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Chechnya Separation Movement and Russia's Response: Focusing on Chechnya War and TERRORISM

Sungtaek Cho

Sunmoon University, Asan, Republic of Korea

Abstract

Purpose: The purpose of this study is to consider the separation struggle of the Chechen Republic in the Caucasus region, which has been under Russian control for more than 200 years, and Russia's response. Chechen wants to get away from the Russian Federation and have their own government. But the Russian federal government does not want to undermine its security interests or economic interests. In this study, we look at the ideologies and strategies pursued by the two forces.

Method: In this paper, we explore the political and economic background of the North Caucasus region and the ethnic characteristics of Chechnya, and explore the existing research literature on the two Chechnya wars. Specifically, it considers mountainous peoples, Islamic acceptance, relations with neighboring countries, geologic factors of Chechnya, and the Russian federal government's pressure on the Chechnya Republic.

Results: Chechnya has been fighting for independence ever since it came under Russian control. In response, Russia has been consistent with strong military pressure and ethnic oppression rather than a moderate assimilation policy. This is because many ethnic groups in Russia were concerned about the departure. The North Caucasus region is also located on the border with NATO and Central Asia, which could have a significant impact on Russia's security and economy, so Russia is not giving up the region.

Conclusion: Chechnya is linked to direct or indirect interests in Russia and other Western countries, including the Republics of the North Caucasus, Turkey and Central Asian countries, and the United States. Also, the conflict may vary depending on Russia's strategy for Chechnya. Local fighting and terrorism are not expected to end unless Chechnya's independence is achieved.

[Keywords] **North Caucasus, Separation Movement, Chechnya War, Samashki Massacre, Mujahideen**

1. Introduction

One of the important phenomena that occurred in Eastern Europe, including the Soviet Union in the 1990s was not the dissolution of the Soviet Union by nationalism, but the revival of nationalism after the dissolution of the Soviet Union[1][2]. The collapse of the Soviet Union was due to economic difficulties, and the collapse of the Soviet Union was an opportunity for change for other socialist countries. Yugoslavia in Eastern Europe was divided into ethnic units, Czechoslovakia was divided into the Czech Republic and Slovakia, and the Soviet Union was transformed into a divided state from a huge state.

The Chechens, who had been under the control of the same Islamic state Turkey since the end of the 18th century, were ruled by Russia, which then expanded to the Caucasus area in 1859. Despite Russia's strong control, they have not assimilated into Russia and have maintained their own national consciousness and religion. At that time, there were many ethnic groups under Russian control, but Chechens were the only one who continued to struggle under Russian rule.

From 1920 to the following year, the Bolshevik regime mobilized tanks and fighter jets to suppress resistance in Chechnya, killing or injuring 100,000 people. After the annexation of the Soviet Union in 1924, Chechen resistance continued, but was suppressed by Stalin's special forces. Stalin forced 300,000 Chechens to relocate to the Siberia, permafrost in the Arctic and Stem in Kazakhstan in 1944 for their cooperation in the German Nazi government. One-third of the forced Chechens died of cold and hunger.

In Russia, ethnic minorities did not express segregated independence during the Soviet era, not because their national awareness was extinguished, but because their development into political movements was frozen. Also, in terms of the ethnic composition of each republic, the titular nations of each republic are controlled by the Russians without exceeding a majority in the republic[3].

For Russia, the North Caucasus region is of great strategic importance. Since the collapse of the Soviet Union, it has been a region of conflict that threatens the national unity of the Russian Federation, and is a key point in securing stable energy resources and managing transportation. Chechnya has oil reserves and large oil refineries, and oil pipes are installed in the northern part of the Caspian Sea, passing through Grozny. The fact that Russia's northern railway network and Caucasus railway network are passing through Chechnya is also an important issue for Russia[4][5].

Chechnya is seeking independence from Russia, but it is an important area that Russia cannot abandon. In the two wars, Chechnya was not independent, and conflicts still remain between Chechnya and Russia. In this paper, I would like to try to analyze the nature and consequences of the two Chechnya wars and the causes of constant terrorism.

2. Change of Control Over Chechnya

2.1. Interference from powerful nations

The Chechen people had been in the form of clan communities and were underdeveloped in socio-economic conditions. The characteristics of Chechen society are the collective community called 'taip' and Islam[6]. Taip is a community unit that has the same ancestry and encompasses tribes, kinsmen and neighbors. Therefore, Chechens, which has strong solidarity by the tribal community's traditional structure, has a strong sense of self-reliance that wants independence more than any other people. In the 9th and 11th centuries, the Caucasus developed the Byzantine Empire and Iran to expand their power.

Georgia and Armenia, influenced by the Byzantine Empire, embraced the Orthodox Church, and the peoples of North Caucasus embraced Islam under the influence of Iran. In the early 13th century, the Allan dynasty was invaded by Mongolia and collapsed. In the 16th century, the struggle with Mongolia ended and Iran, the Ottoman Empire, and Russia engaged in territorial battles. From the middle of the 18th century, Russia began to interfere with the people of the region with the southward policy. During the Ottoman Turks and Persian Wars in the 18th century, the Russian Empire attempted to annex North Caucasus into its protectorate. The Russian Empire, which overpowered Tatar in Crimea, began military operations against the North Caucasus, including Chechnya, in 1785[7][8].

Chechnya is located at the intersection of civilizations linking the East and the West, and has been invaded by immigrants on several occasions. Religiously, the Chechen people have been influenced by Christianity and Islam. From the 7th to 13th centuries, it was under the influence of Christianity in Georgia, and from the 16th to the 18th century, the religion of the Chechen people became Islam[9].

The Chechens share a unique culture of mountain people because of the geographical environment located in the mountainous region between the Caspian Sea and the Black Sea. Because of the geographical conditions, there was little interaction between tribes, so one unified political system could not be established, and each tribal union has been allied with neighboring powers. The neighboring powers have been competing for leadership over the Caucasus region[10].

The Chechens and other North Caucasus had a desire to establish a separate country, divided into various languages and ethnic groups. To realize this wish, the "Central Committee of the Confedera-

tion of Caucasus and Dagestan" was held in 1917. In May 1918, he proclaimed the "in Republic". However, the Chechens and Ingushetians lost the battle against the Caucasus forces, failing to establish the state[11].

2.2. Establishment of the Russian federation system

The Chechen resistance to Russian imperialism began in 1785 during Sheikh Mansour, the first white imam. He united several North-Caucasian nations under his command to resist Russian aggression and expansion.

In 1817-1864, after a long period of regional resistance during the Caucasian War, the Russian Imperial Army defeated Chechnya and annexed their territory before expelling thousands to the Middle East in the late 19th century. After the fall of the Russian Empire in 1917, Chechnya's independence attempts failed, and in 1922 Chechnya became part of the Soviet Union.

The collapse of the Soviet Union was a new turning point, with some regions establishing independent states or the rest joining the Russian Federation. Republics belonging to the Russian Federation have independent powers from the federal government.

First, you can specify your own language as an official language.

Second, a republic has a constitution and a system as a state.

Third, land and natural resources are the property of the people in the Republic.

Fourth, the Republic can establish political and economic international relations to the extent that they do not violate the federal constitution.

Fifth, the federal government must obtain prior consent from the republic if it needs to enter its territory due to an emergency.

In the 1993 New Constitution, the powers of the president were strengthened and the federal assembly was established. The Federal Assembly is considered not to be faithful to its role in representing the interests of each republic. In addition, independent declaration of independence or separation movements within Russian territory were restricted[3].

3. First Chechnya War

3.1. A precursor to the Chechnya-Russia conflict

The First Chechnya War was a military conflict between the Chechen Republic of Ichkeria and the Russian Federation from December 1994 to August 1996.

After the dissolution of the Soviet Union in December 1991, Russia pushed for legislation defining the authority of each federal subject. In 1992, 86 representatives of federal subjects, excluding Chechnya and Tatarstan, signed the law. In 1994, Tatarstan belatedly signed at Yeltsin's suggestion and became a republic. Only Chechnya did not sign the law. The Chechens' intention is to build an independent state, not a republic belonging to the Russian Federation. However, Yeltsin expresses his willingness to respond strongly to Chechen separation.

Dudayev, a Chechen native, founded the All-National Congress of the Chechen People(NCCHP) party and attacked a session of the Chechen-Ingushetia ASSR Supreme Soviet to gain Chechen independence.

The Chechen presidential election on October 27, 1991 resulted in a landslide victory for Dudayev, but the Russian federal government did not recognize the doctrine and sent troops to Grozny in November of the same year.

In June 1992, the Republic of Ingushetia joined the Russian Federation, and in 1993, Chechnya declared independence as the Chechen Republic of Ichikeria. In the process, other ethnic groups in Chechnya were suppressed by Dudyev and many escaped to other areas. Dudayev dissolved parliament to strengthen his power and declared a state of emergency in preparation for Russian attacks. Within Chechnya[12], there were forces opposing Dudayev's policies, and they started an armed

movement to overthrow Dudayev's regime. However, the Chechens' willingness to separate independence did not change.

Russian President Yeltsin's invasion of Chechnya was aimed at eradicating criminal forces in Chechnya. However, it is reasonable to say that Yeltsin's decision to invade Chechnya was aimed at strengthening his political position because it is hard to find a mafia in Chechnya. Due to the failure of economic policies, widespread crime, corruption of bureaucrats and politicians, Yeltsin's popularity fell by more than 20%. Many believed that Yeltsin invaded Chechen to regain political support.

3.2. The rise and progress of the Chechnya war

The First Chechnya War lasted about a year and eight months. The Russian military deployed 24,000 troops for the first time, but the number gradually increased to 95,000. The Chechen army was about 30,000 people. The number of people killed in the war was between 8,000 and 10,000 in Russia and more than 15,000 in Chechnya.

Before the battle between Russia and Chechnya, there was a civil war between the anti-Dudayev and the Dudayev forces from mid-October to late November. Russia supported anti-Dudayev in the fighting, and on November 29, Yeltsin ordered the fighting to cease and disarm. Judging that the fighting was not likely to stop, Russia launched an air strike on Chechnya[13].

The Russian military also failed to comply with Yeltsin's orders. Military commanders did not obey orders such as the attack on Grozny and the suspension of the attack. The Russian soldiers who were deployed were inexperienced soldiers who were not properly trained, and the failure of the operation was revealed everywhere in the battle. Numerous civilians were damaged during the battle. In particular, a large number of civilians were killed in the Grozny air strikes. Russian forces occupied Grozny and Chechnya rebels fled to the mountainous areas. The Russian army continued to fight after them without stopping the offensive.

Yeltsin also suggested a carrot book that Chechen people who participated in the battle would be pardoned if they surrendered, but it was not properly accepted. The Russian attack caused many casualties, including children, resulting in criticism that it was 'an unimaginable disaster' in the international community. Criticism has also arisen within Russia.

The Chechen independent forces carried out a hospital hostage act in June 1995. He held 1,500 hostages and negotiated a ceasefire with the Russian prime minister. Meanwhile, 120 Russians were killed. The negotiations led to a ceasefire, but Chechnya had the opportunity to reinforce its forces. They supplemented children and women with combatants, engaged in surprise guerrilla tactics, and began to use IEDs. Military clashes between the two sides resumed again as the ceasefire became meaningless. Chechen militants carried out hostages and genocide against civilians, mistreated Russian prisoners, and federal forces killed, raped, and looted civilians. The inhumane acts of both sides took place throughout the war and were reported unfiltered by Russian media.

Russia's inhumane attacks during the Chechnya War are well illustrated in 'Samashki Massacre'. The Samashki Massacre took place in the villages of Samashki on the border between Chechnya and Ingushetia from April 7 to 8, 1995. OMON troops indiscriminately threw grenades, fired guns and house fires at civilians in Samashki, killing at least 250 people. Although Chechen resistance forces had already left the village, they engaged with some 40 remaining militias and carried out unnecessary attacks on civilians. It also restricted outsiders from traveling to Samashki. Russian intellectuals and international organizations have argued that the massacre is equivalent to the Nazi massacre of Russians.

The Russian federal government spent a significant amount of money on the Chechnya airstrikes and failed to eradicate the Chechen militants. After a year and eight months of fighting, Russia failed to win Chechnya's surrender and agreed to a 'Khasavyurt peace treaty' to reserve Chechnya's status until 2000. The contents of the peace treaty are as follows. First, instead of withdrawing Russian troops from Chechnya territory, Chechnya will hold off on the independence of Chechnya for five years until December 31, 2001. Second, permanently abandon the use of force in any difficulty. Third, after the restoration of political stability, Chechen's future is left to the opinion of Chechen residents[14][15].

4. Second Chechnya War

4.1. War and terrorism[16]

The Second War began in August 1999 in the Chechnya-North Caucasus border area between the Russian Federation and the Chechen Republic of Ichkeria and lasted for nine months until April 2000[17].

Russia had 93,000 troops and Chechnya had 22,000. The death toll was 10,000 on the Russian side and 14,000 in Chechnya. There was no major conflict between Russia and Chechnya before the Second Chechnya War, but Chechnya extremist violence continued. Salafi Muslims benefited from the kidnapping of hostages, and there were intermittent small clashes between Chechnya and Russia. Russia's assassination attempt was also made when anti-Russian Aslan Maskhadov became president of Chechnya. In addition, there have been several terrorist attacks by Chechen militants.

· November 16, 1996 bombing in Caspisk, Dagestan
· April 23, 1997 Krasnodar Krai bombing of Russian
· May 28, 1997 Stavropol Krai bombing of Russian
· December 22, 1997 Armed forces led by Ibn al-Khattab raided Russian troops in Buynaksk, Dagestan.

The war began in May 1999, when the Russian federal government closed the Chechnya-Russian border and Chechnya attacked Russian border guards. In Takestani, Islamists carried out a series of bombings against Russian troops.

In August 1999, Islamic fighters from Chechnya clashed with Russian troops in the North Caucasus region. Shamil Basayev of Chechnya joined Ibn al-Khattab in the neighboring Republic of Dagestani, with 2,000 militants from Chechnya, Dagestani, international Mujahideen and Wahhavist. Russia launched an air strike on Chechnya, and 80,000 civilians fled to nearby Ingushetia.

Putin, then Prime Minister of Russia, vowed to attack the Terek River. The reason for the march to the Terek River was to protect other republics, but it was one of the strategies to destroy the Chechen separatists. On October 12, 1999, Russian troops crossed the Terek River and began their two-pronged march south of the capital, Grozny. On October 15, 1999, Russian troops attacked Grozny, and on October 21, they launched a missile attack on Grozny.

It occupied the second city of Gudermes in Chechnya on November 12 of the same year. On February 2, 2000, in a series of attacks, the Russian army captured Grozny. In a massive air strike, Grozney became a devastated city. Separatists and civilians escaped from Grozny, but more than 3,000 separatists were killed in battle. Separatists, meanwhile, damaged Russian troops in an ambush. The Battle of Russia-Chechnya was raging in the mountains south of Chechnya until the end of 2000.

Russian President Putin directly ruled Chechnya in May 2000. Next month Putin appointed interim Russian government head Akmad Khadyrov. On March 23, 2003, the new Chechnya Constitution passed a referendum. The 2003 Constitution granted the Republic of Chechnya a significant degree of autonomy, but it still combined Chechnya with the rule of Russia and Moscow and took effect on April 2, 2003. The referendum was strongly supported by the Russian government, but met with harsh criticism from Chechen separatists, and many citizens chose not to vote. Akmad Khadyrov was assassinated in the 2004 bombing. Since December 2005, the leader of the pro-Russian militia, Ramjan Khadyrov, has become the de facto ruler of Chechnya. Ramjan Khadyrov became president of Chechnya in February 2007.

