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Abstract

In the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (OST) Article 4 states that the moon and other bodies should be used solely for peaceful purposes. Since there is no definition of peaceful purposes in this treaty, opinions are opposed in the interpretation of Article 4. Apart from the conflicting views on these interpretations, countries have been using the outer space for military and security purposes, and no country strongly opposes the practices of these countries. In particular, the Draft International Code of Conduct for Outer Space (ICOC) prepared by the EU has made explicit reference to the military use of outer space, and has also referred to the right to self-defense. Although the draft was not even addressed by the conflicting opinions of the different countries, it would have been an international document formulating the military and self-defense use of outer space if adopted. Based on this situation, this paper will focus on the international legal basis for the applicability of the right to self-defense in outer space.


1. Introduction

Currently, the space activities of individual countries are rapidly increasing.

In the Cold War era, the United States and the Soviet Union have been developing space as a part of the arms race. Today, many nations, including China, European countries, Japan and India launch satellites for commercial and scientific purposes and the activities of those countries are increasing more than ever. In other words, space development is moving away from a US-Soviet centric focus and is spreading to various countries that can access direct and indirect space technology.

Article 4 of the OST, which governs the activities of nations, states that outer space should be used solely for peaceful purposes. There are conflicting opinions about whether it means a complete prohibition of military use of space or non-invasive (non-aggressive) military activities are possible. Regardless of the conflicting interpretations of this provision, countries are increasingly using space for their own security, space developing countries are using to conduct surveillance and reconnaissance satellites and the degree of dependence and utilization of space assets is increasing[1]. On the other hand, In December 2006, the UN adopted a resolution requesting member states to implement on transparency and confidence building measures as a means of preventing arms competition and international cooperation in space (UN GA Resolution 61/75). In order to implement this resolution the EU has been actively engaged in the drafting of the ICOC.
since 2008. Particularly, in July 2015, 109 nations attended the UN headquarters in New York to promote international cooperation on space security[2].

The conference procedural legitimacy and transparency of the contents, were controversial as well as the fact that it included content to acknowledge military activities in space and exercise of self-defense right. The discussion on adopting the draft was not able to start because of the controversy and it was not possible to discuss the draft in earnest, but it was necessary to study the application of self-defense in outer space, which was the center of the controversy in the international cooperation process.

The purpose of this study is to examine whether the military use of space is permitted under international law and whether self-defense is applicable in outer space.

2. The Right to Self-Defense

2.1. Definition of self-defense and its requirements

The right to self-defense is the right of the state to resort to certain power in order to rule out imminent and present harm[3]. According to this definition, the right to self-defense implies a right to actively take measures in order to escape from a situation that is an imminent and present harm.

The origins of the right to self-defense can be found in the theory of ‘just war’ (bellum justum) in ancient and medieval times[4]. In the international community before World War I, there was no need to claim self-defense, as various acts of armed force, especially war, were generally recognized as a means of realizing the policies of nations. At that time, the right to self-defense was not a legal concept but a political excuse[5].

After World War I, the League of Nations was established and in 1928 the Kellogg-Briand Pact was concluded, which led to the declaration of the war as a national policy instrument as illegal. The right of self-defense was recognized as a legal matter from then on.

In addition, since World War II, the United Nations was established and the threat and use of force were prohibited by the Charter. Only the exercise of self-defense or the use of force was permitted under the collective provisions of Chapter VII. Therefore, it is only after the enactment of the UN charter that the right to self-defense is accepted as a fundamental right of the state in positive law.

On the other hand, the requirements for the exercise of self-defense were materialized in the Caroline case. In 1837, the Britain attacked the US cargo ship Caroline, causing Americans to be missed. The Britain claimed that their attack was necessary for self-defense. US Secretary of Defense, Webster stated that the use of force that can claim to be self-defense is only “instant, overwhelming, leaving no choice of means, and no moment for deliberation” through an official letter.

After this event, the necessity and proportionality became valid as an inherent requirement in the exercise of the right to self-defense under the Charter of the United Nations and these interpretation criteria were subsequently recognized by various countries’ claims, international court decisions or international law scholars[6].

The right to self-defense has been formulated in the UN Charter Article 51 and many International Court of Justice judgments, but it has not been formulated in international instruments such as UN resolutions or the International Law Commission.

2.2. Self-defense right under UN charter article 51

Article 51 of the UN Charter states: “Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defense shall be immediately reported to the Security Council and shall not in any way affect the authority and
responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.”

In Article 2(3) of the UN Charter, “Peaceful settlement of international disputes” and Article 2(4), “The principle of prohibition on threat or use of armed forces” were introduced. In particular, Chapter 7 defines political, economic, and military actions to regulate aggression. However, Articles 51 and 53 stipulate that States are allowed to exercise individual and collective self-defense and that regional agreements or bodies allow compulsory action by the Security Council.

The provisions of self-defense in the UN Charter mean that the exercise of the right of self-defense is embraced as an inherent right of an individual country as an exception to the use of force. In other words, it is the only lawful force exercise permitted under the Charter of the UN(7).

3. International Space Law and Military Use of Outer Space

3.1. International space law

In 1957, when the Soviet Union initiated their space activities, two customary laws were formed. The first is that the territorial sovereignty of a state does not extend beyond the outer space and the second is that every nation has the right to explore and use the outer space. The reason for accepting these two propositions without any specific objection in the space activities at the time was that individual countries recognized space as a region where all countries could freely access and enjoy the benefits(res communis omnium). The United Nations General Assembly adopted “The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space” in 1963. Based on the contents of these principles, the UN General Assembly adopted “The Treaty on Principles Governing the Activities of States in the exploration and Use of Outer Space, including the Moon and Other Celestial Bodies” in 1967.


