equipment through AI (Artificial Intelligence), equipment management warehouse robots, self-driving trucks for transportation, self-driving ships and remote-controlled unmanned ships, and drones.

Fifth, it can be the wisdom of managing mobilized supplies and equipment to make good use of private military companies and private logistics companies that are well equipped with the technologies of the fourth industrial revolution centered on the Internet of things[9].

Sixth, crowd sourcing is required for light resources in the management of mobilized goods and equipment. In other words, we need wisdom to match mobilization needs with supply, such as transportation using ordinary people and public officials, and using state-owned land, buildings and private ownership spaces as warehouses.

Seventh, the number of items that can be intercompatible with military, administrative and private demand should be increased. Commercial vehicles should be used as military command vehicles and transport bus trucks. This can greatly improve the maintenance as well as the

procurement of parts and utilize the infrastructure of private companies a lot.

Eighth, war emergency supplies and equipment with little actual situation should be used first every year for disaster management, and then interoperability should be improved between war contingency resources and disaster management resources that produce and return used materials.

#### 4. Conclusions

In order to prepare for a future war of 5th generation using state-of-the-art science and technology equipment against all-out war as well as local warfare and terrorism[22], a support system for smart operation systems should be established. The conditions under which such smart operating systems will be operated can be said to be key to resource management that has been made smart in terms of stockpiling, mobilizing, producing and transporting resources in peacetime.

To establish a smart operational system for future warfare, two major alternatives are to improve the production, management, and transport of mobilization materials, equipment and resources management.

One is to utilize technologies that are discussed as a category of the fourth industrial revolution based on the ongoing IOT, and the second is to utilize and connect excellence in logistics[23], which is the resource management of private companies.

In the logistics sector of private companies, smart logistics systems using IOT and big data[24] are being introduced in earnest. This smart logistics system is a key supporting technology for smart operational systems against future war-

fare, and it is evaluated to present many implications and alternatives to smart resource management.

The above-mentioned smart logistics industry technologies will be summarized into a few benefits for smart resource management as a support system for smart operations against future warfare.

First, in the field of mobilized goods and equipment management, information identification, such as tracking the location of goods and equipment, and comparing paths, is used.

Second, in the field of management of goods and equipment, information collection of real-time stockpiles and equipment makes it possible to smarten up real-time identification of information and quantity of goods transported, including management and disposal causes.

Third, it is possible to smarten up the identification of information that reduces the total number of equipment and materials(the period of use) and transportation and management costs. It will also be possible to smarten up the management network of platform-based mobilization materials equipment.

Fourth, it will be possible to enhance transport efficiency of supplies and equipment through storage robots using artificial intelligence(AI), self-driving trucks for transportation, self-driving ships and remote-controlled unmanned ships, and autonomous flight drones [25].

Fifth, it will be possible to prepare private military companies and private logistics companies that are well equipped with the technologies of the fourth industrial revolution centered on IoT, enabling cooperative smarting between private companies and military resource management[26].

Sixth, it is possible to establish smart application of production materials and equipment of

private companies to enable production equipment of private companies and equipment held by government agencies to be utilized in future wars by ensuring that military and private enterprise demand and demand of government agencies are compatible.

Seventh, the future war is a smart operation that is inter-networking between ground, air and sea operations, so it can build smart management of supplies and equipment needed for the Army, Navy, Marine Corps and Air Force. Such smarting could enhance the co-operation between ground, air and sea operations and streamline joint operations with allies, thus enhancing the efficiency of the smart operational system against future warfare.

As a comprehensive system of the above-mentioned alternative proposals, the system should enhance the systematic link between the laws applied during the war and the ordinarily written ones[27]. Legislative networking[28] should be established closely Law of forced use in war, the Emergency Resource Management Act, the Disaster and Safety Management Framework Act, the Civil Air Crisis Act, the Anti-terrorism Act, the Integrated Defense Act and the Framework Act on Science and Technology[26].

## 5. References

### 5.1. Journal articles

- [1] Lee SJ & Park MH. Fifth Generation Warfare (5GW) -Concept and Its Implication to Korea's National Security-. *The Korean War*, 12, 121-133 (2017).
- [7] Lee SH. Change of Aspects on Future Warfare in the Korean Peninsula and Role of Ground Forces. *The Journal of Strategic Studies*, 22(3), 107-137 (2015).

- [8] The Korea Institute for Strategic Studies. Operation of Equipment and Materials for Ensuring the Effectiveness of Wartime Mobilization. *Army Headquarters*, 17, 1-16 (2017).
- [9] Joo YY & Lee IH. A Plan to Enforce Mobilization by Utilizing Private Military Enterprises. *Habcham*, 70, 84-87 (2017).
- [10] Lee SK & Jeong TS. Smart Logistics in the Age of Big Data: Cases and Trends in the Utilization of Big Data. *Industrial Engineering Magazine*, 23(4), 13-20 (2016).
- [11] Jung SY & Jung KY. Smart Logistics IT Technology Case. *The Magazine of the IEEE*, 39(5), 26-31 (2012).
- [22] Moon HC. A Study on the Improvement of the Response System against Terrorism in Foreign Countries. *Korean Society of Terrorism*, 11(4), 108-133 (2018).
- [23] Kim SH. Internet of Things Technology. *Magazine of the IEK*, 43(3), 64-71 (2016).
- [26] Moon HC. A Study on the Systematization of Science and Technology Laws for the Platformization of the Fourth Industrial Revolution. *Journal of the Korean Computer Information Society*, 23(1), 28-41 (2019).

## 5.2. Books

- [2] George WB. Decision Point. YBMsisa (2011).
- [3] Ministry of National Defense. An Explanation of the War Law. Ministry of National Defense (2013).
- [4] Carl CB & Ryu JS. Theory of War. The World of Books (2010).
- [5] Maurice PR. Rommel. Tree of Thought (2013).
- [6] Oh IH. Crisis Management Leadership. Open Books (2003).

## 5.3. Conference proceedings

- [24] Sagong TH & Yun HY. Technical Research Trend Analysis for the Processing and Utilization of Big Data. Korea Intelligent Information Systems Society (2016).
- [27] Moon HC. A Study on the Improvement of Emergency-related. Ministry of Government Administration and Home Affairs (2011).
- [28] Ministry of Administration and Safety. Resource Mobilization Survey Education Textbook. Ministry of Administration and Safety (2016).

## 5.4. Additional references

- [12] Jeon HY. The Future of Logistics Industry in the Fourth Industrial Revolution. VIP Report 707 Hyundai Economic Research Institute. (2017).
- [25] <https://www.msit.go.kr/> (2018).

### Author

**Moon Hyeon-cheol** / Chodang University Professor  
 B.A. Chosun University  
 M.A. Chosun University  
 Ph.D. Chosun University

### Research field

- A Study on the Improvement of Terrorism Response System in Foreign Countries, Korean Society of Terrorism, 4 (2018).
- A Study on the Improvement of the Disaster Management System for the Improvement of Korea, Journal of the Humanities Society, 21 (2019).

### Major career

- 2007~present. NSC, MND, JCS Policy Advisory Committee, Member
- 2019~present. National Crisis Management Association, Vice Chairman