Large-scale fighting within Chechnya was halted, but small-scale attacks continued, especially in southern Chechnya and neighboring territories of Caucasus. Small separatist militants targeted Russian and pro-Russian officials, security forces, military and police convoys and vehicles. Separatist units used IEDs and sometimes combined for large-scale attacks. Russian forces retaliated against separatist forces with artillery, airstrikes and counterattacks.

Chechen remained stable, but there were still clashes with militants in areas near Dagestan and Ingushetia.

4.2. Global Islamic intervention

Chechnya's political elite, who judged that the First Chechnya War had freed themselves from Russian interference, had a plan to turn the North Caucasus region into a vast muslim region. The move was aimed at changing Chechen's strategy of creating a Islamic state in North Caucasus. Within Chechnya, there was a feud between Islamic moderates and hardliners, but the Second Chechnya War united on the anti-Russian front.

The cause of the war was not religion, but the participation of external Islamists helped reverse the nature of the war. The Islamist unit Mujahideen, dubbed the Wahhabi Muslims in Russia, was already active on all fronts by the end of the First War, many of which were independent of the Chechen army under separate command[18][19].

It was Khattab who led Mujahideen. Khattab infiltrated Baku, the capital of Azerbaijan, where he searched for ways to enter Chechnya. He infiltrated Chechnya in February 1995 and began jihadism against 'Russian Pagan' by organizing a Muslim army composed of foreign Muslim mercenaries while training Chechnya field commanders and Chechnya militants. He participated in combat in October 1995, January 1996, April and August of the same year. After the first sports war entered a ceasefire, Khattab established a military training center and conducted military training and Islamic education for young people of other ethnic groups in Russia, including Chechen people.

Khattab expressed great interest in the idea of expanding Jihad in Chechnya to countries around the Caucasus, especially the Republic of Dagestan, which has close historical and religious ties with Chechnya. Khattab's idea of expanding the temple is to integrate Dagestan with Chechnya to build a first Islamic state, secure a passage east to the Caspian Sea, and merge the neighboring North Caucasian republics. In the western Qadar region of Dagestan, the local Wahhab expelled secular authorities and declared "Sharia territory" in 1998, but when Khattab took control of the western mountainous region of Dagestan with Basayev in August 1999, Dagestan Jihad was destroyed by Russian attacks.

In the end, Khattab's idea of expanding the temple was unsuccessful and provided an excuse to induce the second Chechnya attack by the Russian army. The Russian military has expanded its offensive in Dagestan and Chechnya with enormous force to remove Islamists. As a result, the Wahhabi Muslims of Dagestan, which formed the two axes of the Caucasus Jihad along with Chechnya, hid underground, and Chechnya Islamists were forced to move to the southern mountainous region after Russian military indiscriminate air strikes and massive attacks.

The war seemed to end in early 2000 when Russian forces took control of most of the Chechen Republic's territory, excluding the southern mountains, and a pro-Russian regime led by islam sufi cleric Khadirov, but the struggle for Chechen independence centered on guerrilla warfare continues, and the religious character of resistance is becoming more solidified over time.

5. Conclusion

If the First Chechnya War was a war of lasting aspirations for national independence, the Second Chechnya War was fought against Russia by radical Islamic leaders who advocated jihad[20].

The differences between the two wars are as follows[9].

First, the first war was supported by international public opinion due to the emergence of new independent states and the spread of nationalism during the post-Cold War period, but the second war was a series of Islamic fundamentalists' terror attacks, which made international public opinion inadequate.

Second, the leadership of nationalist Dudayev gained independence from the Chechens and gained independence from Russia, but the Second War did not gain active consent from the Chechens due to the devastation of life from the First War.

Third, during the First War, the Russian army failed with a less prepared strategy, but in the Second War, the Russians won early through careful preparation.

Islam was the ideology of the people of North Caucasus, and Islam was a common cultural element of the North Caucasus against the outside world. Islam is closely related to the ethnic identity of the

Caucasus region. The Islamists in Chechnya needed some common ideology to unite the Chechnya people and embodied religion as an ideology of struggle. The Chechens, who wanted independence from the Russian Federation, accepted jihad as a common ideology in terms of a struggle with a powerful nation.

The strong emergence of Wahhabism within Chechen society is largely attributable to the Russian government's sudden invasion of the Chechen Republic in 1994. Although the Chechen people claimed separation and independence, it was President Yeltsin of the Russian Federation who first sent troops to start the war. Basically, within the Russian Federation, it is very difficult for an autonomous republic to have its own regular army. But Chechnya organized militias and joined the war.

In the first Chechnya War, ethnic factors within Chechnya had to emerge. Thus, the characteristics of the war for national independence and the war for national liberation were very strong. But the Second Chechnya War changed its aspect. The involvement of external Islamists set the goal of building Islamic societies in the North Caucasian region, including Chechnya, and the Salafi Jihadists' strategy was implemented.

Russian President Putin strongly pursued the Chechenization policy. Chechenization is a strategy or policy for the Russian federal government to delegate responsibility and authority to a pro-Russian Chechen leader in resolving the Chechen conflict so that this very non-Federal regime can control Chechen territory stably by curbing the Chechen separatist movement or terrorism.

The Second Chechen War was a foundation for his acquisition of power, even if it was a "war for Putin," to the extent that it was not a big exaggeration. But by the summer of 2000, Putin realized that he would not be able to solve the Chechnya problem by means of force or war. He began to be skeptical about the possibility of a military victory in the Chechen conflict[21].

Putin's national strategic goal is to build a strong Russia. It aims to establish a strong federal government and achieve territorial unity and national unity. Putin's strategy is hampered by the North Caucasus region, especially Chechnya. It is working with the United States on international terrorism to control Chechnya. On the other hand, the United States and Western European countries are indirectly supporting the separating independent forces to weaken Russia's control of the North Caucasus while maintaining a strategic partnership in response to international terrorism[4].

Chechnya is linked to direct or indirect interests in Russia and in the North Caucasus, Turkey and Central Asian countries, the United States and other Western countries. Also, the conflict may vary depending on Russia's strategy for Chechnya. Local fighting and terrorism are not expected to end unless Chechnya's independence is achieved[22]. Terrorism and anti-terrorism tend to lead to repetitive and brutal forms, as seen in ethnic conflicts such as China, the Middle East and North Africa[23].

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Author	SC	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Biden Administration's APPROACHES to Denuclearizing the Korean Peninsula

Sangsoo Lee

Korea National Defense University, Nonsan, Republic of Korea

Abstract

Purpose: This article delves into the problems of the U.S. strategy for negotiations with North Korea based on Neo-liberalism and look briefly at the implications for its denuclearization policy on the Korean Peninsula.

Method: This paper analyzes the problem of the US negotiations between the US and North Korea through the lens of Neo-liberalism. Neo-liberalism is a market-oriented economic and social policy approach that seeks to minimize government intervention, focus on the maximization of private companies, market expansion between countries.

Results: The biggest problem of neo-liberalistic ways of negotiation with North Korea is first, the minimization of government intervention, second, the pursuit of military-industrial complex interests with a focus on private corporate efficiency, and thirdly, China's alienation due to the strengthening of common value shared alliance networks.

Conclusion: First of all, it is necessary to maximize the role of the U.S. government to revitalize the negotiations on the denuclearization of the Korean Peninsula, which has been strained by this neo-liberal approach of the U.S. An active engagement policy is desirable, and if necessary, it needs to consider a summit for phased denuclearization. Second, the control of the profit-seeking of military-industrial complexes. Despite the signing of the 9.19 inter-Korean military agreement, South Korea is making efforts to purchase state-of-the-art weapons from the U.S. to retrieve wartime operational control. This is causing a backlash from North Korea, giving an excuse to be intransigent in denuclearization negotiations. Third, China should be embraced as an active partner in the denuclearization of the Korean Peninsula. China's cooperation is essential to denuclearize the Korean Peninsula, but the strengthening of the U.S.-centered value alliance will lead to China's isolation, which will prevent China from cooperating with North Korea's denuclearization. Fourth, policies that consider the weak are needed to overcome the harmful effects of the infinite competition of neo-liberalism. North Korea is inferior to the U.S. and its allies economically and militarily.

[Keywords] Biden Administration, Negotiation, State Intervention, Sanctions, Strategic Patient

1. Introduction

The inter-Korean communication line, which had been disconnected, was restored on June 27, 2021. This came 413 days after North Korea unilaterally cut off the communication line, taking issue with the spread of leaflets by some North Korean defectors' groups. Expectations for the denuclearization of the Korean Peninsula and a peace process are increasing along with the restoration of inter-Korean communication lines. Hans Christens, director of the Nuclear Information Project of the Federation of American Scientists, noted that it is estimated that North Korea currently can build 40 to 50 nuclear weapons and, expect to make about 80-90 nuclear weapons by 2030[1].

Since the Biden administration announced a new policy stance on North Korea, denuclearization

negotiations between the U.S. and North Korea have been stalled. As a precondition for the denuclearization of the Korean Peninsula, North Korea is calling for the suspension of its hostile policy toward the North, the guarantee of the North Korean regime, and the suspension of the introduction of strategic weapons on the Korean Peninsula. Former U.S. administration negotiations on the denuclearization of North Korea are repeating active intervention and strategic patience. The Biden administration is going to restore the liberal internationalist diplomatic stance of neoliberals and put U.S. interests in the same context as Trump's America First Policy[2].

The Biden administration's policy toward North Korea is almost the same as the Obama administration's "strategic patience" strategy. In addition, the US policy toward North Korea's denuclearization is being pushed out of priority due to its policy of checking China. The purpose of this article is to analyze the problems of the U.S. strategy for negotiations with North Korea based on Neo-liberalism and illustrate briefly the implications for its denuclearization policy on the Korean Peninsula. To this end, Chapter 2, describes the characteristics of Biden's North Korea policy from a neoliberal perspective of minimizing government intervention, maximizing profits of the military-industrial complex, and cooperation among shared values states, and expanding free trade by checking China's communist regime. Chapter 3 analyzes the negotiation strategy for the denuclearization of the Korean peninsula between the United States and North Korea. In conclusion, I would like to propose a policy alternative for the denuclearization of the Korean Peninsula and the peace process.

2. Literature Review

2.1. Literature review

The Biden administration's North Korea policy was announced through White House spokesman Jen Psaki that "complete denuclearization of the Korean Peninsula" is still the goal of U.S. policy toward North Korea, and it is not the grand bargain or a strategic tolerance, but a well-coordinated pragmatic approach[3]. This pragmatic approach means maximizing the national interests of the United States. The denuclearization approach will be intensive, but each stage will be carried out by exchanging nuclear dismantlement and lifting sanctions. He added that the Biden administration has consulted with South Korea, Japan, and other allies in the denuclearization process and will continue to do so.

Angeno & Lee Sang-geun summarizes the Biden administration's North Korea policy direction in the report, "Analysis of North Korea's foreign policy since the launch of the Biden administration: Focusing on U.S. policy[4]. First, They will pursue a policy that is different from Trump. The working-level talks will give priority to confirming North Korea's substantial denuclearization measures. Second, it will push for phased denuclearization to block threats to the U.S. mainland. North Korea's nuclear weapons development is for the survival of the regime and will attempt a phased approach based on the judgment that it will not give up at once. Third, it is unlikely that the Biden administration will try to rapidly advance the negotiations while making preemptive concessions due to a change in North Korea's position. In a report titled "The Prospect of U.S.-North Korea Relations under the Biden Administration and the Resumption of North Korean Nuclear Negotiations," Jeon Bong-geun evaluates that North Korea is likely to protest because Biden's new North Korea policy is based on the premise that North Korea will abandon its nuclear weapons while the US is maintaining its economic sanctions to the North Korea[5]. In a paper titled "The Biden administration's East Asia-Pacific Strategy and South Korea-U.S. Relations: The Strategy of Engagement-Hedging," Yoon Dae-yeop stressed the need to embrace China[6]. To sum up, the existing studies reviewed above, we predict that denuclearization negotiations between the U.S. and North Korea on the Korean Peninsula will face a long-term deadlock due to the U.S. negotiating attitude and the policy of putting China first and that South Korea will have various strategic options in the process. Unlike previous studies, the study attempted to seek alternatives by analyzing the problems of neo-liberalism's way of negotiation for denuclearization negotiations on the Korean Peninsula.

2.2. Framework of analysis

The Biden administration's new North Korea policy implies a pragmatic policy tendency, but it strongly implies its tendency to carry out its claims with a powerful state's arrogance. In analyzing the existing U.S. negotiation strategy on North Korea, those studies tend to focus on political dynamics based on new realism, the balance of power, or the building of peace on the Korean Peninsula based on neo-liberalism. Neo-liberalism, in particular, focuses more on the formation of peace between countries than on peace by force. Voluntary peace can be established by establishing international norms and systems to expand economic interdependence based on open order rather than using force. Neoliberals believe that the key to ensuring peace is not the distribution of power between countries, but the spread of liberal democracy and market economic principles that support the spirit of neo-liberalism. Against this backdrop, the US has imposed non-military economic sanctions against North Korea's military provocations while sticking to a "strategic patience strategy" in anticipation of the North's change.

Neo-liberalism is a market-oriented economic and social policy approach that seeks to minimize government intervention, focus on the efficiency of private companies, free trade and market expansion between countries[7][8]. The main problems with the U.S. negotiation strategy to denuclearize North Korea based on these neo-liberal methods are first, minimizing government intervention, second, pursuing military-industrial complex interests at the level of private corporate efficiency, and third, strengthening cooperation among alliances with commonly shared values.

3. The U.S. and North Korea's Negotiating Strategy for Denuclearization of the Korean Peninsula

After the Hanoi deal in February 2019, denuclearization negotiations on the Korean Peninsula have reached a deadlock due to the suspension of dialogue between the U.S. and North Korea. Since the inauguration of the Biden administration, a new North Korean policy has been announced that it will seek a coordinated pragmatic solution, not Trump's negotiating method or Obama's strategic patience. The Biden administration may refuse to hold a top-down summit until it is successful in denuclearization by a civilian working-level negotiation team. But North Korea is unlikely to follow these conditions and path[9]. This refers to what it calls the U.S. neoliberal way to denuclearize the Korean Peninsula, minimizing U.S. involvement in the dimension of government, seeking the interests of the military-industrial complex, and maximizing practical national interests with cooperation with values shared the alliance network. The U.S. response, without considering North Korea's preconditions for the denuclearization of the Korean Peninsula, is expected to meet with North Korea's version of strategic patient[10]. In this chapter, I would like to point out the problems of the U.S. neo-liberalistic denuclearization approach on the Korean Peninsula and examine the predictable North Korean response strategies.

3.1. The US negotiation approach to North Korea

The Biden administration's strategy of negotiating denuclearization on the Korean Peninsula will follow the traditional U.S. approach of achieving North Korea's complete denuclearization through diplomacy, prioritizing verification and agreement for complete denuclearization. In a nutshell, The Biden administration's policy stance toward North Korea is negotiating, sanctioning, and military posture. The Biden administration's North Korea policy can be summarized as increasing the cost of nuclear possession for the Kim Jong-un regime. As North Korea continues to develop and produce new nuclear weapons and projectiles, the cost of denuclearizing North Korea will increase further and ultimately threaten the security of Northeast Asia[11].

The U.S. negotiation strategy with North Korea to denuclearize the Korean Peninsula is far from the success of the negotiations as it reflects the neoliberal stance that has failed so far, namely the minimization of government intervention, the profit polarization of the military-industrial complex, and the prioritizing ideology based alliance network. These neoliberal policies are expected to trigger a backlash from China and North Korea. In this chapter, I would like to briefly point out the problems of the

U.S. approach, which is skewed to neo-liberalism.

3.1.1. Minimizing government intervention

Biden is a believer in neo-liberalism and values cooperation between countries through the revival of the alliance to resolve international problems. Although the Biden administration's strategy to denuclearize the Korean Peninsula argues rhetorically that it is different from that of Obama and Trump, it is reasonable to see it as Obama's "strategic patience" 2.0. North Korea is also choosing a North Korean version of "strategic patience" waiting for a change in the U.S. negotiating attitude and calculation.