3.2. Military use of outer space

Article 4 of the OST provides: “State Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kind of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.”

Article 4 of the OST is interpreted as a provision on the peaceful use of outer space, as well as a restriction on military use in space[8].

There are three primary views that interpret the peaceful use of the universe in relation to the military use of space. The first is that the meaning of ‘peaceful’ should be understood as complete non-militarization.

Second, according to Article 51 of the UN Charter, the military use of the right to self-
defense is permitted but the invasive use is prohibited.

Third, ‘peaceful’ means only non-weaponization, and it is understood that military use of space should be compatible with maintaining or promoting peace[9].

The military use of outer space can be largely classified into the militarization and the weaponization of space. The militarization of space means strengthening the efficiency and effectiveness of conventional weapons, or using space-based assets for military purposes.

In the 1992 Gulf War, the 1999 Kosovo War, and the 2001 Afghan War, the United States used GPS to perform military activities such as troop movement and missile flight tracking and these are main examples of the militarization of outer space.

On the other hand, the term "weaponization of the space" refers to such thing as the introduction of a weapon system into space, disturbing the operation of the infrastructure of another country by jamming the GPS signal, or directly attacking satellites of other countries.

In short, the literal interpretation of Article 4 of the 1967 OST does make it clear that the peaceful use of outer space does not imply a complete ban on the military use of space.

In addition, Article 3 of the OST requires Parties to the Treaty to comply with international law, including the Charter of the United Nation. Thus, the military use of outer space is normatively recognized under international law as well as the OST, and the conclusion that the right of self-defense under the Charter of the UN can also be applied in outer space.

4. Application of Self-Defense in Outer Space

The problem of applying the right of self - defense in space needs to be objectively recognized in consideration that the use of space-based technology is inseparable in the field of today’s security environment. In order to apply the right of self-defense in space, it is related to the view differences in the interpretation of Article 4 of the OST in Chapter 3 above.

The first view argues that there cannot be applicable self-defense in outer space because it violates the principle of peaceful purposes on OST. Therefore, the peaceful purposes of Article 4 of the OST does not include the military use of space, so it is a logical conclusion that the right of self-defense based on military use cannot be applied.

The second view is that by Article 3 of the OST and Article 51 of the UN Charter, States have the inherent right to self-defense to protect their satellites in response to potential attacks, and thus applying the right of self-defense is possible. However, when applying the right of self-defense, the necessity and proportionality in Jus ad bellum and the general principles of Jus in bello should be followed[10].

The third point is that the state has the right to self-defense, so it is possible to apply the right to self-defense in space, but emphasizes the uncertainty of the scope and limitations of self-defense. This position focuses on the problem that it is difficult to specify the subject of the armed attack, whether a certain armed attack can trigger the right attack to exercise the self-defense right, and whether it is possible to apply the self-defense power to a threat that did not reach the level of an armed attack. In short, the application of the right to self-defense in outer space is considered to be valid under international law, but the requirements for exercising self-defense in space and the responsibility for actions such as armed aggression needs to be considered by the international community.
5. Conclusion

Nations are silent about the practices of their countries which are using outer space for security purposes. In addition, if we look at the normative discussion process of the military use of outer space at the UN General Assembly resolution and at the international conference, it can be seen that nations and scholars are already in a position not to deny the military use of outer space as a part of space security.

It acknowledges the inevitability of the military use of space for rapid and effective response for national security purposes. However, apart from the issue of application of self-defense in space, there is no international normative reference on matters related to the exercise of self-defense, so it is necessary to draw up the consensus of the state to set up guidelines and a legal-binding treaty governing national activities in space and confidence building measures for space security in outer space.

6. References

6.1. Journal articles


6.2. Books


6.3. Additional references


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Abstract

In the half-century since the first launch of Sputnik 1 it has become impossible to consider economic, political, or scientific human life in the communication field without reference to outer space. As proved in the recent Iraq, Gulf, and Kosovo Wars, Space capability necessary actor of modern warfare. Space power is becoming a barometer of national power. Commercial and military activities were developed by the USA and former Soviet Union in the early days, but in the 21st Century many nation participate in space activities either directly or indirectly. While ongoing developments of outer space have contributed positively to the overall well-being of mankind, there have been mounting concerns that the last frontier may also turn into a political and economic battlefield. Numerous experts have foreseen a high possibility of a space arms race among dominating space powers such as the US and Russia and other emerging nations as they actively attempt to utilize space for military uses. Public opinion is growing with regard to increased measures through various international bodies, including the UN, in guaranteeing the peaceful use of outer space and preventing the space arms race. There is a growing public opinion that increased measures should be taken through the mediation of various international institutions, such as the UN, to guarantee the peaceful use of outer space and prevent the catastrophic outcome that may occur as a result of the space arms race. Such actions are indeed imperative as the non-weaponization of space will be a wasted effort otherwise. If we disregard this problem, people will be demised owing to the past tens years’ visualized 'Star Wars' scenario. As the importance of the commercial and military aspects of space is increasing, the vulnerability to cope with threats imposed on the utilization of space still exists and must be confronted. However, it is very difficult to secure international cooperation due to the narrow view on space arms control and national security, owing to the conflict of interests among nations in regard to their development of weapons and positions they hold in the international society. The outstanding example is that The United States which has been holding the position of the most advanced space power withdrew from OST in early 2000s, which would be very harmful to the efforts of arms control in space by international community. Nevertheless, a long-term and systematical approach is essential to utilize space for peaceful purposes and establish it as a common heritage of mankind(CHM).

Keywords Outer Space, Arms Race, Militarization, Peaceful Use, Purposes

1. Introduction

In the half-century since the first launch of Sputnik 1 it has become impossible to consider economic, political, or scientific human life in the communication field without reference to outer space. As proved in the recent Iraq, Gulf, and Kosovo Wars, Space capability necessary actor of modern warfare. Space power is becoming a barometer of national power. Commercial and military activities were developed by the USA and former Soviet Union in the early days, but in the
21st Century many nation participate in space activities either directly or indirectly. Because of the importance of space and security interests, China, Japan, the EU, as well as USA and Russia, spur military and commercial space development.

The military sector of the U.S.A. and the Soviet Union were in charge of the space development and they were not welcomed to discuss the prohibition of the military uses of outer space at the legal section in the COPUOS. Although both countries had common interests in securing the freedom of military uses in outer space.

2. Current US Space Policy and Strategy

Current U.S. military strategy relies on being able to project power around the world and over great distances-something space-based capabilities are uniquely able to support. But as the United States has developed more advanced national security space systems and integrated them into military operations in increasingly sophisticated ways, potential adversaries have taken notice. The U.S. military’s dependence on space makes these systems a natural target for adversaries to exploit. Space is simultaneously a powerful enabler for the U.S. military and a critical vulnerability[1].

President Donald J. Trump amended the 2010 National Space Policy on Monday, December 14, 2017[2]. President Trump amended the 2010 National Space Policy to redirect the United States to go back to the Moon through the “Presidential Memorandum on Reinvigorating America’s Human Space Exploration Program,” also commonly referred to as Space Policy Directive 1. The directive dictates that a section of the 2010 National Space Policy be deleted and replaced with new language to ensure that NASA and the U.S. government aim to send Americans back to the Moon first before pursuing deep space exploration, including Mars. These 63 words could signal a significant shift in the goals and direction of NASA, a $19 billion government agency. In 2010, the Obama administration cancelled NASA’s Constellation Program, started under the George W. Bush administration, due to budgetary and scheduling concerns. The Constellation Program began in 2005 in the wake of the Columbia accident with the goal of sending Americans back to the Moon and establishing a lunar base before sending humans to Mars. Despite its cancellation, some aspects of the Constellation survived, such as the Orion Crew Capsule. Congress and the Obama administration redirected NASA to develop the Space Launch System with the intent of sending humans beyond low-Earth orbit.

President Donald J. Trump is unveiling an America First National Space Strategy on March 23, 2018[3]. He announced as follows;

“Our travels beyond the Earth propel scientific discoveries that improve our lives in countless ways here, right here, at home: powering vast new industry, spurring incredible new technology, and providing the space security we need to protect the American people.” It will be concrete strategy.

AMERICA FIRST AMONG THE STARS: President Trump’s National Space Strategy works within his broader national security policy by putting America’s interests first.

SPACE PREEMINENCE THROUGH THE AMERICAN SPIRIT: President Trump’s National Space Strategy harnesses the American spirit and continues the American tradition of pioneering and exploration.

PEACE THROUGH STRENGTH: President Trump’s space strategy builds on the National Security Strategy emphasizing peace through strength in the space domain.

FOUR PILLARS FOR A UNIFIED APPROACH: President Donald J. Trump’s new National Space Strategy drives a whole-of-government approach to United States leadership in space, in close partnership with the private sector and our allies, and is based on four essential pillars:
• Transform to more resilient space architectures: We will accelerate the transformation of our space architecture to enhance resiliency, defenses, and our ability to reconstitute impaired capabilities.
• Strengthen deterrence and warfighting options: We will strengthen U.S. and allied options to deter potential adversaries from extending conflict into space and, if deterrence fails, to counter threats used by adversaries for hostile purposes.
• Improve foundational capabilities, structures, and processes: We will ensure effective space operations through improved situational awareness, intelligence, and acquisition processes.
• Foster conducive domestic and international environments: We will streamline regulatory frameworks, policies, and processes to better leverage and support U.S. commercial industry, and we will pursue bilateral and multilateral engagements to enable human exploration, promote burden sharing and marshal cooperative threat responses.

A NEW DIRECTION FOR U.S. SPACE: President Trump has already taken significant steps to reorient American space policy and set it on the right path for the future.

Also, President Donald Trump directed officials Monday (June 18, 2018) to establish a military Space Force before signing a new U.S. policy for space traffic control[4]. The measure, he said, is another step forward in U.S. leadership in space.

Trump spoke at the third public meeting of the newly-reinstated National Space Council, chaired by Vice President Mike Pence and hosted at the White House, and officially signed the council’s third space policy directive. This document concerns monitoring objects in orbit and sharing the information so spacecraft can avoid collisions. But near the beginning of his remarks, Trump focused on the security implications of operating in space. He then directed the Department of Defense and the Pentagon to establish a Space Force as the sixth branch of the armed forces.