North Korea is preparing for a long-term war, saying, "We will not have dialogue for dialogue," unless there is no withdrawal from the U.S. hostile policy against North Korea and sanctions. Although North Korea is in a difficult situation due to international economic sanctions and pressure, it has expressed its willingness to persevere with "self-reliance" and wait for changes in South Korea and the U.S. attitude[12]. North Korea is not an economically competitive country, and possessing nuclear weapons is the only way of overcoming external pressure and ensuring the legitimacy of the North Korean regime [13][14][15]. North Korea is obsessed with the siege mentality, and the resolution of the mentality could be a clue to the denuclearization of the Korean Peninsula. Only when the U.S. government implements an active intervention policy to resolve North Korea's siege mentality can accelerate progress in the denuclearization of the Korean Peninsula. South Korea and the U.S. are facing a good opportunity to open up North Korea and reduce its dependence on China to revitalize the North Korean economy with drastic measures at a time when the North Korean economy is difficult due to the spread of COVID 19. Policy alternatives to this end include long-term U.S. loans to build infrastructure and the signing of free trade agreements between the two Koreas.

The Biden administration made it clear that it would not hold a summit unless it showed sincere commitment to denuclearization as a result of negotiations with civilian working-level negotiators. If the deadlock in the strategic competition between North Korea and the U.S. continues, North Korea may try to bring the U.S. to the negotiating table by resuming its nuclear test and missile launches targeting the new Biden administration. The problem of "strategic patience" strategy 2.0. minimizing U.S. government intervention is that it will induce North Korea to pursue its own "strategic patience" and eventually encourage North Korea to use its last card of military provocation.

3.1.2. Maximizing profit-seeking of the military-industrial complex

For South Korea, which is facing North Korea, the purchase of state-of-the-art weapons from the U.S. is an essential factor for its deterrence against the North, and it plays a major role in its deterrence against the North. The government purchased state-of-the-art weapons from the U.S., including early warning airplanes and stealth fighters, to recover wartime operational control. South Korea responds to North Korea's nuclear and missile threats by conducting a joint military exercise with the U.S. every year[16]. The annual ROK-US military exercise has a deterrent effect on North Korea, but it is a new U.S. weapons test and also has the effect of advertising it to the global market. President Eisenhower's warning in his 1961 farewell speech that "the military-industrial complex could put freedom and democratic processes at risk," and is still valid for denuclearization of the Korean Peninsula and progress in the peace process. Former U.S. leaders believe military power is crucially important to lead the world, and President Jo Baiden is also following the U.S. creed[17].

If we take advantage of the interests of the organization's so-called military-industrial Complex, it could be a stumbling block to the denuclearization of the Korean Peninsula and the progress of the peace process. The denuclearization on the Korean Peninsula is possible by arms control between the two Koreas and the U.S, Therefore, the profit logic of the military-industrial complex only results in arms proliferation, making mutual structural arms control impossible by amplifying distrust among the parties concerned. Militarism resulting from the maximization of profit-seeking via the military-industrial complex may encourage proxy wars that were nominally carried out in the name of peace, freedom, and democracy. For this reason, isn't dialogue with North Korea for the denuclearization of the Korean Peninsula falling behind in priorities?

3.1.3. Utilizing value shared alliance network

The emergence of the Biden administration means the revival of the U.S. alliance, and the U.S. tries to curb threats from North Korea and China in cooperation with the democratic values shared alliance. This solidarity of democracy has the nature of an exclusive that checks non-democratic forces rather than seeking to spread democracy outside. The United States put priority on alliance's cooperation to deal with China's South China Sea, East China Sea, Hong Kong human rights issues, and cross-strait issues[18]. With the U.S. focused on Chinese issues and South Korea focusing on North Korea, cooperation between South Korea and the U.S. is difficult due to the difference in their goals. The Biden administration's democratic values' diplomacy surfaced in a joint statement at the U.S.-Japan summit.

The U.S. is trying to prevent the expansion of China's authoritarian regime by strengthening cooperation with its allies under the Indo-Pacific strategy[19]. The strengthening of the alliance network may cause a backlash from North Korea, China, and Russia, which is likely to serve as a stumbling block to the denuclearization of the Korean Peninsula and the peace process. In addition, the Biden administration's human rights-oriented diplomacy serves as an obstacle that triggers North Korea to further strengthen its nuclear capabilities. The pursuit of U.S. ideological interests by strengthening with shared alliances could hinder negotiations for the denuclearization of the Korean Peninsula and the peace process.

3.2. North Korea's response to the US approaches

What North Korea demands from the U.S. on the premise of giving up its nuclear weapons is first, politically normalizing U.S.-North Korea relations and lifting sanctions. second, military withdrawal of U.S. troops from South Korea, and thirdly, infrastructure construction and economic assistance[20]. North Korea insists that if the U.S. does not change its hostile policy toward the North, no improvement in relations will be made no matter what treaty is signed between the two countries. Over the past three decades, the U.S. has insisted on North Korea giving up its nuclear program, but the Kim Jong-un regime is unlikely to change its calculation against the U.S. by strengthening its nuclear weapons.

North Korea is implementing the Yongnam Tongmi(用南通美: tactics to use the South to connect the United States) tactics with reconnecting the inter-Korean communication lines[21]. For the denuclearization on the Korean Peninsula, North Korea can only increase the probability of establishing a denuclearization regime on the Korean Peninsula through U.S. concessions and North Korea refraining from nuclear test missile tests. If the U.S. negotiation stance of strategic patience continues under the Biden administration, amid tedious strategic competition between the U.S. and North Korea, the peace process will be suspended and unstable security will continue under the armistice. While the strategic competition between North Korea and the U.S. is running parallel. Under these circumstances, expected North Korea's response may be insulation, muddling through, and customized military provocations[22].

By using such a strategy, North Korea may seek to strengthen the priority of inter-Korean cooperation in South Korea or the logic of nuclear arms control within the U.S. The tailored military provocation is that North Korea is continuously strengthening its nuclear capabilities to attract the attention of the U.S. while the tedious strategic competition between the U.S. and North Korea continues.

4. Conclusion

As mentioned above, the main problems of neo-liberalistic ways of negotiation with North Korea are first, the minimization of government intervention, second, the pursuit of military-industrial complex interests with a focus on private corporate efficiency, and thirdly, China's alienation due to the strengthening of common value shared alliance. First of all, it is necessary to maximize the role of the U.S. government to revive the stalled negotiations on the nuclear deal with the North Korea, which has been strained by the US neo-liberal approaches. An active engagement policy is desirable, and if necessary, it is necessary to consider a summit for phased denuclearization. Secondly, the control of

the profit-seeking of military-industrial complexes. Despite the signing of the 9.19 inter-Korean military agreement, South Korea is making efforts to purchase state-of-the-art weapons from the U.S. to retrieve wartime operational control. This is causing a backlash from North Korea, giving an excuse to be uncooperative in denuclearization negotiations. Third, China should be embraced as an active partner in the denuclearization of the Korean Peninsula. China's cooperation is essential to denuclearize the Korean Peninsula, but the strengthening of the U.S.-centered value alliance will lead to China's isolation, which will prevent China from cooperating with North Korea's denuclearization. Fourth, policies that take care of the weak are needed to overcome the harmful effects of the infinite competition of neo-liberalism. North Korea is inferior to the U.S. and its allies economically and militarily, so it needs policy efforts to take care of the weak.

This study has limits in assessing the Biden administration's approach to negotiations with North Korea because it has not passed its first year in office. North Korea is waiting for a new calculation by the Biden administration, and the U.S. is waiting for North Korea's positive action for the denuclearization, saying it will mention a new approach if the North comes to unconditional dialogue. In response to the U.S. demand, North Korea's position is that it will not hold dialogue for dialogue because there is no compensation for the dismantlement of the Dongchang-ri missile launch site and its nuclear test site. In addition, the U.S. does not meet North Korea's preconditions for denuclearization of the Korean Peninsula.

North Korea will maintain a negative attitude to denuclearization negotiations on the Korean Peninsula by implementing a North Korean-style coercive policy through strengthening its nuclear weapons. Strategic alternatives for the future denuclearization of the Korean Peninsula and the progress of the peace process are as follows. First, if North Korea brings sincerity to the denuclearization of the Korean Peninsula, it will be able to review the Hanoi deal and start negotiations based on what the U.S. accepts. Second, there is a need to partially lift economic sanctions that encourage the North to come to the negotiation table. The U.S. is expected to engage in dialogue if it resolves only one of three things: lifting sanctions on North Korea to export sanctions relief on minerals daily necessities, and oil. Third, South Korea needs to abandon its rosy hopes for North Korea's tactics of Yongnam Tongmi(用南通美: tactics to Use the South to Connect the United States) tactics with reconnecting the inter-Korean communication lines. South Korea needs to confirm the North's willingness to denuclearize through the exchange of letters with the North. There is a need to expand the lifting of economic sanctions in consultation with the U.S. on concrete steps to denuclearize North Korea. Fourthly, North Korea is now suffering a triple hardship. The spread of COVID-19, stalled external relations, severe financial difficulties, and food shortages. China, a sponsor of North Korea, is also unable to afford to support North Korea economically due to the spread of COVID-19 and floods caused by typhoons.

The US and South Korea are facing a good opportunity to separate North Korea from China if it offers benefits to attract North Korea, which has benefited from both China and Russia by equidistant diplomacy. North Korea distrusts China's COVID-19 vaccine and prefers U.S. Pfizer or Modena. Considering the difficult situation in North Korea, the U.S. and South Korea can offer the COVID-19 vaccine as an incentive to come to the denuclearization negotiation table. South Korea can establish a so-called "Northeast Asia Quarantine Community" as a hub for vaccine production and use it as a means to promote confidence-building in the region. Fifth, to denuclearize North Korea and advance the peace process on the Korean Peninsula, Japan should be attracted as a partner to persuade the United States. If Korea and Japan compromise, it will be easier to persuade the U.S. for active engagement in the denuclearization of the Korean Peninsula.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Author	SL	-Set of concepts ☑
		-Design ☑
		-Getting results ☑
		-Analysis ☑
		-Make a significant contribution to collection ☑
		-Final approval of the paper ☑
		-Corresponding ☑
		-Play a decisive role in modification ☑
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑
		-Participants in Drafting and Revising Papers ☑
		-Someone who can explain all aspects of the paper ☑

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NORTH KOREAN Refugees: Empowerment by the Police's Gender and Age

Hwasoo Kim[1]

Korean National Police University, Asan, Republic of Korea

Sunggu Jo[2]*

Kyungwoon University, Gumi, Republic of Korea

Abstract

Purpose: This study has analyzed the differences in the empowerment by gender and age of the police officers serving for the South Korean security police organization, which is dedicated to the North Korean refuges, who are increasing in number due to the economic downfall of the North Korean regime. In addition, it is sought to discuss the policy measures which can help improve the new empowerment of the North Korean refugees and the security police organization analyzed based on the results of this study.

Method: In this study, to analyze the differences in the empowerment as per the gender and age of the police officers serving in the security police organizations, 100 police officers from the security department who have work experiences related to the North Korean refugees with the South Korean police officers as the group of recruitment in 2020 were targeted, and the survey was conducted by using the Self-Administration Method.

Results: In terms of the differences in the empowerment as per gender, with Q-1 "What I'm doing is important to me", men demonstrated a higher level of significance than women at the significance level of 5%, and in terms of the differences in the empowerment as per age, 8 out of 20 questions demonstrated that empowerment was higher for those in their 50s or older than in those in their 20s, 30s, and 40s.

Conclusion: The weight of the women police officers in the organizational culture of the security police for the expansion of the North Korean refugees ought to be increased. Among the North Korean refugees, women account for twice as many as men, and the role of women police officers in counseling and managing them ought to be taken seriously. Furthermore, there is a need for an ambience where the empowerment possessed by the police officers in their 50s and older may be conveyed to the young police officers, and the values generated from the long experiences of working with the North Korean refugees, that is, a strong sense of the view of nation, ought to be well conveyed to the young police officers.

[Keywords] **North Korean Refugees, Security Police, Empowerment, Gender, Age**

1. Purpose of the Research

Immediately after the Korean War, which began with the North Korean surprise invasion of the South in 1950, North Korea achieved its growth based on communism while South Korea achieved its growth based on capitalism as each of their ideologies[1][2][3].

However, with the collapse of the Soviet Union, which represents communism, North Korea's dictatorial regime is causing North Koreans to starve to death, and hence, human rights are severely violated[4][5][6][7].

Meanwhile, South Korea is the only country in the world which has achieved both the democratization and industrialization simultaneously, and has grown among the world's top 10 economic powerhouses, and it has been announced by the Ministry of Unification of South

Korea that the number of the North Korean refugees entering South Korea via China to escape North Korea's dictatorship and hunger has reached 33,752 as of 2020[8][9].

In particular, as the number of high ranking North Korean diplomats has gradually increased in South Korea and other neighboring countries, the economic situation in North Korea has further deteriorated, and the collapse of the North Korean regime itself may also be expected.

Hence, the South Korean security police ought to be prepared for the North Korean refugees who may enter South Korea from the replacement of the North Korean dictatorship and the coup d'etat.

Therefore, this paper seeks to examine the security police organization managing the North Korean refugees, and in particular, seeks to present the direction for the security police organization by examining the differences in the empowerment as per gender and age.

2. Research Method

2.1. Research subjects and sampling method

In this study, among police officers in the security department as of 2020 who had experience in work related North Korean defectors, 100 trainees in the Police Human Resources Development Institute were surveyed via self-administration method. Among the collected survey questionnaires, 91 were selected as valid samples, excluding those whose answers were incomplete or missing.

Table 1. The general characteristic of the research subjects.

	Description	N(%)	Total
Gender	Male	61(67.0%)	91
	Female	30(33.0%)	
Age	20s	7(7.7%)	91
	30s	28(30.8%)	
	40s	30(33.0%)	
	50s or older	26(28.6%)	
Education	High school	14(15.4%)	91
	Junior college	30(33.0%)	
	College	43(47.3%)	
	Graduate school	4(4.4%)	
Rank	Policemen/women	1(1.1%)	91
	Senior policemen/women	19(20.9%)	
	Assistant inspector	18(19.8%)	
	Inspector	29(31.9%)	
	Senior inspector	14(15.4%)	
	Superintendent	10(11.0%)	
Employment path	General recruitment	75(82.4%)	91
	Special recruitment	5(5.5%)	
	Police academy	2(2.2%)	

	Police cadet	9(9.9%)	
	Other	0(0.0%)	
The total length of service as a police officer	5 years and less	13(14.3%)	91
	6-10 years	32(35.2%)	
	11-15 years	13(14.3%)	
	16-20 years	13(14.3%)	
	Longer than 20 years	20(22.0%)	
The length of service at the security department	2 years and less	16(17.6%)	91
	3-5 years	56(61.5%)	
	6-10 years	17(18.7%)	
	Longer than 10 years	2(2.2%)	
The number of police officers in the organization	10 or less	18(19.8%)	91
	11-15	42(46.2%)	
	16-20	24(26.4%)	
	More than 21	7(7.7%)	
Service location	Tier 1 areas(big cities)	80(87.9%)	91
	Tier 2 areas(small/medium-sized cities)	11(12.1%)	
	Tier 3 areas(rural areas)	0(0.0%)	

2.2. Measuring instrument

The appropriate method for each verification method was chosen to increase the content validity and verify the construct validity of the questionnaire. Content validity was validated through consultation with relevant experts to adopt survey questions suitable for the purpose of the study, and the reliability of the survey questions was shown to be Cronbach's α coefficient .951.

Table 2. The questions.