A war in outer space sounds like the stuff of science fiction but it is something we need to consider. Its impact on everybody on Earth and its implications for future human space exploration would be devastating. In June this year, U.S. Secretary of the Air Force Heather Wilson said a future war in space is likely and the U.S. is investing heavily in maintaining its military dominance in space. She commented: We must expect that war, of any kind, will extend into space in any future conflict, and we have to change the way we think and prepare for that eventuality. The first Gulf War in 1991 has often been called the first space war, though it wasn’t actually fought in outer space. Rather, the U.S. and coalition forces relied heavily on GPS and other satellite technology to conduct that conflict. Since then, space-based assets have enabled even greater capability for land, sea and air forces. Given the dual use of many satellites, an armed conflict in space could be catastrophic to modern life. The United States has had established doctrine and policy on counterspace capabilities for several decades, although not always publicly expressed. Most recent U.S. presidential administrations have directed or authorized research and development of counterspace capabilities, and in some cases greenlit testing or operational deployment of counterspace systems. These capabilities have typically been limited in scope, and designed to counter a specific military threat, rather than be used as a broad coercive or deterrent threat. For example, a series of policy memos in the mid-1970s recommended the development of a limited offensive counterspace capability to destroy a limited number of militarily-important Soviet space systems in a crisis situation or war.275 The
goal was to not deter the Soviets from attacking U.S. space capabilities, but rather create the capability to reduce the Soviet ability to use space against the United States in a conflict, while limiting escalation against U.S. satellites to those in low Earth orbit. The memos specifically highlighted the use of Soviet space systems for targeting long-range anti-ship missiles against U.S. naval forces as the most critical capability to counter. The memos culminated in presidential decision directives by the Ford and Carter Administrations to develop a limited ASAT capability, along with complementary space arms control initiatives.

To that end, the 2010 policy directs the Secretary of Defense shall “develop capabilities, plans, and options to deter, defend against, and, if necessary, defeat efforts to interfere with or attack U.S. or allied space systems,” and “develop capabilities, plans, and options to deter, defend against, and, if necessary, defeat efforts to interfere with or attack U.S. or allied space systems.” The link between these policy statements and offensive counterspace capabilities can be found in the official U.S. military doctrines on space operations. Two different doctrines exist on space operations: an Air Force doctrine developed by United States Air Force Space Command; and a joint doctrine developed by United States Strategic Command. Under current doctrine, the U.S. military considers space control to be a separate mission area of space operations. Space control consists of defensive space control (DSC) and offensive space control (OSC), both of which are supported by SSA. DSC consists of active and passive actions to protect friendly space-related capabilities from enemy attack or interference by protecting, preserving, recovering, and reconstituting friendly space-related capabilities before, during, and after an attack by an adversary. OSC consists of offensive operations to prevent an adversary’s hostile use of U.S./third-party space capabilities or negate an adversary’s space capabilities. Prevention can occur through diplomatic, informational, military, and economic measures, and negation can occur through active offensive and defense measures for deception, disruption, denial, degradation, or destruction. Ground and space-based SSA capabilities are used to find, fix, track, and target adversary space system, and assess the effects of OSC operations. OSC actions may target space nodes, terrestrial nodes, and/or communications links. To the greatest extent practicable, U.S. forces are to use OSC systems and methods which minimize risk to friendly forces, civilians, and civilian property. Since 2014, U.S. policymakers have placed increased focus on space security, and have increasingly talked publicly about preparing for a potential “war in space” and about space being a “warfighting domain.” Between May and August 2014, the Department of Defense convened a Space Strategic Portfolio Review (SPR), which concluded there was a need to identify threats in space, be able to withstand aggressive counterspace programs, and counter adversary space capabilities. Following the SPR, senior military leadership began to talk publicly about the inevitability of conflict on earth extending to space and the need for the military to prepare to defend itself in space. There was also increased focus on preparing to “fight a war in space”, even though senior U.S. military leaders expressed no desire to start one. A similar shift in tone can also be seen in academic writings from U.S. military journals calling for renewed focus on fighting wars in space and offensive space control. The U.S. Congress also weighed in, calling for a study on how to deter and defeat adversary attacks on U.S. space systems, and specifically the role of offensive space operations. This shift in rhetoric has been accompanied by changes to the national security space organization. A new facility, originally called the Joint Interagency Combined Space Operations Center (JICSpOC) and later renamed to the National Space Defense Center (NSDC), was created
to improve collaboration between military and intelligence communities to respond to attacks in space and became operational in January 2018. The U.S. Congress also criticized the Air Force for its handling of space programs and forced a debate over reorganizing national security space, potentially by creating a separate entity such as a Space Corps[5].

3. US Space Budget

Despite this increased rhetoric, the unclassified U.S. national security space budget contains a relatively small amount of funding for dedicated counterspace programs but has seen recent increases. Between fiscal year (FY) 16 and FY17, the total unclassified research, development, testing, and evaluation (RDT&E) budget for counterspace programs increased from $24.1 million to $41.9 million, and it increased again in FY18 to $68.38 million. Nearly all of the increase[6].

The FY18 budget also included $28.8 million to purchase two new 10.2 versions of CCS for active duty Air Force and Air National Guard units.293 It is possible that additional dedicated counterspace programs, and possibly programs with potential counterspace utility, are funded through the classified budget. The United States also spends nearly $8 billion a year on missile defense capabilities, several of which could have counterspace applications.

The United States has also held multiple wargames and exercises over the last 25 years to practice and refine its counterspace doctrine. The most well-known is the Schriever Wargame, which began in the mid-1990s as a biennial tabletop exercise to look at how advanced space technologies influenced future conflicts in space. In recent years, the Schriever Wargame has become an annual event that also explored policy and strategy issues, diplomatic, economic, military, and information activities, and included participation from a growing number of allied military and commercial partners. The 2017 Schriever Wargame looked at scenario in the year 2027 involving a notional peer space and cyberspace competitor in the Pacific Area of Responsibility, and included participation from Australia, Canada, New Zealand and the United Kingdom. In 2017, the USAF also held the first Space Flag exercise. Modeled after the USAF’s Red Flag air combat exercise at Nellis Air Force Base, the Space Flag exercise focused on practicing and training for space warfare. The USAF says it expects to hold future Space Flags biannually.

4. Conclusion

Nowadays, US enlargement space force in view of strategy and budget. Especially, President Trump push ahead space power and want to hold dominant position on outer space. Also many state jumps on space arms race.
Therefore we concern about arms race on outer space. We must address arms race on outer space.

As you know, while ongoing developments of outer space have contributed positively to the overall well-being of mankind, there have been mounting concerns that the last frontier may also turn into a political and economic battlefield. Numerous experts have foreseen a high possibility of a space arms race among dominating space powers such as the US and Russia and other emerging nations as they actively attempt to utilize space for military uses. Public opinion is growing with regard to increased measures through various international bodies, including the UN, in guaranteeing the peaceful use of outer space and preventing the space arms race. Numerous experts have foreseen a high possibility of a space arms race among dominating space powers such as the US and Russia and other emerging nations as they actively attempt to utilize space for military uses. Public opinion is growing with regard to increased measures through various international bodies, including the UN, in guaranteeing the peaceful use of outer space and preventing the space arms race.

There is a growing public opinion that increased measures should be taken through the mediation of various international institutions, such as the UN, to guarantee the peaceful use of outer space and prevent the catastrophic outcome that may occur as a result of the space arms race. Such actions are indeed imperative as the non-weaponization of space will be a wasted effort otherwise. If we disregard this problem, people will be demised owing to the past tens years’ visualized ‘Star Wars’ scenario. As the importance of the commercial and military aspects of space is increasing, the vulnerability to cope with threats imposed on the utilization of space still exists and must be confronted. However, it is very difficult to secure international cooperation due to the narrow view on space arms control and national security, owing to the conflict of interests among nations in regard to their development of weapons and positions they hold in the international society. The outstanding example is that The United States which has been holding the position of the most advanced space power withdrew from OST in early 2000s, which would be very harmful to the efforts of arms control in space by international community. Nevertheless, a long-term and systematical approach is essential to utilize space for peaceful purposes and establish it as a common heritage of mankind (CHM).

5. Reference

5.1. Additional references

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Abstract

It is argued that the importance of artificial intelligence has a lot of social consensus, and that efforts to devise deeper artificial intelligence and to solve various problems are actively made. In Korea, there is a growing interest in using artificial intelligence across a wide range of societal spheres, and discussions about the future of artificial intelligence and robots in our society are becoming more active. The Korean government has also announced plans to strategically nurture artificial intelligence, which is the underlying technology of future new industries.

Terrorism is one of the most serious problems facing the international community today. The possibility of terrorism, which exploits artificial intelligence and a combination of drone, is also realizing, and terrorists may attack drones and artificial intelligence robots to attack the most crowded places.

This paper is intended to examine the possibility of future terrorism using artificial intelligence. To do this, we analyze the concept and development of artificial intelligence, the prospect of artificial intelligence technology development, the possibility of terrorism that exploited artificial intelligence, and the strategies to cope with it, and draw conclusions.

Terrorist aspects and terrorist environments are gradually diversifying in response to changes in domestic and overseas security environments. In addition, the development of artificial intelligence technology and the possibility of exploitation of artificial intelligence, terrorism and crime related by AI are also required to be prepared.

As a result, it is required to prevent abuse and exploitation of artificial intelligence as well as various countermeasures against terrorism and crime related to AI.

In conclusion, artificial intelligence technology should be developed to improve the quality of human life and to prevent and overcome threats such as terrorism that threaten human life and freedom, preparing international, technological, legislative and security measures.

[Keywords] AI, Terrorism, Killer Robots, Drone, Unmanned Vehicle

1. Introduction

It is argued that the importance of artificial intelligence has a lot of social consensus, and that efforts to devise deeper artificial intelligence and to solve various problems are actively made[1]. In Korea, there is a growing interest in using artificial intelligence across a wide range of societal spheres, and discussions about the future of artificial intelligence and robots in our society are becoming more active.

The Korean government has also announced plans to strategically nurture artificial intelligence, which is the underlying technology of future new industries[2].

Terrorism is one of the most serious problems facing the international community today.
Today, the threat of terrorism is a catastrophic event that takes away the lives and property of millions of people in an instant, and the purpose and aspects of terrorism are becoming more and more diverse.

The possibility of terrorism, which exploits artificial intelligence and a combination of drone, is also realizing, and terrorists may attack drones and artificial intelligence robots to attack the most crowded places[3].

This paper is intended to examine the possibility of future terrorism using artificial intelligence. To do this, we analyze the concept and development of artificial intelligence, the prospect of artificial intelligence technology development, the possibility of terrorism that exploited artificial intelligence, and the strategies to cope with it, and draw conclusions.

2. Theoretical Backgrounds of AI

2.1. Concepts of AI

It was the Dartmouth Conference in 1956 that first appeared in the word artificial intelligence. The word artificial intelligence was first used in discussions about the machines that mathematics, psychology, and computer science work together. However, the direction of pursuing artificial intelligence by academic discipline or by individual scholars was different, and they did not give consensus on artificial intelligence[4].

Artificial intelligence in dictionary meaning means artificial intelligence created by a human being or intelligent entity or system. [4] Artificial intelligence means a device that allows a computer to think like a human being or to take the place of human thought processes or intellectual activities[5].

Artificial intelligence refers to the ability of a computer to imitate human intelligence. Artificial intelligence, on the other hand, is about letting computers do what people are doing.