	Questions
Q-1	What I'm doing is important to me.
Q-2	Activities related to my duties are meaningful to me.
Q-3	What I'm doing is meaningful to me.
Q-4	What I am doing has important implications for our department's work.
Q-5	What I am doing now will be very helpful in achieving my future goals.
Q-6	I am confident about my ability to perform my duties.

Q-7	I am confident about my ability to perform my duties.
Q-8	I am skilled in the technical knowledge necessary for my duties.
Q-9	I am confident that I have successfully achieved my department's objectives.
Q-10	I have the ability to handle difficult tasks successfully.
Q-11	I almost autonomously decide how to perform my duties.
Q-12	I have the ability to decide for myself how to carry out my work.
Q-13	I have considerable independence and discretion in performing my duties.
Q-14	I decide on my own goals for the job.
Q-15	I choose the ways I need to perform my duties.
Q-16	My influence on what happens in my department is great.
Q-17	I can control many things that happen in my department.
Q-18	I can influence what is happening in my department.
Q-19	I can exert considerable influence on the determination and modification of how my department performs its duties.
Q-20	I can exert considerable influence on the achievement of my department objectives.

2.3. Data processing and analysis method

The data processing of this study was performed by using the SPSS 23.0, a statistical package program, to perform statistical verification for the purpose of data analysis as follows:

First, frequency analysis was conducted to identify general characteristics using the SPSS/PC+23.0 program.

Second, Cronbach's α coefficient was calculated for the reliability verification of the questionnaire.

Third, the t-test was conducted to examine and understand the differences in the empowerment as per the gender of the police officers.

Fourth, the one-way ANOVA was conducted to examine and understand the differences in the age empowerment of the police officers.

3. Research Results

3.1. Differences in the empowerment as per the police officers' gender

<Table 3> illustrates the differences in the empowerment as per the gender of the police officers. In Q-1(3.8852±.55071), men turned out to be higher than women at the significance level of 5%.

As a result of the differences in the empowerment as per the police officers' gender, examining the

mean(M) and standard deviation(SD) of Q-3, Q-5, Q-6, Q-7, Q-8, Q-9, Q-10, Q-12, Q-13, Q-14, Q-15, Q-16, Q-17, Q-18, Q-19, and Q-20, men turned out to be higher than women, and for Q-2, Q -4 and Q-11, women turned out to be higher than men.

Table 3. Differences in the empowerment as per the police officers' gender.

	Gender	N	M	SD	t-value	sig
Q-1	Men	61	3.8852	.55071	-1.030	.016
	Women	30	4.0000	.37139		
Q-2	Men	61	3.8197	.56297	-.100	.363
	Women	30	3.8333	.69893		
Q-3	Men	61	3.9180	.49312	.158	.505
	Women	30	3.9000	.54772		
Q-4	Men	61	3.7377	.62986	-.919	.519
	Women	30	3.8667	.62881		
Q-5	Men	61	3.6393	.65911	1.354	.609
	Women	30	3.4333	.72793		
Q-6	Men	61	3.5738	.64444	.517	.975
	Women	30	3.5000	.62972		
Q-7	Men	61	3.4426	.64613	.938	.521
	Women	30	3.3000	.74971		
Q-8	Men	61	3.3279	.74658	1.574	.243
	Women	30	3.0667	.73968		
Q-9	Men	61	3.3607	.73104	1.314	.173
	Women	30	3.1333	.86037		
Q-10	Men	61	3.2951	.71518	.169	.286
	Women	30	3.2667	.82768		
Q-11	Men	61	3.2623	.89259	2.638	.082
	Women	30	2.7667	.72793		
Q-12	Men	61	3.0820	.82250	1.695	.219
	Women	30	2.7667	.85836		
Q-13	Men	61	3.0164	.93971	1.885	.627
	Women	30	2.6333	.85029		
Q-14	Men	61	2.9180	.91824	1.444	.720
	Women	30	2.6333	.80872		
Q-15	Men	61	2.9508	.93855	1.607	.317
	Women	30	2.6333	.76489		
Q-16	Men	61	2.8852	.85826	1.281	.421
	Women	30	2.6333	.92786		
Q-17	Men	61	2.9180	.93622	2.055	.607
	Women	30	2.5000	.86103		

Q-18	Men	61	2.8689	.90324	1.547	.696
	Women	30	2.5667	.81720		
Q-19	Men	61	2.7869	.79822	1.656	.676
	Women	30	2.5000	.73108		
Q-20	Men	61	2.868919	.86555	1.646	.241
	Women	30	2.5667	.72793		

3.2. Differences in the empowerment as per the police officers' age

<Table 4> illustrates the differences in the empowerment as per the age of the police officers. In Q-8, those in their 40s and 50s turned out to be higher than those in their 20s and 30s at the 0.1% level of significance. In Q-10, those in their 50s or older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-11, those in their 50s and older turned out to be higher than those in their 20s, 30s, and 40s, and those in their 40s turned out to be higher than those in their 20s at the 0.1% level of significance. In Q-12, those in their 50s and older turned out to be higher than those in their 20s and 30s at the 0.1% level of significance. In Q-13, those in their 50s and older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-14, those in their 50s and older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-15, those in their 50s or older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-16, those in their 50s and older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-17, those in their 50s and older turned out to be higher than those in their 20s and 30s at the 0.1% level of significance. In Q-18, those in their 50s or older turned out to be higher than those in their 20s, 30s, and 40s at the 0.1% level of significance. In Q-19, those in their 50s and older turned out to be higher in their 20s, 30s, and 40s, and those in their 40s turned out to be higher than those in their 20s, while those in their 40s turned out to be higher than those in their 30s at the 0.1% level of significance. In Q-20, those in their 50s and older turned out to be higher in their 20s, 30s, and 40s, and those in their 40s turned out to be higher than those in their 30s at the 0.1% level of significance. In Q-7, those in their 40s and 50s turned out to be higher than those in their 30s at the 1% level of significance. In Q-9, those in their 50s or older turned out to be higher than those in their 20s and 30s at the 1% level of significance, respectively.

Table 4. Differences in the empowerment as per the police officers' age.

		N	M	SD	F	sig	post hot
Q-1	20s	7	3.7143	.75593	.535	.659	
	30s	28	3.9643	.33134			
	40s	30	3.9000	.40258			
	50s and older	26	3.9615	.66216			
Q-2	20s	91	3.7143	.75593	.668	.574	
	30s	7	3.7500	.64550			
	40s	28	3.8000	.55086			
	50s and older	30	3.9615	.59872			
Q-3	20s	26	3.7143	.75593	2.436	.070	
	30s	91	3.7500	.44096			
	40s	7	3.9667	.49013			
	50s and older	28	4.0769	.48358			
Q-4	20s	30	3.5714	.78680	1.235	.302	
	30s	26	3.6786	.61183			
	40s	91	3.7667	.56832			

	50s and older	7	3.9615	.66216			
Q-5	20s	28	3.7143	.75593	1.203	.313	
	30s	30	3.5714	.57275			
	40s	26	3.4000	.67466			
	50s and older	91	3.7308	.77757			
Q-6	20s	7	3.2857	.95119	1.822	.149	
	30s	28	3.4286	.63413			
	40s	30	3.5333	.50742			
	50s and older	26	3.7692	.65163			
Q-7	20s	91	3.0000	1.00000	4.454	.006	C,D>B
	30s	7	3.1071	.56695			
	40s	28	3.5667	.62606			
	50s and older	30	3.6154	.63730			
Q-8	20s	26	2.4286	.78680	10.833	.000	C>A,B D>A,B
	30s	91	2.8929	.73733			
	40s	7	3.3667	.66868			
	50s and older	28	3.6923	.47068			
Q-9	20s	30	2.5714	.97590	4.894	.003	D>A,B
	30s	26	3.0714	.81325			
	40s	91	3.3667	.71840			
	50s and older	7	3.6154	.57110			
Q-10	20s	28	2.7143	.95119	7.642	.000	D>A D>C>B
	30s	30	2.9286	.71640			
	40s	26	3.4000	.56324			
	50s and older	91	3.6923	.67937			
Q-11	20s	7	2.2857	.48795	10.387	.000	D>A,B,C C>A D>C
	30s	28	2.7143	.76290			
	40s	30	3.1333	.81931			
	50s and older	26	3.6923	.73589			
Q-12	20s	91	2.2857	.48795	9.122	.000	D>A,B
	30s	7	2.5714	.69007			
	40s	28	3.0667	.78492			
	50s and older	30	3.5000	.81240			
Q-13	20s	26	2.1429	.37796	7.178	.000	D>A,B,C
	30s	91	2.5714	.74180			
	40s	7	2.8667	.93710			
	50s and older	28	3.4615	.90469			
Q-14	20s	30	2.1429	.37796	8.150	.000	D>A,B,C
	30s	26	2.5000	.74536			
	40s	91	2.7667	.81720			
	50s and older	7	3.4231	.90213			
Q-15	20s	28	2.1429	.37796	6.835	.000	D>A,B,C
	30s	30	2.5357	.63725			
	40s	26	2.8333	.91287			
	50s and older	91	3.3846	.94136			
Q-16	20s	7	2.1429	.37796	6.101	.001	D>A,B,C
	30s	28	2.5000	.63828			
	40s	30	2.8000	.88668			
	50s and older	26	3.3077	.97033			
Q-17	20s	91	2.0000	.57735	6.552	.000	D>A,B
	30s	7	2.4643	.79266			
	40s	28	2.8000	.84690			

	Age	N	Mean	SD	F	p	Post-hoc
	50s and older	30	3.3077	.97033			
Q-18	20s	26	2.1429	.69007	11.651	.000	D>A,B,C
	30s	91	2.3571	.62148			
	40s	7	2.7000	.65126			
	50s and older	28	3.4615	.98917			
Q-19	20s	30	2.0000	.57735	12.507	.000	D>A,B,C C>A D>C
	30s	26	2.2857	.46004			
	40s	91	2.7333	.63968			
	50s and older	7	3.2692	.87442			
Q-20	20s	30	2.1429	.69007	11.041	.000	D>A,B,C C>B
	30s	26	2.3214	.47559			
	40s	91	2.8333	.74664			
	50s and older	7	3.3462	.89184			

Note: A: 20s, B: 30s, C: 40s, D: 50s and older.

4. Discussion

First, it is necessary to discuss the role of women police officers in the organizational culture of the security police for the expansion of the North Korean refugees[10][11][12][13].

It has been gathered that there are over 40,000 North Korean refugees in South Korea, yet the weight of the North Korean refugee women is twice that of men. These North Korean refugee women enter South Korea and receive payments of settlement and an apartment provided by the South Korean government. While they experience a life of convenience and comfort they have not experienced in North Korea, they expend all of the payments of settlement and once they fail in finding jobs, they seek to make money via various illegal ways such as by playing the role of brokers based on the drugs they experienced in North Korea. Consequently, the number of cases of their making re-entry into North Korea due to their failure to adapt to the capitalist society is on the rise.

However, given the fact that there is an increasing number of the North Korean refugee women seeking to make a lot of money by secretly communicating with the spies of the State Security Department, the North Korean intelligence agency, and conducting spy activities by taking their money and offering intelligence, the role of women security police officers is crucial at such important point in time where their management is needed. If more women police officers with better communication skills than men police officers are supplemented, counseling and managing the North Korean refugee women will be far better facilitated.

Second, the police officers in their 50s and older turned out to have a higher level of empowerment than the police officers in their 20s, 30s, and 40s, and hence, it is necessary to create an ambience where the experiences of the police officers in their 50s and older may be conveyed to the young police officers, and the value of such experiences ought to be activated via programs. Police officers correspond to a job which desperately needs regular training[14][15][16][17], and the security police job related training is very crucial given the nature of its work[18][19].

5. Conclusion

The South Korean security police organization ought to be prepared for the downfall of the North Korean dictatorial regime. Even if the North Korea's one man dictatorship falls through a coup d'etat in North Korea, and if a new regime is established, it is expected that there will be no significant change in the North Korean system in the foreseeable future, and in such a crisis situation, a war may arise due to the wrong judgements of the North Korean military.

As for the North Korea's most urgent issue, liberalization is far more important than the collapse of the dictatorial regime. First, it is necessary to experience the freedom of thought and democratic ideology for the North Koreans, who are immersed in the ideology of totalitarian, through the

liberalization of the North Korean society.

Just as there are cases where the North Korean refugees who have entered South Korea are re-entering North Korea or carrying out spy activities such as drugs due to their failure to adapt to the society, it will require a certain amount of time for the North Korean residents who have been immersed in the communist ideology of "Juche" for decades to accept the ideology of democratic capitalism overnight. First, North Korea needs to liberalize and allow its residents to use the Internet, and if their thoughts change, then the dictatorial politics will no longer be viable.

North Korea is a one man dictatorship which has survived over 3 generations, which is unprecedented in the world, and North Koreans are living on the food supplied following the state's ration policy, which is a political structure by which the members of the Labor Party can thrive and be wealth even while their residents may starve to death.

To maintain such vested interests, they are not opening to foreign powers, and hence, the voices of the North Korean residents cannot be heard. However, such vivid reality of North Korea is uncovered via the statements of the North Korean refugees defecting to South Korea. Among which, the human rights issues are most urgent for the North Korean residents.

Therefore, the South Korean security police organization ought to always be prepared for the replacement of the North Korean dictatorship.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	HK	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑
Corresponding Author*	SJ	-Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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An Criminological Approach to Explain TERROR and Terrorism

Woosuk Yun

Keimyung University, Daegu, Republic of Korea

Abstract

Purpose: The purpose of this study is to explain the causes of terrorism based on criminological perspectives. The existing theory of terrorism has been proposed mainly outside of the academic of criminology such as, politics, economics, sociology, etc. However, terrorism is a deviant act that is no different from ordinary crime. Thus, existing criminology theories can explain terrorism. Especially, in this study, three major criminological theories, such as social disorganization theory, crime opportunity theory, and general strain theory, were discussed.

Method: This study sought to achieve its purpose through theoretical comparison. First, this study focused on the discussion of pervious theories proposed by the academic fields outside of criminology. Many theories have been suggested to explain terrorism. In particular, various theories have been suggested in the fields of politics and economics. Typical terrorist theories include violence, international political structural theory, social structural theory, and game theory. Secondly, the author attempted to explain terrorism by applying various theoretical approaches to criminology such as social disorganization, strain, and opportunity perspectives. In order to understand terrorism well, it is essential to understand the status of terrorism. Thus, this study tried to analyze the GTD to understand the current status of terrorism from 1790 to 2019. The status analysis showed how often terrorism occurred, where it occurred, and the seasonal changes in the outbreak.

Results: As a result of comparative analysis of theory, there was a limitation that the theories proposed in areas other than conventional criminology explained the cause of terrorism centered on political conflict. This has limitations in presenting practical policy alternatives. This is because the political problem is very complicated and difficult to solve. Meanwhile, when applying the theory of criminology, the understanding and problem-solving of terrorism were more clear. In the case of strain theory, it has the advantage that it has been able to present a variety of collective tension mitigation measures in a particular region. The theory of social disorganization theory suggests ways to strengthen social control in the concentrated areas of terrorism. The theory that the most efficient practical policy proposal is seen as a criminal opportunity theory. The criminal opportunity theory suggests that terrorism can also be prevented through situation control because it is an act that takes opportunities and situations into account.

Conclusion: Crime and terrorism are not separate concepts. Terrorism is a sub-concept that belongs to a criminal act. Thus, the theory of criminology can be used to fully explain terrorism. If the cause of terrorism is identified through a criminological approach, more effective alternatives can be proposed. This requires follow-up studies that apply criminology theory in future terrorist studies.

[Keywords] *Terrorism, General Strain Theory, Crime Opportunity Theory, Social Disorganization, Criminological Perspectives*

1. Introduction

Terrorism is often accepted as an illegal act that has a significant difference from general crimes such

as assault, robbery, murder, and violence. This is probably because it is thought that terrorism is more brutal, kills more lives, and uses weapons that are difficult for ordinary criminals to use, such as bombs, and is organized[1]. But there is no difference in the nature of both terrorism and crime in terms of the consequences of human rational choice or individuals' crime-prone characteristics. It is an illegal act that is ultimately committed in the interests of oneself and groups because thieves commit acts of stealing with the aim of securing economic benefits through crime, while terrorists express their political, religious or ideological intentions and kill lives in order to show their intentions[1]. In other words, terrorist acts are committed when there is a perception that the object or goal of maximizing the benefits of terrorism can be set and their goals can be achieved more easily. Thus, terrorism and common crime could be the same as illegal acts that are done by reasonably judging the calculations of the benefits and losses gained from their actions.

However, discussions on terrorism have been mainly explained by political theories[2]. Violence theory, international political structure theory, and social structure theory were proposed as representative political theories. Game theory in economics has also recently been proposed as an explanatory theory of terrorism. But these theories proposed outside of criminology have limitations in explaining the cause of terrorism directly. These theories are mostly focusing on the discussion in the political milieu of terrorism.

In particular, various recent criminological studies tend to sight the effects of residential areas and residential environments that cause crime as more important than focusing on the psychosocial characteristics of individuals[3]. In other words, the essential conditions for crime to occur require the existence of basic criminal opportunities, such as criminals, victims and objects, and the absence of surveillance, in which case a criminal decides whether to proceed to crime or not through reasonable calculations[4]. In addition, the space in which individuals reside is understood to play a role in determining their preference for terrorism as well as providing opportunities for terrorism.

It is a representative criminology theory that provides the basis for this logic and is rooted in classical criminology. Neoclassical criminology theory is a theory that recognizes the existence of human free will and rational computational ability in classical criminology in Beccaria, but believes that criminal opportunities and situational factors that can lead to crime ultimately determine the occurrence of crime[5]. These theories argue that crime must have a situation of crime and that crime tends to be concentrated at a particular place/time, so that more effective crime prevention measures can be prepared if specific crime-countermeasures can be taken[2]. In areas where terrorist events occur a lot, there are more terrorist incidents than in other regions because there are various situational and opportunity factors at the same time.

In addition, social disorganization theory and subcultural theory are also the major theories that explain the relationship between residential areas and terrorism. Furthermore, there is a structural strain theory that, to expand the scope, the structural strain that exists collectively in the space in which individuals reside can affect the entire local population[6].

The existing theory of terrorism is mainly discussed in the area of politics. Recently, it is meaningful in that efforts have been made to understand terrorism using criminological theories. However, there has been a lack of in-depth discussions on the causes of terrorism based on the argument of criminology. In sum, this study seeks to illustrate the theory of terrorism approaching from a criminal perspective. The criminological approach to terrorism will help to propose a variety of countermeasures that have not been presented in other academic approaches.

2. Current Status of Terrorism

The most comprehensive database on terrorism is the Global Terrorism Database(GTD) of the University of Maryland's Study of Terrorism and Responses to Terrorism(START)[7]. The GTD is unique data containing the characteristics of various terrorist incidents around the world from 1970 to 2019. It contains information collected on more than 201,000 terrorist incidents. The Global Terrorism Database has been compiled since 1970 and has used more than 4 million news reporters and 25,000 news

sources to analyze and date terrorist event data from 1989 to 2019. Since 2001, the GTD has been conducting data collection and analysis at the University of Maryland based on data from the Pinkerton Global Intelligence Services(PGIS). The GTD provides detailed information on the types of terrorism, weapons, the number of terrorists, the number of casualties and the date of the attacks. The GTD provides a chances to systematically analyze information related to terrorism, such as trends in terrorism, regional centralization of terrorism, and changes in terrorist types, so on[7].

The GTD contains information on a total of 201,000 terrorist attacks between 1970 and December 2019. It provides a new database every year and is the most useful source for identifying trends in terrorism. STATA's international database of terrorism is provided in Excel file format and big data analysis is possible using various statistical analysis tools(SPSS, SAS, HLM, etc.). The study seeks to understand the changes and status of international terrorism over the past 50 years. The trend and current state analysis of terrorist events around the world is a very important process in understanding the exact facts, changes in trends and aspects of terrorism.

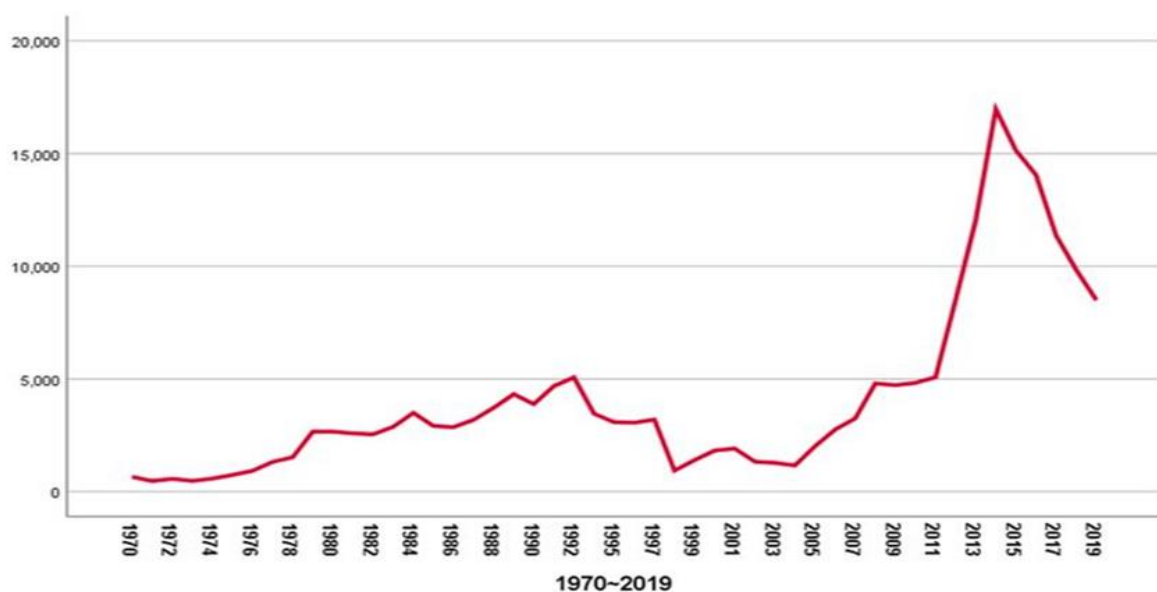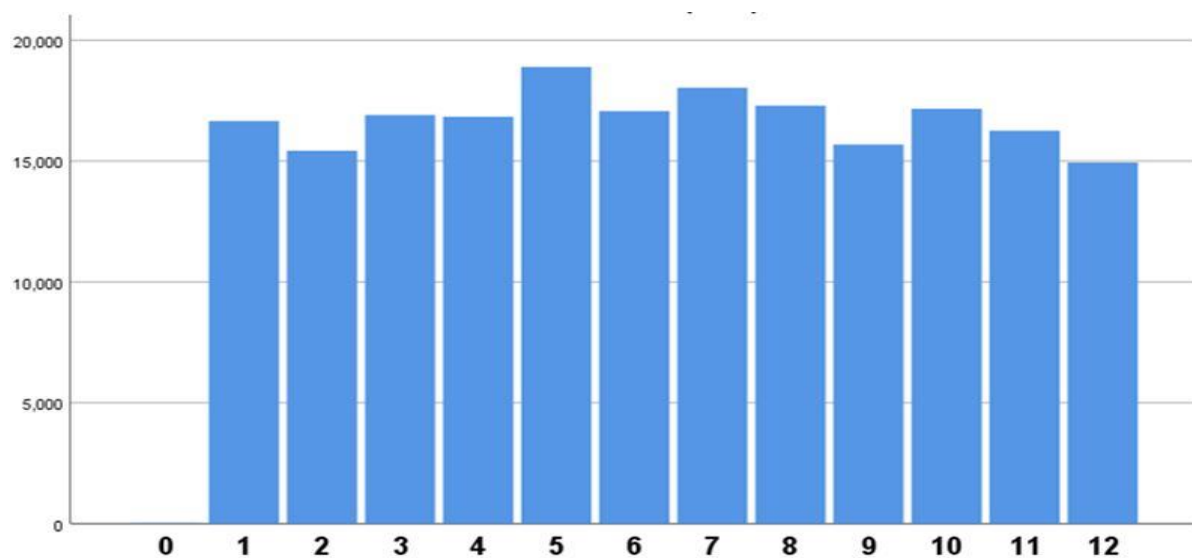**Figure 1.** Trend of terrorism occurrence from 1970 to 2019.

Figure 2. Terrorism occurrence by month from 1970 to 2019.

<Figure 1> is the result of an annual analysis of the global trend of terrorism. Looking at the trend, it increased from 1970 to 1992 and decreased from 1998. Since then, the number of cases has increased since 2005, with as many as 16,959 cases occurring in 2014. Since then, the number has dropped significantly to 8,495 cases in 2019. The results of the monthly analysis of terrorist incidents around the world are shown in <Figure 2>. As shown in the picture, May is the month of the most terrorist attacks, and December is the month of the least terrorist attacks. Overall, however, the number of terrorist attacks per month does not seem to vary much. In other words, global terrorism appears to be less affected by seasonal factors.

<Table 1> is the result of a 10-year analysis of terrorist incidents around the world. As shown in <Table 1>, the number of terrorist incidents worldwide was the lowest from 1970 to 1979, but was found to be high in recent 2010 to 2019. In other words, the risk of terrorism in the last 50 years is considered the most dangerous in the last 10 years. Of course, there is no limit to the reliability of this outcome. This is because compared to the 1970s, acts perceived as terrorism tend to be more easily identified and spread through the Internet. In other words, rather than because of the increase in the frequency of terrorism, the results of the difference in the frequency of exposure of news media may have a partial impact on the current situation. However, assuming the reliability and validity of the global terrorism database, the frequency of terrorist incidents can be seen as more dangerous now than 50 years ago.

<Table 2> is a representative outcome table that clearly illustrates the centralization of terrorism. As shown in the table, the largest number of terrorist attacks between 1970 and 2019 was 56,414 in the Middle East/North Africa, with 28% of the total global terrorist attacks concentrated. There were 51,301 cases in South Asia and 19,572 in South America. There have been 64.3 percent of terrorist attacks in these areas over the past 50 years, confirming the centralization of terrorism. In Oceania, East Asia and Central Asia, fewer than 1 percent of all terrorist incidents occurred, showing contrasting results. Of course, there are changes in the frequency of terrorist countries or continents depending on the times, but overall, terrorism is occurring more in certain parts of the world.

Table 1. Occurrence of terrorism divided into ten year units from 1970 ~2019.

Ten Year Units	N	%
1970 to 1979	9,914	4.9
1980 to 1989	31,156	15.5
1990 to 1999	28,763	14.3
2000 to 2009	25,051	12.5
2010 to 2018	106,299	52.8
Total	201,183	100

Table 2. Spatial concentration by continental regions from 1970~2019.

Regions	N	%
Middle East & North Africa	53,110	28
South Asia	51,301	25.5
Sub-Saharan Africa	21,742	10.8
South America	19,572	9.7
Western Europe	17,033	8.5
Southeast Asia	14,079	7

Central America & Caribbean	10,374	5.2
Eastern Europe	5,266	2.6
North America	3,698	1.8
East Asia	825	.4
Central Asia	574	.3
Australasia & Oceania	305	.2

3. Theories of Terrorism

Terrorism has been proposed in various fields of study, including politics, economics, sociology, and criminology. In particular, the existing theory of terrorism has been discussed mainly in politics. In this study, we look at the existing theory of terrorism while also addressing a new approach to criminology.

3.1. Previous terrorism theories

3.1.1. Violence theory

First of all, it is the violence theory of terrorism. The theory of violence in terrorism emphasizes the necessity of violence. Terrorism becomes political violence because terrorist organizations or terrorists stab to succeed their political goals by using the tools of violence against their terrorists[8]. What distinguishes violence from terrorism in general is whether violence with political purposes has been used. Terrorism usually happens in political conflicts, with individual conflict subjects defining certain acts as terrorism on one side and understanding them as martyrdom on the other[8].

In the era of Japanese colonial, the movements of independence in Korea were understood as independence activities, but for Japan, it appeared as acts of terrorism. Studies of the actual occurrence of terrorism have shown that rather than economic inequality, it is due to frustration and insults arising from oppressive political environments[9]. This explanation is supported by the fact that the social background of suicide bombers is considered fairly good[8].

Finon, who founded the theory of violence, also proposed the theory of terrorism by participating in Algeria's liberation movement, which was under French colonial rule. Finon called colonization of the Third World by Western advanced capitalist countries violent, stressing that perhaps the only way to use violence as a protest against colonial rule[2]. Finon saw that tensions between the rulers and the colonists in colonial situations justify violence as a means of colonizing the colony, and understood that violence is a means of promoting the human awakening of the colonized people[8]. The theory of violence in terrorism later came from Germany, who defected to the United States and served as a professor at the University of California, providing the ideological foundation for the New Left Movement. It was theorized by and influenced anti-Vietnam War movements, civil rights movements, and unemployment protests[10]. The strategy and tactics of terrorism are then developed by Mariella, who in the Minimal of the Urban Guerrilla explains the code of conduct, including attacks, ambushes, street warfare tactics, executions and kidnappings, arguing that the revolution should be centered around urban areas rather than rural areas[2]. As a result, the theory of terrorism violence can be understood as a way to achieve political objectives and a product of strategic and tactical decisions in the process of conflict[8].

3.1.2. Theory of international political structure

Among the causes of terrorism, the theory of international political structure believes that terrorism is defined according to the national interests of individual sovereign states. In other words, the government provides various support, including weapons, funds, and shelter for terrorist groups in accordance with its own interests, and the logic is to define them as terrorist groups and control

them[10]. During the Cold War, the Soviet Union and the U.S. showed their interests through activities such as supporting political groups that are helpful to their countries to take power. Typically, the U.S. implemented policies to support the emergence of pro-government governments in the United States through low-intensity conflict policies, which helped fight low-intensity violence such as guerrilla warfare, terrorism, and rebellion[10]. There were many views that the Soviet intelligence agency KGB supported Bulgaria, Libya and Syria during the Cold War against the United States[8]. However, there is not enough evidence to prove the theory of international political structure[11]. Rather, it is understood that there are more terrorist groups created by conflicts between their religions, ideologies, races, and countries, regardless of powers such as the United States and the Soviet Union[8].

3.1.3. Theory of modern social structure

Next, the modern social structure theory that modern society's structure causes terrorism diagnoses that terrorism is spread by the presence of urban concentration of population and the development of mass transportation media, advancement of weapons systems due to advances in science and technology, and government acquiescence in terrorism[11]. Donald Black, who discussed in more depth the occurrence of terrorism by modern social structures, noted that modern society is a structure in which social distance and social division deepens, resulting in the violent behavior of certain groups. At this time, violence was viewed as a means of self-help[12]. In other words, modern social structures are necessarily escalating conflict and the escalation of conflict will result in an increase in terrorist acts accompanied by violence[8].

3.1.4. Gaming theory of terrorism

Game theory is a theory that describes how decisions are made in interdependent and strategic situations between people participating in the game. Game theory believes that players make rational choices and that games consist of players, strategy, and payoff. Game Theory was presented by John von Neumann and Oskar Morgenstern in 1944 and John Nash was awarded the Nobel Prize in Economics for Game Theory in 1994. Game theorists conducted a study that applied game theory to terrorism after the September 11, 2001. Negotiations between terrorists and governments are seen as a typical gaming process. Terrorists use the fear of terrorism to achieve their political and economic goals to threaten the government's stable management of government, and in the process negotiations determine their interests[13].