2.2. Trends in development of technologies of AI

Since the 1980s, thanks to the development of semiconductor technology, miniaturization, high speed, and large capacity of computers have been made, hardware basis of artificial intelligence has been established. Based on this, artificial intelligence became realistic as software technology converged with various fields such as machine learning and artificial neural network developed.

Developed countries and major global corporations are paying attention to the application of artificial intelligence technology as the promising technology of next generation of IT and they are trying to commercialize them in various fields[6].

The robots that are currently competitive in the world are drones and unmanned vehicles. The drones have already become popular enough to become popular, and unmanned vehicles are expected to be commercialized soon.

The development of artificial intelligence technology has developed worldwide over the past several decades. Recent advances in machine learning and deep learning have led to a strong interest in artificial intelligence, which has led to the emergence of supercomputers with superior capabilities than humans and the universalization of robots that replace human work[7].

3. Possibilities of Terrorist Attacks by AI

3.1. Security environment surrounding Korea

In our special security environment, more than 90% of the terror attacks we have been involved in were terrorist attacks by North Korea. The possibility of terrorism using cyber terrorist attacks and priestly explosives of North Korean defectors has also been raised.

The Internet is a civilization that brings together all the knowledge on the Internet to bring about explosive expansion of information, but it cannot deny that it is open to anyone, so that it can be planned and executed based on the information of the Internet[8].

Terrorist attacks in the age of artificial intelligence is expected to result in various types of terrorist attacks in a new aspect that exploits
artificial intelligence. Biological attacks by terrorists are also expected[9].

3.2. Development of AI technology and future of war

Currently, about 40 major countries such as the United States are working on the development of unmanned weapons using artificial intelligence ahead of the opening of the era of robotic war. Computer experts, computers, and the Internet alone can destroy any infrastructure in a certain city[10].

Now, countries around the world are competing to develop military robots equipped with artificial intelligence. Military robots are now widely used for detecting and dismantling explosives. The United States uses drones engaged in surveillance and reconnaissance activities in certain areas[10].

Robots are being put into the task of disturbing the electronic network or guiding missile targets. Major countries, including the United States, are known to deploy unmanned weapons such as killer robots and drones that do not require human control in the next 10 to 20 years.

The United States is a leader in artificial intelligence unmanned weapons development. The drones developed by the United States are emerging as the core of US military power and military operations. The United States has said it has spent $5.3 billion on the federal budget for the year of 2015 alone to develop an unmanned weapons system[10].

Following the United States, Britain, China and Israel are spurring the development of unmanned weapons. Countries that do not suffer military threats like the Netherlands have also entered the competition to develop unmanned weapons. Russia has announced it will complete its robot development program, which will cover five missile bases by 2020[10].

Unmanned weapon competition does not stop here. Biomolecular weapons are being developed that use biotechnology to induce only those with certain genes to become infected and die. Rather than killing humans, researchers are actively researching biological weapons that can eventually kill specific racial or ethnic groups by spreading viruses that kill reproductive capabilities. Non-fatal biological weapons are also available, such as making blinds for a period of time.

4. Counterstrategies Against Terrorist Attacks by AI

4.1. Clarification of authorities and responsibilities of AI

First of all, it is needed to clarify the authority and responsibility of artificial intelligence. In order to solve problems caused by malfunction, abuse and abuse of artificial intelligence, it is necessary to clarify artificial intelligence authority setting and the matter of responsibility for results.

Basically, artificial intelligence should not be the subject of ethical judgment without human intervention. Under these standards, the human subject who is determined to be able to do so should be responsible. Also, careful design will be needed from the developmental stage so that artificial intelligence is not the sole subject of ethical judgment but only the functional role of supporting it[11].

As technology develops, the degree of complexity and autonomy increases, and as the range of application becomes wider, the degree to which human beings can control artificial intelligence will gradually decrease, and the social intelligence autonomous decision-Threats to safety can be increased. In order to prevent this, we should study not only the issue of authorization of artificial intelligence but also the legal basis of responsibility matter.

4.2. Strict limitation on development of killer robots in the level of international conventions

The UN Convention on Conventional Weapons deals with how to prevent killer robots as an annual meeting after 2014. The UNCCW has a policy of regulating and guiding human beings to go the right way in accordance with the development of AI technology. In July, 2015, a letter from academics, philosophers, and AI experts was released on the website of Future of Life Institute, arguing that it is a matter of time
for terrorists, dictators, and warlords to get automated weapons using artificial intelligence technology through the black market once they are developed, therefore, development of those kinds of weapons must be strictly regulated by international agreements[12].

4.3. Maintenance of technical ability against terrorist attacks by AI

Killer robots are subject to careful review, development and production. Considering the history of mankind, the appearance of military robots is becoming a reality that cannot be prevented in the future.

If the possession of military robots is realized by other nations, terrorist attacks will have to have artificial functional skills that surpass terrorists. The war between a country that has a military robot and a country that does not have a military robot has already been decided. Therefore, various applications of artificial intelligent robots should be considered[13].

4.4. Enactment of legislation against abuse of AI technologies

In order to prevent abuse and misuse of artificial intelligence technology, social debate, consensus, legal and institutional research on strict legal apparatus and punishment in case of violation should be prepared. There is also a need to preemptively detect and cope with misuse and malfunctions, and it is also needed to develop stable and reliable artificial intelligence devices.

The institutional device is provided to basically equip artificial intelligence with technology that protects personal privacy and prevents public control by adjusting utilization range of artificial intelligence technology, or to give responsibility and duty of company management related to artificial intelligence to protect the users’ interests[11].