We briefly discussed the cause of existing terrorism. Existing discussions suggest that terrorism is the use of violence to achieve political objectives, and that political objectives are, in fact, in the process of negotiating between various interested parties(state, group, organization, etc.). Gaming Theory and the social environment that precedes terrorism is also a conflict. Whether political or religious, conflict exists, and when negative emotions such as frustration are collectively recognized, terrorism with violence appears to occur.

3.2. Criminological theories of terrorism

3.2.1. Agnew's general strain theory of terrorism

There have been many studies based mainly on psychological and criminological theories as theories of terrorism. In particular, existing studies have suggested that terrorist acts are largely based on grievances[14][15]. However, as a result of in-depth interviews and quantitative research on terrorists, the discussion that the main cause of terrorism is strain has been centered. However, empirical studies have shown that many studies of economic poverty or deprivation have limits in describing terrorism[8][16].

For example, it has been reported that poor and educated Palestinians at the individual level support terrorism less, while middle-class educated people support terrorism more in some areas[17]. However, on the lack of empirical evidence of the relationship between tension and terrorism, criminologist Agnew pointed out that existing studies measured strain limited to physical factors and that

strain was not properly explained and that there was a lack of comprehensive explanation of the magnitude of tension in the relationship between strain and terrorism[6].

Agnew's general strain theory explains that existing general strain theory deviates from the explanation that negative emotions caused by strain in individual-level daily life events lead to crime, and that terrorism acts as the fundamental energy for terrorist organizations[6].

Agnew's theory explains that collective strains at the core are not at the individual level but at the level experienced by certain subgroups(religion, race, class, region or political group), but rather very high levels of strain(e.g. by many civilian victims), unfair, and socially powerful people[6]. In particular, collective strain is when it causes serious harm(such as death, serious physical sexual attacks, looting) to many people in a particular group and threatens the identity, values, and goals of the core group. It is also explained by the Identification theory that homogeneity with these harms and threats, even if they have not experienced them directly[6], makes them feel collective strain. In particular, collective strain is attributed to strong negative emotional states and trays when they think that unfair or unfair harm and strain are inflicted on their members, and they feel anger, humiliation, and hopelessness, which are favorable to terrorism[6]. Also, collective strain increases the membership of ordinary people to terrorist organizations and reduces individual strain, which is why many people who have experienced strong collective strain gather. However, certain conditions must be met in order for terrorism to occur due to collective strain to occur, and if such opportunities are not available(and are legally conflict-solvable in democracies, but lack of humanitarian assistance in dictatorships and underdeveloped countries), negative social control exists. It explains that social relationships with close supporters of terrorism are likely to develop into terrorism if they have a favorable belief in terrorism and if terrorist actions are expected to be successful by cost and benefits[6].

Agnew's general strain theory of terrorism seems to illustrate a comprehensive explanation of the terrorist outbreak and its preconditions. While existing theories of terrorism have fragmented and simple explanatory structures, Agnew's collective theory of strain overcomes these limitations and explains the causes of complex terrorism. However, in reality, there are not many ways to prevent terrorism through Agnew's collective theory of strain. In fact, Agnew argues that the government should seek policy measures to reduce social support and collective strain to prevent terrorism, but it seems difficult to pursue such a policy in an international community that is faithful to its own interests. Rather, if the collective strain that acts as a key energy source for terrorism cannot be resolved, it seems necessary to control the conditions under which terrorism can occur.

Agnew saw the possibility of terrorism increasing when seven conditions are met in strong collective strains, especially the introduction of situational control techniques that make terrorist activities difficult to succeed. Terrorists are trying to achieve their political goals through their own terrorism, which must be successful. The success of terrorism is that terrorists cause damage to terrorists, which could be effectively eradicated if the terrorist activities could be controlled to fail.

3.2.2. Social disorganization theory of terrorism

Traditional criminological discussions have shown long-standing support for the claim that crime is determined by regional characteristics. In fact, terrorism, an act of deviation, is also similar to the results of existing criminology studies, considering that many cases occur in places where conflicts such as specific interest groups exist. The beginning of research on the relationship between space and crime began with the University of Chicago in the early 1900s. Ecological criminology, which has since been developed under the name of urban ecology, considers the city as a kind of social organism. Neighborhood areas, where humans lead their lives, claim that complex human relationships and situations of internal members exist, and criminal patterns arise from them. Ecological criminology is based on the fact that crime rates vary from region to region in urban areas, and the economic status of communities, racial heterogeneity, and population mobility are causing crime to prevail[18][19].

Shaw and McKay proposed social disorganization theory derived from concentric theory of urban city. In their book "Juvenile Delinquency and Urban Area," they found police data showed that juvenile delinquency is concentrated in certain areas of the city. Based on this fact, they conclude that crime occurs in areas with high immigration rates, high public support, and low homeownership rates[20].

Shaw and McKay explain that the crime problem in cities is because the social structure of certain areas of the city is poor, populous and ethnically diverse. Post-social disorganization theorists, called the revised social disorganization theory or social systemic theory developed from classical social disorganization theory, understand social disorganization as a weakening of community control[21]. Revised social disorganization theorists understood that informal social exchanges of local residents were affected by the structural characteristics of the community and determined their ability to solve problems arising in the community[21][22]. Similarly, a country or region where existing terrorism is concentrated appears to have weakened state-level social control, or to result in conflict and extreme consequences such as terrorism. Political, religious, social, and cultural heterogeneity and conflict fail to control acts between nations and members of society, and eventually appear to be acts of terrorism involving violent means. The degree of community control determines the level of community problems, particularly crime[19][21][22][23]. The importance of informal social control in communities among factors affecting crime in communities is highlighted by existing studies[19][21][22][23]. Combining the existing social disruption theory of crime concentration in the community, the cause of terrorism is that the possibility of terrorism will increase if the community's ability to regulate and control acts such as terrorism is weakened. Until recently, Islamic State(IS) anti-human activities in the Middle East have been reported on the news day after day. Their actions are trying to use violent means to strengthen their control and overthrow a legitimate state. The commonality of ISIS-affected regions is that they have weak control of state institutions and have been a region where religious and political conflicts have been severe, so it is likely to apply a discussion of social dissolution theory explaining the phenomenon of crime concentration. In other words, efforts are required to improve social control capabilities by region or country as an alternative to preventing terrorism. This shows the importance of social control, given that there are relatively few terrorist outbreaks in areas where the country's politics and systems have been stabilized.

3.2.3. Crime opportunity theory of terrorism

Not unlike traditional crimes, terrorism requires characteristic circumstantial conditions and opportunities for terrorism to occur. The possibility of terrorism will increase if there are no terrorist groups or terrorists trying to commit it, the people or targets of it, and the guardianship who can contain it. It can be understood that in countries where there have been many previous terrorist incidents, there were more situations and opportunities than in other countries, and as a result, the frequency of terrorist attacks is high. This explanation is typically neoclassical criminology's logic, which values the situation and opportunity of a crime rather than finding the cause of it in the criminal's tendency. In particular, it follows the explanation of criminology theories focusing on criminal opportunities, such as the routine activities theory, which emphasizes the three major factors of criminal occurrence.

Professor Clark, a leading criminal opportunist, argued that there are limitations in establishing criminal control and criminal policy based on the inner nature of criminals, and that for more efficient crime control, the focus should be on crime incidence situations[3][5]. In particular, the reason why the cause of the crime is focused on criminal situations or opportunities rather than criminal nature or temperament is that it is suitable to present a consistent and unified response to the crime phenomenon. The arguments of existing criminology theories that individual criminals have different tendencies and temperament were difficult to guarantee effectiveness because they require too complex criminal countermeasures. Thus, crime prevention policies using theories that understand crime phenomena as criminal opportunities have become one of the main trends in police activities in recent years. This is because it is expected to reduce crime by controlling the opportunity for certain crimes to occur, so it is important to establish a policy to focus on the situation of crime rather than paying attention to criminals committing it.

The contextual approach to crime is to prevent crime risk factors that induce criminals to commit crime rather than to predict and reduce the risk of crime[3]. The theory of situational crime prevention is the theory that suggests the most comprehensive and multifaceted crime prevention techniques among criminal opportunity theories. The theory of situational crime prevention presents Opportunity

Reduction Techniques to explain the structure of crime opportunities and to prevent criminal situations caused by crime opportunity structures. The theory of situational crime prevention is based on classical criminology based on rational selection theory, everyday behavior theory, lifestyle theory, environmental criminology, CPTED, defensible space, and problem oriented policing[3]. The theory of situational crime prevention is divided into three ways to reduce crime opportunities. First, it directly intervenes in specific forms of crime to reduce crime opportunities. Second, maintain, design or manipulate the environment at hand in a systematic and permanent manner. Third, it is to make crime more difficult(difficulty), risky(risky), less compensatory(less reward), and less excusable[3]. The theory of situational crime prevention seeks to block specific modes of crime or methods that exist under individual crimes by applying very specific situational control techniques to criminal offenses. For example, theft crimes take place in a variety of forms, including home theft and shop theft, and it is recommended that characteristic situational control techniques be applied differently according to these different types of crimes. In addition, situational crime prevention theory assumes that criminals do not commit crimes with professional skills or knowledge unlike ordinary people, and both criminals and ordinary people can commit crimes under certain circumstances. However, criminal acts acknowledge that various offenders commit certain criminal acts to satisfy their various motives and in various ways[3]. The theory of situational crime prevention also states that environmental design can affect the determination of behavior by calculating the benefits and losses of a criminal's involvement in a particular crime. At the same time, the theory of situational crime prevention argues that the method of situational control is not limited to specific crimes, but is applicable to almost all crimes[3].

Situational crime prevention theory believes that criminal propensity factors and criminal situation factors influence the victims, targets, and Facilitators who determine the structure of crime opportunities, resulting in criminal opportunities for potential criminals. Crime opportunity structures explain that crime victims' daily behaviors and lifestyles can lead to the absence of supervision in the physical environment(urban life, residential forms, crime prevention facilities, vehicles, etc.). In addition, the socio-economic structure of the community affects the subculture and social control of the community, which affects potential criminals.

As a result, the criminal opportunity theory, as with ordinary crime, is understood that terrorism will differ in the circumstances of crime and the possibility of terrorism through it. Therefore, in order to prevent terrorism, efforts are important to prevent the possibility of the existence of terrorist risks in advance by mobilizing crime prevention strategies such as designing buildings. In fact, based on this perception, some criminal opportunity theories can also be found in existing national critical facilities protection plans.

In areas where terrorist incidents occur a lot, there are more terrorist incidents than in other regions because there are various situational and opportunity factors at the same time. For example, the Middle East is traditionally a place of terrorism, where ethnic and religious conflicts exist, conflicts with powerful countries such as the United States, and the lack of state systems makes it less controlled and easier to access weapons such as guns. In other words, terrorism frequently occurs in places where there are many opportunities for terrorism to occur, and in order to prevent it, it is necessary to come up with measures to block terrorist opportunities. In other words, the possibility and risk of terrorism can be looked at based on the theory of criminal opportunity. Studies on criminal opportunities can find its logic in the theory of criminal opportunities developed from classical criminology[2][3].

4. Conclusion

Terrorism is virtually no different from a common crime. Of course, there is a distinct motive based on religion, politics, and race, but this is also not much different from the motives of ordinary crimes. Therefore, it is necessary to stab to comprehend terrorism on the same lines as ordinary crime rather than to appreciate it as a crime and other forms of behavior. Such a shift in perception help to contrive effective counterterrorism strategies. Existing terrorist theories were often based mainly on political

science. However, there was a limitation in proposing effective counterterrorism strategies by converting existing terrorism theories into actual practical policies. Many criminologists have recently attempted to explain the phenomenon of terrorism by applying existing criminology theories. Representatively there are social disorganization theory, criminal opportunity theory, and general strain theory. These theories understand the cause of terrorism as strain, social disorganization, and opportunity.

Conventional theories of terrorism in the area of politics have been useful in explaining the mechanisms in which violence is used in the political situation of a particular country. However, there was a limitation that there was a lack of discussion about the process and the cause. In response, Agnew's general strain theory explains the amplification process of conflict and tension. It also explains why strains are higher in certain countries and makes it easier to understand why the possibility of terrorism is increasing. Explanation of the geographical centralization of terrorism is well explained based on social disorganization theory. Social disorganization theory explains why crime occurs more in a particular country or region. In particular, the weakening of social control is understood as the most powerful cause of crime or terrorism.

Terrorism, like common crime, is the calculation of profits and losses. The situation and opportunity of terrorism are also important. Selection of targets and weapons used in terrorist attacks depends on opportunities and circumstances. Therefore, it is also important to establish a counterterrorism strategy that applies the theory of crime opportunities. The criminal opportunity theory is a criminology theory that can control the situation and opportunities of terrorism.

In this study, the theory of criminology was applied to explain the principle of terrorism. Until recently, many terrorist studies have been conducted in South Korea[24][25][26][27]. However, there was a limitation that these studies focused on policy measures rather than on in-depth discussions of the causes of terrorism. Therefore, it is necessary to raise interest in the theory of terrorism. Although there is still a lack of empirical research on terrorism, continuous research should be done to determine the cause of terrorism by applying existing criminology theories.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Author	WY	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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ROK's Preparedness Direction against NK's WMD Threats

Sangjung Park[1]

Korea National Defense University, Nonsan, Republic of Korea

Hongje Cho[2*]

Korea National Defense University, Nonsan, Republic of Korea

Yooshin Im[3]

Korea Research Institute for Military Affairs, Seoul, Republic of Korea

Abstract

Purpose: This article is to assess the threats of North Korea's weapons of mass destruction(WMD), including nuclear weapons, biological weapons, and chemical weapons. It also suggests the direction of the Republic of Korea to prepare for the North Korea's threats of WMD.

Method: The assessment of North Korea's WDM threats is derived from analysis of previous research and empirical insights from the experts. It covers the development progress, types, threats and capabilities of North Korea's weapons of mass destruction. Through this process, this article seeks practical ways to eliminate North Korea's WMD threats.

Results: North Korea is estimated to have 20 to 60 nuclear weapons and can produce six new nukes per year. North Korea's biological agents may include anthrax, cholera, yellow fever, smallpox, typhus, dysentery, plague, brucellosis, tularemia, epidemic hemorrhagic fever, botulinum toxin, yellow cattle toxin and so on. Pyongyang, which possesses up to 5,000 tons of chemical weapons, ranks third in the world after the U.S. and Russia. North Korea is estimated to be capable of producing 5,000 tons per year during armistice and 12,000 tons during war-time. Finally, North Korea could use its WMD against ROK, Japanese, and U.S. targets in the region.

Conclusion: A combination of open negotiations and real pressure based on the strong ROK-U.S. alliance will be the best option for eliminating North Korea's WMD threats. The key is to induce the active participation of China, Japan, and Russia around the Korean Peninsula. Furthermore, the international community's sanctions against North Korea's weapons of mass destruction threat should be continuously strengthened.

[Keywords] *WMD, Nuclear Weapons, Biological Weapons, Chemical Weapons, Sanctions*

1. Introduction

On May 21, President Biden of the United States repeatedly emphasized the denuclearization of the Korean Peninsula at the ROK-U.S. summit. President Moon Jae-in emphasized the peace process on the Korean Peninsula and is making efforts to resume the North Korea-U.S. dialogue. On November 29, 2017, Chairman Kim Jong-un emphasized the historic achievement of completing the national nuclear force. Chairman Kim declared the completion of the nuclear force in November 2018[1][2][3].

According to the 'Annual Threat Assessment' report released on April 13 2021, the U.S. Defense Intelligence Agency(DIA) indicated that Kim Jong-un is fully committed to developing nuclear weapons and continues to research and develop ballistic missiles and biological and chemical weapons. North Korea will be evaluated as a Weapons of Mass Destruction(WMD) state in the near future[1][3][4].

According to the assessment by the U.S. DIA, North Korea has not tested a long-range missile since December 2019, when Kim Jong-un announced in December 2019 that he would suspend

nuclear and Intercontinental Ballistic Missile(ICBM) tests. North Korea still hopes that the U.S. will resume negotiations on the denuclearization of the Korean Peninsula[1][2][5].

The international community is abiding by three treaties: the Nuclear Non-Proliferation Treaty(NPT), the Biological Weapons Convention(BWC), and the Convention on the Development, Production, Stockpiling, Use and Disposal of Chemical Weapons(CWC). However, North Korea is violating all three treaties. Therefore, in this article, North Korea's WMD threat is evaluated first and practical countermeasures are proposed[6][7].

2. North Korea's WMD Threat Assessment

North Korea continues to develop weapons of mass destruction(WMD) despite adverse conditions such as international sanctions, large-scale famine, and the ongoing Coronavirus disease(COVID-19) pandemic[4][6].

Through the development of weapons of mass destruction, North Korea externally secures military superiority as a means of negotiating and internally seeks unity of the regime. North Korea does not give up its ambition for reunification of the Korean Peninsula under communism[2][4].

North Korea's Weapons of Mass Destruction facilities are shown in <Figure 1>[8].

Figure 1. North Korea's weapons of mass destruction facilities.

Note: https://carnegieendowment.org(2019).

After the first nuclear test in October 2006, North Korea conducted six nuclear tests in May 2009, February 2013, January 2016, September 2016, and September 2017. In addition, North Korea conducted various missile test launches such as Intermediate-range Ballistic Missiles(IRBMs), Submarine-launched Ballistic Missiles(SLBMs), Land-attack Cruise Missiles(LACMs), and Intercontinental Ballistic Missiles(ICBMs), which could threaten not only Japan but also the

U.S. mainland. The international community, including the United Nations, regards North Korea's nuclear test and long-range missile launch as a serious challenge to the international denuclearization regime and is tightening sanctions against North Korea[1][6][8].

The U.S. consistently evaluates the three main reasons for North Korea's development of weapons of mass destruction: the maintenance of the regime of the Kim family, the existence of an independent state without external interference, and the reunification of the Korean Peninsula by the North Korea's government[1][2].

2.1. Nuclear weapons threat

The 2020 Republic of Korea Defense White Paper evaluated that, despite all economic sanctions from the international community, North Korea's development of nuclear weapons was a measure to overcome the gap with ROK in terms of conventional power and war fighting capability[4]. Kim Jong-un unveiled a number of ballistic missile launchers, new SLMBs, and ICBMs at the parade commemorating the 8th Labor Party Congress in October 2020, despite the ongoing COVID-19 crisis[9][10][11].

On July 6, 2016, North Korea proposed five conditions for the denuclearization of the Korean Peninsula in a government statement: First, release U.S. nuclear weapons stationed in South Korea. Second, dismantle nuclear weapons and nuclear weapons facilities in South Korea and verify them by the international society. Third, guarantee that U.S. will never again introduce a means of nuclear attack on the Korean Peninsula. Fourth, commit not to use nuclear weapons against North Korea. Fifth, proclaim the withdrawal of U.S. forces from South Korea[4][6].

The analysis of North Korea's requirements is as follows. Currently, ROK has neither strategic nor tactical nuclear weapons, so the first and second conditions are nothing more than a political offensive. The third condition is the demand not to deploy strategic assets such as nuclear-powered aircraft carriers and B-1, B-2, and B-1B bombers of Japan and Guam on the Korean Peninsula. The fourth condition is a statement banning the use of intercontinental ballistic missiles(ICBMs) on the U.S. mainland[1][8][12][13].
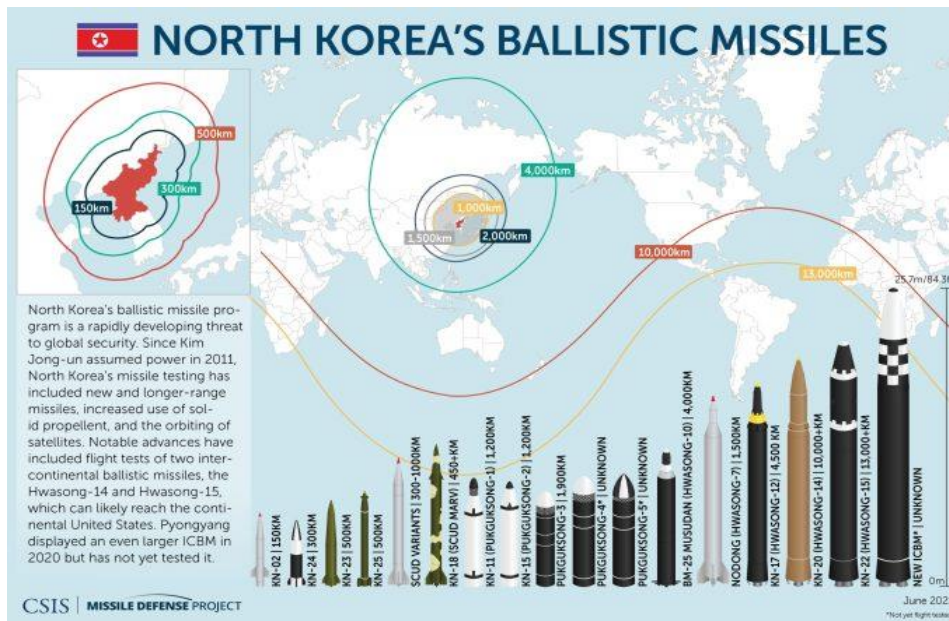
North Korea's insistence on denuclearization makes it clear what North Korea ultimately aims for. As with all North Korea's strategies toward ROK, insisting on the denuclearization of the Korean Peninsula will ultimately mean the withdrawal of U.S. forces from Korea. In conclusion, it can be evaluated that there is no change in North Korea's strategy toward ROK, which means reunification under communism[1][5].

North Korea poses serious WMD threats to the U.S. and its allies, especially ROK and Japan[12][14]. The North Korea's regime attempted diplomatic contact to mitigate sanctions by the international community, and since 2017 it has suspended nuclear and long-range missile tests. However, even during this period, North Korea did not halt its nuclear and missile programs[1][4][15][16].

In mid-2019, North Korea launched about a dozen missiles, including three new Short-range Ballistic Missiles(SRBMs), Submarine-launched Ballistic missiles(SLBMs), and Land-attack Cruise Missiles(LACMs)[3][12][17]. North Korea has developed its own SRBM version of SCUD-B and improved extended range variants such as SCUD-C, SCUD-D and SCUD-ER. In 2019, North Korea kicked off testing three new solid-propelled SRBMs. Each has several missiles per launch pad[8][13].

The range of North Korea's ballistic missiles is shown in <Figure 2>[15].

Figure 2. North Korea's ballistic missiles range.

Note: https://missilethreat.csis.org(2021).

Specifically, LACM is an unmanned armed aircraft designed to strike fixed or mobile ground targets. Most missions are used for level flight because they fly a pre-programmed route to a predetermined target. Therefore, It is estimated that the new short-range and medium-range missiles unveiled at the time will have improved capabilities in evading existing missile defense systems. This could pose a serious threat to all of Japan and to U.S. forces in Japan. Accordingly, Japan is promoting the strengthening of its maritime missile defense system and the establishment of a standoff missile system[5][11][12].

According to the U.S. Department of Defense(DOD)'s 'North Korea Tactics' on August 18, 2020, North Korea possesses 20 to 60 nuclear weapons and is estimated to have the capacity to produce six nuclear weapons annually. It also raised the possibility of possessing up to 100 nuclear weapons by 2020[1][4].

North Korea possesses a variety of nuclear delivery means, including 170mm long-range artillery, FROG-5/7, SCUD-B/C, Nodong and Taepodong missiles, and various bombers. In particular, North Korea experts are expressing concerns that North Korea is promoting performance improvement of the ICBM KN-08(Hwasong-12) and has made significant progress in miniaturization of its nuclear warhead[5][8][16].

On November 28, 2017, North Korea introduced the ICBM-class Hwasong-15, an improved version of the Hwasong-14, a road-mobile two-stage liquid-propellant system. North Korea announced that the Hwasong-15 could reach the U.S. mainland with a range of more than 10,000 km[4][17].

2.2. Biological weapons threat

Since the establishment of the Microbial Research Institute in 1954, North Korea has been focusing on a total of 13 species, including bacterial pathogens such as anthrax, cholera, and plague, and viral hospitals such as smallpox and botulinum toxin. Among these, the most likely biological weapons are anthrax and smallpox[5][13][18]. The World Health Organization(WHO) has warned that if 50 kg of anthrax is sprayed on a city of 20 square kilometers, tens of thousands to hundreds of thousands of people may die or suffer damage.

Since biological weapons are difficult to produce and possess in the form of preparations that can be used as weapons, it is estimated that they will be mass-produced and weaponized when necessary, such as in wars or crises. Biological weapons possessed by North Korea are easy to

breed, conceal and transport compared to chemical weapons, and do not require mass storage[4][12]. In addition, biological weapons are weapons that can be easily used by terrorist countries or terrorist groups at low cost, and the ripple effect can have a big ripple effect like the Corona 19 crisis[6][11]. In addition, since research on bacteria and viruses, which are the basis of biological weapons, is essential for health care, it is not easy to determine regulations, verification targets, and procedures.

There is a problem that bio research institutes like the Wuhan Research Center in China are operated in any country with a certain degree of national power, so they can be diverted to research institutes for the development of biological weapons at any time[1][6][11]. In particular, pathogens, viruses or toxic substances, which are means of biological warfare, can be misused with the intention of weakening the national power of a potential enemy or competitor even in peacetime without a means of delivery.

According to a 2017 report entitled North Korea's Biological Weapons Program: The Known and Unknown, released by the Belfer Center at Harvard University's Kennedy School, North Korea claims to possess 13 biological weapons[17]. They possess the ability to provoke with biological weapons at any time because they are directly experimenting with human living bodies. In addition, the report raised concerns about the possibility of mass production of military biological weapons as a result of analyzing satellite images of the Pyongyang Biotechnology Research Institute[18][19]. The ROK Ministry of National Defense estimates that North Korea does not deploy ready-to-use biological weapons (CW), but possesses a variety of pathogen samples and CW technology capabilities to use them[4][15][18].

North Korea possesses 13 biological weapons, including anthrax, smallpox, plague, cholera, high fever, yellow fever and dysentery. In particular, experts analyzed the fact that North Korean soldiers as well as USFK were vaccinated against smallpox, and concluded that North Korea would use anthrax and smallpox as biological weapons. According to the testimonies of defectors with disabilities, "North Korea regards the disabled as a social burden, is socially isolated, and uses them for biological and chemical weapons testing"[4][20][21].

The New York Times(NYT) on January 15, 2019, citing expert comments, was concerned that North Korea's biological weapons are highly advanced and lethal and are far more likely to be used than nuclear weapons in an emergency. The NYT also warned that one gallon(about 3.78 liters) of anthrax could end human life on Earth[3][6].

On August 18, 2020, the U.S. DOD estimated that North Korea possessed 5,000 tons of 13 types of cells at 10 facilities through the 'Tactics Report of the Democratic People's Republic of Korea(DPRK)'s Biological agents are available as missiles, unmanned aerial vehicles(UAV), airplanes, aerosols, or living humans[1][22][23][24].

In particular, the U.S. DOD warned that as the unmanned combat system of the 4th industrial revolution develops, there is a high possibility that a spray-type UAV or an infected person will be dispatched to South Korea rather than a missile as a carrier of biological weapons[1][6][19][25]. The reporter warned, "There is a high possibility that an unmanned aerial vehicle(UAV) in the form of a spray or an infected person will be sent to South Korea as a biological weapon carrier rather than a missile.". The report said that North Korea could send agents disguised as cleaners or disinfectants to spray biologics or inject germs into urban water facilities[1][4][26].

North Korea can also spread germs through person-to-person contact by sending carriers of germs into people's bodies. Carriers can easily spread germs to people without special skills, and they are not exposed to body searches. Accordingly, it is clear that North Korea continues to show interest in the development of biological weapons[7][18][27].

2.3. Chemical weapons threat

Chemical weapons are called "poor man's nuclear weapons" along with biological weapons. Chemical weapons can be easily produced at low cost, difficult to identify, and easy to destroy

evidence. On the other hand, even a small amount of chemical weapons can cause enormous social chaos and fear[6][18][26].

During a visit to South Korea in September 2012, Organization for the Prohibition of Chemical Weapons(OPCW) Secretary-General Ahmet Üzümcü strongly warned that North Korea was running a highly advanced chemical weapons program. In addition, he pointed out that OPCW has two outstanding missions. "The first is to eliminate the fear of chemical(weapon) terrorism, and the second is to dismantle the chemical weapons program that North Korea must operate."[27][28].

In 2013, U.S. Secretary of Defense Chuck Hagel testified to a Senate Armed Services Committee hearing that "North Korea possesses an enormous amount of chemical weapons." In the same year, the US Department of Defense reflected this threat and redeployed the 23rd Chemical Unit, which had been withdrawn from Korea in 2004, to the 2nd Division of USFK for the first time in 9 years[1][28][9].

In a report on military and security trends in North Korea submitted to Congress in 2016, the U.S. Department of Defense pointed out that "North Korea possesses the chemical weapons program capability to produce nerve, blister, blood, and suffocating agents." It will be possible to use chemical weapons by improving various conventional weapons[1][3][28]." The report also assessed North Korea's readiness to operate in contaminated environments, including regular chemical defense exercises. In particular, the report pointed out that North Korea has not signed the Chemical Weapons Convention(CWC).

The Korean Institute for Defense Analysis(KIDA) estimated that there are 16 chemical weapons-related facilities in North Korea[16][28]. North Korea distributes and stores chemicals throughout the country. In particular, a total of 12 plants are producing chemical substances, including the Cheongsu Chemical Plant in Sakju, North Pyongan Province, Suncheon Nitrogen Lime Fertilizer Plant in Suncheon, South Pyongan Province, and so on[9][18].

When North Korea's chemical weapons threat was raised in 2013, A KIDA senior researcher warned in a media article that North Korea could produce up to 1.25 million chemical bombs if all of its stockpiles of chemicals were used up. He argued that chemical weapons are as serious a threat as nuclear weapons because they can be delivered and deployed through a variety of means and can be easily used for terrorism[9][19][28].

Chemical weapons experts say that 1,000 tons of chemical weapons could kill 40 million people. Chemical weapons do not need to be mounted on advanced ballistic missiles such as ICBMs and SLBMs, and can be used in mortars, artillery and multiple rocket launchers(MRLs). In addition, it is possible to attack forward and backward using various delivery means such as aircraft and land mines, as well as unmanned aerial vehicles(UAVs) that recently flew over Seoul[15][27].

As reported by the Asahi Shimbun in 2018, experts argued that it was unrealistic and exaggerated when the ICBM was loaded with anthrax because the high heat generated during the launch could destroy the anthrax. However, David Ozonoff, emeritus dean of Boston University's Graduate School of Environmental Health, insisted, "It is difficult for ordinary people to weaponize anthrax, but North Korea is a technology that can be obtained if desired.".

On August 18, 2020, the U.S. Department of Defense estimated that North Korea is the world's third-largest state of chemical weapons, with 2,500 to 5,000 tons of chemical weapons in North Korea's Tactical Report. The Pentagon estimates that North Korea's annual chemical weapons production capacity is 5,000 tons in armistice and 12,000 tons in wartime. Korea Institute for Defense Analysis(KIDA) estimates that North Korea currently stockpiles 25 types of chemical weapons at 16 facilities[16][19].

On September 4, 2020, the U.S. Congressional Research Service(CRS) expressed concerns about the use of chemical weapons by countries such as North Korea, Syria, and Russia in its report "The Resurrection of Chemical Weapons Use: An Issue for Congress". The report pointed out that although more than 20 years have passed since the international community decided to ban the use of chemical weapons under the Treaty on the Prohibition of Chemical Weapons(CWC) in 1997, the use of chemical weapons is increasing[5][25].