5. Conclusions

Since the end of the Cold War, terrorism has attracted attention as a major international issue that threatens international peace, including human rights and poverty. Terrorist aspects and terrorist environments are also gradually diversifying in response to changes in domestic and overseas security environments. In addition, the development of artificial intelligence technology and the possibility of exploitation of artificial intelligence, terrorism and crime related by AI are also required to be prepared.

As a result, it is required to prevent abuse and exploitation of artificial intelligence as well as various countermeasures against terrorism and crime related to AI.

The prospects for the evolution of artificial intelligence and human life are mixed. The evolution of artificial intelligence improves quality of life or productivity, but if technology becomes increasingly sophisticated and automated, it becomes inaccessible, or if it is exploited by a group of specialists, serious social and ethical problems can arise.

In conclusion, artificial intelligence technology should be developed to improve the quality of human life and to prevent and overcome threats such as terrorism that threaten human life and freedom, preparing international, technological, legislative and security measures.

6. References

6.1. Journal articles


6.2. Thesis degree

6.3. Books


6.4. Additional references


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Abstract

Purpose; Conducting pre, postwar issues carried after liberation from Japan, establishing democratic government in South because of binary division in the country, stationing UN forces in South followed by Korean War and their armistice, helping South to join the United Nations at the time and providing solutions for human rights and nuclear weapons in North Korea are the reasons why the role of the United Nations in unifying Korean peninsula is important. Above mentioned are so-called ‘Korean Question’ that the United Nations have inseparably been discussing. The role of the United Nations in Korean history unceasingly affects and valid to this day and the same is required to construct peace and unification in Korean peninsula. I am worried that the Korean War, which should be still remembered clearly, is forgotten over time. We often discuss North Korea academically or even in our daily lives because we see them to be reunified with South Korea. The 2018 inter-Korean summit, which the whole nation has watched, would have been a great opportunity for young people as well as the whole nation on the Korean peninsula to form a consensus on unification other than any opinion of the expert. However, we must remember the dark history of the Korean War first to understand the unification. The memory of history will gather our people to desperately want the unification.


1. The Korean Question and the United Nations

Conducting pre, postwar issues carried after liberation from Japan, establishing democratic government in South because of binary division in the country, stationing UN forces in South followed by Korean War and their armistice, helping South to join the United Nations at the time and providing solutions for human rights and nuclear weapons in North Korea are the reasons why the role of the United Nations in unifying Korean peninsula is important. Above mentioned are so-called ‘Korean Question’ that the United Nations have inseparably been discussing. The role of the United Nations in Korean history unceasingly affects and valid to this day and the same is required to construct peace and unification in Korean peninsula.

To establish One Korea, issues in Korean Peninsula and their unification is inseparable from the United Nations. The United Nations maintained its original duty of keeping world peace by practicing Korean Question and showed their attribution to develop the International Law. The UN forces participated in Korean War remained in South Korea help to materialize collective security system which is the fundamental of the United Nations. To achieve unification successfully, searching help from superpowers from other nation is significant. During this procedure, Korea must ensure that the unification of Korean peninsula is not threat to the marginal states, it is the for the sake of regional benefits and
world peace by diplomacy. The UN forces remained within South Korea to maintain the armistice agreement, to tolerate peaceful unification process and for the unforeseeable crisis in the future. In particular, the UN forces play a pivotal role in the Korea Question. The United Nations Command(UNC) in Korea first arrived at the Korean peninsula during the Korean War and it is still operating in Korea with its roles to deter wars in Korea. It is expected that the UNC will play a critical role in securing peace in Korea after the unification.

Also, Efforts to prepare for ‘contingency’ in North Korea and lead such changes to unification are especially important but it should be carefully reviewed the current Armistice Agreement’s effect during the crisis situations of North Korea and the replacement by a new peace agreement. Since the Korean Question is not only domestic but also international matters, it should be noted that we need to expect UN’s participation in the crisis situations of North Korea while preparing for fully secured territorial supremacy and right of self-determination of ours.

Conventionally establishing unification under the United Nations requires much effort from the marginal states and international society. The UN Security Council system is expected to induce abstention from China without explicit objection or vote absence. In case Korea is not a member of the United Nations Security Council, based on the Charter of the United Nations article 31, Korea may not have a suffrage but as a stakeholder who can join the council to appeal their stances. Article 99 of the Charter of the United Nations states that such stakeholders can insist the UN secretary general to practice the power and this types of efforts are much needed. Under the premise of Korea showing such efforts and strive to achieve unification, the role of the United Nations who works for world peace is crucial by the name of International Law when representing international society. Korea must stand strong to utilize the role of the United Nations that sends solid advocate message to other countries.

2. The Current Legal Evaluation of Security on the Korean Peninsula

As the historian Edward H. Carr said, history is a conversation between the past and the present. Even the Korean War has become the history, the national security situation on the Korean peninsula is always a continuation of tension although South Korea and North Korea are adhering to the armistice agreement. That is why we must strive to overcome the unclear present between war and peace. The two Koreas were one, even during Japanese colonial era, but it was after the liberation that we virtually divided into two countries based on the 38th line. With the establishment of Republic of Korea on August 15, 1948, and Democratic People’s Republic of Korea on September 9 of the same year, the division of the Korean peninsula, which was not on our will, has been fixed. It has been 65 years since the armistice agreement was signed on July 27, 1953, after the Korean War on June 25, 1950, and the full-scale hostilities between South Korea and North Korea were suspended. The inter-Korean summit on April 27 this year seems that there had never been a war between the two Koreas.

The official name of Korean Armistice Agreement on July 27, 1953, which is the result of the Korean War that caused tremendous post-war problem and divided Korean peninsula into two countries, is “Agreement between the Commander-in-Chief, United Nations Command, on the one hand, and the Supreme Commander of the Korean People’s Army and the Commander of the Chinese People’s volunteers, on the other hand, concerning a military armistice in Korea”. The agreement in Korean used the term “truce” which refers the suspension of ‘partial’ hostilities, while the agreement in English used the term “armistice” which refers the suspension of ‘all’ hostilities. So, it is possible to use both terms. As a signer of the agreement, Mark W. Clark, the United Nations Commander and US Army chief, came out for South Korea, and Il-Sung Kim Dehuai Peng came out on the other side. North Korea then insisted that South Korea not be a party to the
agreement by handing over operational command authority to a foreign country and would discuss the peace regime directly with the United States. It was the result of misunderstanding the nationality of the signer and the parties to the agreement and failing understanding that President Lee had transferred the command of the ROK military to the UN during the Korean War. With the 2018 inter-Korean and North-U.S. summit, it is necessary to understand the legally significant point about the change from the state of the armistice to the peace regime.

First, we announce ‘Panmunjeom Declaration for Peace, Prosperity and Unification of the Korean Peninsula’ promising to announce the war termination by this year. Even if it seems to be in the peaceful state, the Korean peninsula is legally in a state of war because the armistice agreement regulates the security of the Korean peninsula. The will to announce the declaration of the war termination is a political, symbolic, and declarative statement to end the war and make the Korean peninsula peaceful. However, the armistice agreement on the premise of a state of war, will not be abolished just by the declaration of the end of the war. Meanwhile, the 3 party talks (South Korea, North Korea, US) or the 4 party talks (South Korea, North Korea, US, China) were proposed to discuss the peace treaty. This means that North Korea accepted South Korea as a party to the armistice agreement and peace treaty to discuss the peace regime together. If a peace treaty is concluded as a result of the discussion of the peace regime, the armistice agreement will be abolished, and the peace treaty will substitute it as a new regime to regulate the unification of the Korean peninsula. The peace treaty is necessary to bring peace on which is the premise of unification in the Korean peninsula.

Second, the implementation of the peace treaty will bring substantial peace and enable concrete preparations for unification, such as inter-Korean basic agreement on unification. The Panmunjom Declaration showed the rough version of the peace treaty by suggesting measures for the development of inter-Korean relations, mitigating military tensions by military reduction, war termination, and denuclearization.

Third, joint agreement of North-U.S. summit on June 12 reaffirmed the Panmunjom Declaration and established a trust relationship, which is expected to lead to a new relationship between North America. North Korea’s denuclearization will enable the United States to secure North Korea’s security and establish diplomatic relations with them. Establishment of diplomatic relations is an issue of recognizing North Korea as a nation under international law. Of course, recognizing North Korea as a nation is a separate issue from the ROK’s constitutional provisions of territory and inter-Korean relations.

3. Remembering the Korean War

A country that requires enormous international support lacking the identifiable power or authority, such as Somalia and Cambodia, is called failed states in international politics term. In the point of international laws, failed states are in the state of no rule of law, so that the country violates human rights and not protect people properly. While North Korea is also classified as a failed country in the international society, the fact that the leader of North Korea, one of the poorest countries in the world, met the leader of the United States, one of the strongest countries in the world, for the first time on June 12 give a glimpse of the will of North Korea to be ‘an internationally accepted country’ from failed states.

North Korea’s being in the tunnel of isolation in the international society may be the result of the unprecedented dictatorship that is hard to find in the world now, but it also caused by the name of war crime nation that they had waged the Korean War, even after the establishment of UN(24th of October 1945), a universal organization to secure peace by prohibiting war in the international society. This led to the participation of the UN Army, the first compulsory military measure in the history of UN Charter, resulting in denial of approval as a nation form international
society. Also, what ‘the only legitimate government in Korea’ under subparagraph 195 of the decision of UN General Assembly in 12th of December 1948 mean is that North Korea government cannot be approved as a nation, not because it was an anti-government organization who occupied the northern region of Korean peninsula illegally, but because it was the government which had established without democratic election that had not been held by UN.

There is the thing that should not be misunderstood about the fact that the president Lee had op-posed to the armistice agreement and had wanted to unify North Korea into South Korea. It would be wrong to understand the situation that South Korea wanted to keep the war, while North Korea tried to ceasefire. In fact, President Lee did not oppose to the armistice agreement itself but oppose to the armistice agreement ‘without unification’. That is because he expected that the communist army could have waged war again at any time, if the war had ended without unification even after the enormous sacrifice due to the invasion of the Communist army. Before signing the armistice agreement, the United States was promised to establish an alliance with South Korea to substantially support the armistice agreement, and Mutual Defense Treaty between the Republic of Korea and the United States of America was concluded on 1st of October 1953.

I am worried that the Korean War, which should be still remembered clearly, is forgotten over time. We often discuss North Korea academically or even in our daily lives because we see them to be reunified with South Korea. The 2018 inter-Korean summit, which the whole nation has watched, would have been a great opportunity for young people as well as the whole nation on the Korean peninsula to form a consensus on unification other than any opinion of the expert. However, we must remember the dark history of the Korean War first to understand the unification. I was fortunate enough to hear from Japanese colonial era to Korean War and Vietnam War which is a painful history of the Korean peninsula from my parents and relatives. I believe that the memory of history will gather our people to desperately want the unification, so that it can make Korea a strong and happy country.

4. References

4.1. Journal articles


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