North Korea is also listed as a concrete example of recent use of chemical weapons, along with Russia and Syria. In particular, the Congressional Research Service(CRS) mentioned that North Korea assassinated Kim Jong-nam, the half-brother of North Korean leader Kim Jong-un, with the chemical weapon VX new agent at Kuala Lumpur International Airport in Malaysia in February 2017. In this regard, in March 2018, the U.S. State Department officially concluded that North Korea had ordered chemical weapons attacks and imposed sanctions[1][2][23].

For reference, the U.S. Defense Secretary is scheduled to report to Congress on North Korea's countermeasures against biological and chemical weapons in accordance with the Defense Authorization Act for fiscal year 2021[2][4][26]. The U.S. Army stated in a report titled "North Korea's Tactics" published in July that North Korea has been conducting a chemical weapons program for a long time and possesses about 25 types of chemical weapons. According to the report, North Korea has 6 types of nerve agents(sarin, V series), 6 types of blistering agents(mustard, leucite), 3 types of blood agents(hydrogen cyanide), 2 types of choking agents(phosgene), vomiting and tear gas, etc. It is presumed to have been developed and possessed[1][27].

According to a report on the threat analysis of chemical weapons in North Korea, North Korea is expected to operate 740 tons of chemical weapons in the forward area during the first three days of the war. If North Korea fires 15 tons of sarin with 100 rounds of 240mm long-range Multiple Rocket Launchers(MRL) at Seoul, it is estimated that 46,000 to 460,000 people will suffer damage if only 60% of the target is achieved[1][29].

There is also concern that if SCUD missiles attack large cities such as Busan, Daegu, Gwangju and Incheon, the casualties will increase sharply. The ROK Ministry of National Defense(MND) had previously feared that if North Korea attacked South Korea with chemical weapons, as many as 2.19 million soldiers and civilians would be harmed in just one month of the war. On April 30, 2021, U.S. Defense Intelligence Agency(DIA) Director Scott Barrier was concerned that North Korea might have thousands of tons of biological and chemical weapons[1][4][18][26].

3. Republic of Korea's Response to North Korea's WMD threat

North Korea possesses serious weapons of mass destruction(WMD) capabilities, including nuclear, biological and chemical weapons. It is estimated that North Korea currently possesses 20 to 60 nuclear weapons and produces enough fissile material to produce 6 to 7 nuclear weapons per year[4][6][22]. In January 2003, North Korea withdrew the Treaty on the Non-Proliferation of Nuclear Weapons(NPT). Since 2006, North Korea has conducted six nuclear tests to reduce weight and size and increase range. In return, the international community imposed sanctions on nuclear tests[2][6].

North Korea established the Microbiological Research Center in 1954 and the Chemical Research Center in 1965 to promote the development of biological and chemical weapons. North Korea began to develop biochemical agents in earnest in the 1980s, and since the 1990s has been accelerating the development of delivery means such as mounting warheads for biochemical agents[4][15].

North Korea has significant quantities of biological and chemical weapons. The Pentagon argues that North Korea may have 13 biological agents(mainly anthrax and smallpox) and can weaponize within 10 days. At one time, the number of small North Korean drones infiltrating South Korea, particularly Seoul and even near the Blue House, has soared[4].

A high-ranking North Korean defector insists to have witnessed North Korea testing the effects of infection by loading undisclosed biological and chemical weapons onto drones and then spraying them on animals. Some defectors also accused North Korea of testing biological weapons on humans. The ROK Ministry of National Defense(MND) estimates that North Korea may possess between 2,500 and 5,000 tons of chemical weapons(CW) and can produce up to 12,000

tons during wartime. Nerve agents such as sarin and VX are considered the mainstream of production[4][5][18][24].

As a Two-sided tactics of peace and war, North Korea is participating in the peace process on the Korean Peninsula while strengthening its capabilities in WMD such as nuclear weapons, biological weapons, and chemical weapons. Experts familiar with North Korea point out that North Korea's biological and chemical weapons are more dangerous than North Korea's nuclear and missile programs[4][16].

U.S. Defense Intelligence Agency(DIA) Director Scott Barrier said on April 30, 2021, "North Korea is focusing on developing biological weapons"[1]. Also, North Korea Experts have consistently pointed out that chemical and biological weapons are more dangerous than North Korea's nuclear weapons and missiles[4][12]. Biochemical weapons can be developed at 1/800 the cost of nuclear weapons under the same conditions. It is easy to mass produce and store, and even a small amount can kill many people. Since it is invisible in the form of gas, it can inflict extreme fear on the enemy and at the same time reduce the effectiveness of combat by using various delivery means[2][9][11]. The ongoing COVID-19 pandemic is providing a practical indicator of the power of biological and chemical weapons[7][20][21].

ROK Ministry of National Defense(MND) is establishing a three-axis system: ① Kill Chain, which preemptively strikes North Korea's nuclear weapons and missiles in case of emergency; ② Korean Missile Defense System(KAMD), which intercepts missiles launched by North Korea; and ③ Korea Massive Punishment and Retaliation(KMPR), which launches mass ballistic missiles to punish North Korea[4].

The Moon Jae-in administration has replaced the two terms 'Kill Chain' and 'KMPR' from the existing three-axis system to the neutral terms 'Strategic Strike' and 'Overwhelming Response', respectively. The Government evaluated that the two terms could be interpreted as 'Psychological Offensive' and could cause unnecessary misunderstanding in inter-Korean relations[4].

Republic of Korea should pursue both a negotiation and pressure policy based on the solid ROK-U.S. alliance against the North Korea's WMD threat. To address North Korea's WMD threat, ROK should encourage the participation of neighboring countries on the Korean Peninsula, such as China, Japan, and Russia, and visibly strengthen sanctions against North Korea in cooperation with the international community[7][26].

In particular, The key to eliminating North Korea's WMD threat is to induce China's active participation. Therefore, ROK should be able to draw active cooperation from China by persuading that the removal of North Korea's WMD threat is of real benefit to China's practicality[7][26]. On the other hand, if North Korea does not accept the negotiation, ROK should continue to work with the U.S. and Japan as well as the international community to tighten sanctions against North Korea's WMD threat.

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5. Appendix

5.1. Authors contribution

	Initial name	Contribution
Lead Author	SP	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑
Corresponding Author*	HC	-Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑
Co-Author	YI	-Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Significance and Challenges of NORTH KOREA's Railway Development: Focusing on the Connection of Inter-Korean and Chinese-Russian Border Railways

Jiwon Yun[1]

Sangmyung University, Seoul, Republic of Korea

Youngjun Jo[2]*

Sangmyung University, Seoul, Republic of Korea

Abstract

Purpose: The main purpose of this article is to examine the significance and challenges of the main-railway and sub-road system of North Korea, which has received greater attention since the Panmumjom Declaration adopted on April 27, 2018, and to investigate the political, diplomatic and security implications of cooperation of the inter-Korean and Chinese-Russian border railways.

Method: For better analysis, as a major research method, the existing academic papers related to North Korea including literature reviews considering the characteristics of research on North Korean railways, and data from the Ministry of Unification and main state-run research institutes. Researches on the inter-Korean railway and trans-continental railway connections have accumulated in academic circles, government agencies and research institutes from 2000 to this day.

Results: Despite these various advantages, it is the most urgent task to resolve North Korea's nuclear issue and lift economic sanctions against North Korea. After the breakdown of the 2019 North Korea-United States Summit in Hanoi at the end of February, the North Korea-U.S. relations reached a stalemate, and the international community's extensive sanctions have continued. The connection of inter-Korean railways and the opening of China-Russia border regions are major arteries of the North Korean economy and serve as the basis for industrialization, urbanization and modernization, but they can be made possible only via active multilateral economic support and cooperation from the international community.

Conclusion: The connection of inter-Korean and China-Russia railways not only has economic ripple effects, but also is subjected to political, diplomatic and security factors with relevant countries. North Korea's rail modernization has its significance in that it helps to form the foundation for North Korea's economic growth, escape isolation from the international community, ease tensions on the Korean peninsula, prevent border disputes between China and Russia, promote economic development, lift U.S sanctions against North Korea, and expand the possibility of advancing into the Asia-Pacific and Eurasia regions. As the expansion of international cooperation and participation of the international community may lead to the opening of the closed North Korean society and the instability of the Kim Jong-un regime, questions still arise as to whether North Korea will select such international cooperation.

[Keywords] Main-Railway and Sub-Road System, Modernization of North Korean Railway, Connection of Inter-Korean Railways, Trans-Continental Railways Connection, Border Railway

1. Introduction

In the late 18the and early 19th centuries, construction of the Trans-Siberian Railway(TSR) of Russia and the Gyeongui Line, a railway line built by Japan's military on the Korean peninsula, was regarded as very important in military and security terms as well as its strategic role and significance. The railway, which has been the outcome of imperialism and a symbol of colonial exploitation in the past,

helped to integrate the economy, society and culture of Europe in the 1900s, thereby contributing greatly to the establishment of the European Union(EU).

If a cooperative railway connection between Northeast Asian countries acts as a medium for promoting the development and opening-up of North Korea, it will pave the way for the peaceful reunification of the Korean peninsula and facilitates the formation of an economic, social and cultural community that connects Europe, Asia and the Pacific as a driving force that contains complex elements [1]. Furthermore, if the inter-Korean railway and trans-continental railway connections on the Korean peninsula, a symbol of the Cold War and division, help overcome the division and restore Korean territory, a foundation for the development and prosperity of Northeast Asia and Eurasia will be laid. Meanwhile, as North Korea serves as a land bridge that connects continents and oceans from a geopolitical viewpoint, its railway connections with South Korea and the China-Russia border regions are expected to promote economic cooperation, prevent border disputes, and relieve military tensions [2].

With inter-Korean ties frozen, arrangements for the resumption of the U.S and North Koran nuclear talks remain uncertain. However, if the promotion of the inter-Korean railway and Russia-DPRK-China border region railway connections is fully achieved in the future, it will allow North Korea to spread its political, security and diplomatic wings, mitigate military tension, prevent border disputes and secure momentum for further linkages with the Eurasian continents via the 'international passenger and freight rail network'. In June 2000, the leaders of South Korea and North Korea signed an agreement to restore the disconnected Gyeongui Line at the inter-Korean summit in order to connect the inter-Korean railway. In April 2002, they also agreed to connect the Donghae Northern Line. The opening of the unconnected sections of the Gyeongui Line and the Donghae Line in 2007, a long-cherished project, laid the groundwork for the establishment of 'multilateral cooperation' among Northeast Asian countries and international land transport systems, including Trans-Korean Railway(TKR), Trans-Siberian Railway(TSR), Trans-Chinese Railway(TCR), Trans-Mongolian Railway(TMGR), and Trans-Mancunian Railway(TMR), which connect the Korean peninsula, China, Eurasia and Europe.

Depending on the North Korea's choice, the time when this happens will come earlier than expected. North Korea connects to Central Asia, the Eurasian continent and Europe through China and Russia, and thus can take strategic opportunities to connect to the Asia-Pacific region through South Korea. Differentiated from the previous studies, this article is to analyzes the role and modernization of North Korea's main-railway and sub-road system, on which new light has been shed since the April 27th Panmunjom Declaration, and major international railway routes. It also examines the diplomatic and security implications based on the China-Russia border region and inter-Korean railway cooperation.

2. Modernization of North Korea's Railways and Major International Railway Lines

Railways in North Korea play a key role in the survival of people, and Kim Jong-un, who succeeded his father, Kim Jong-Il, has also maintained North Korea's rail modernization as a project in the economic development zone in the economic cooperation of Russia-DPRK-China border regions. The perception of North Koran railways is well described in Article 1 of the North Korean Railway Act, where "a railway is defined as the artery of the nation and the leading index of the people's economy." Land and railways are those things which North Korea has defined by law as revolution trophies. As such, the North Korean railway is a key element of the nation's survival as the main-railway transportation system, and forms the basis of the economy, such as industrialization, urbanization, modernization and manufacturing on a commercial basis[3].

North Korea's top leadership, including supreme leader Kim Jong-un, concentrated its energy on establishing the infrastructure to obtain the rights to build railways and construct roads and ports in North Korea through exchanges with the three border countries, China, Russia and South Korea, as part of efforts to promote North Korea's rail modernization[4]. North Korea has maintained its main-railway and sub-road system, and it is expected that an inter-Korean railway connection and trans-

continental railway linkages will make it possible to link industrial development resulting from fostering railroad-based projects and modernizing railways that connect the entire region, thus allowing for key strategic businesses which will then lead to economic reconstruction. In this respect, the North Korean railway is a key to the survival of the North Korean regime and a core element of national power. The railway, referred to as the artery of North Korea, is the basis and essential condition of North Korea's industrialization, urbanization, modernization and manufacturing on a commercial basis. In addition, the Kim Jong-un regime is making all its efforts to secure the political and economic interests of its country from the South Korean government and non-western powers, such as China and Russia, through rail modernization diplomacy[5].

In 1977 the North Korean regime established the basic direction of its transportation policy in earnest and suggested the necessity of railway capacity improvements, rail electrification, signal automation and railroad facilities with an emphasis on the intensive transport and multi-modal transport in the railway transportation sector[6]. Since North Korea has many mountainous areas, its transportation policy has been developed separately in the east and the west with the Nangrim mountain range as the boundary. The railway serves as a means of transportation that allows for mass and regular transportation rather than a high-speed rail and is in charge of transporting industrial raw materials or agricultural products in a relatively short time at a low cost. In North Korea, railways account for about 90% of cargo and about 60% of passenger transport, which is called the main-railway and sub-road system. In comparison with the railways in South Korea, the total length of the railway network in North Korea is 5,226km(H-shape, 100 lines or more as of 2015), which is 1,148km longer than that(4,078km) of South Korea(X-shape, 96 lines or more as of 2018). From 1954 to 1983, the increased length was only 822.9km, and only 67.8km of railway tracks have been laid over the past three decades. Particularly in 1990s, the railway network deteriorated, and rail facilities were destroyed and neglected due to famine and poverty. Except for a few main lines such as the Hamgyeong Line and the Pyeongbu Line, most of the North Korean track lines were not properly maintained[7].

As stated above, the North Korean railway has suffered very severe deterioration. Therefore, technical modernization is required in relation to single track, deterioration, lack of power, roadbed and facility repairs, operating speed increase, and logistics facility construction. The details are as follows. Firstly, speed is a problem. This problem is related to railway track deterioration and significantly slow speed. The top speed is 40(cargo) km/h per hour, and only 20km/h for general trains. Due to the deterioration of railway tracks and carriages, the current operating speed is very slow, which inevitably reduces the efficiency of train operations. Secondly, power supply is a big problem. The rate of railway electrification in North Korea is 90%, which is higher than the 80% in South Korea; however, worsening power shortages make it impossible for trains to operate normally. In North Korea, 79.3% of the trains operate using an electricity supply. However, since the electric power supply capacity is insufficient due to economic difficulties, the punctuality of railway operation is not being kept. In terms of electricity, a 3,000v dc feeding system is used in electric trains, and manual and semi-automatic devices are used for the operation of substations. Thirdly, the enormous cost of the modernization poses a problem. North Korea's rail modernization requires trillions of won, and the problem is who will provide this investment and how. The main directions of modernization for North Korean railways are classified into high-speed rail lines, high-speed railways and existing railway lines with restored performance. The existing rail lines of North Korea are a single-track railway, and the double-track rate is only 2 %(compared to 49.3% in South Korea). Consequently, a double-track railway system is required to improve the transport capacity of the railway network, and about 32~53 tons of rails are needed for railways[8].

To be more specific, most rail modernization projects are to improve 3,500km of old railroads in North Korea. Data on transport demands and project costs for each part of North Korea's rail modernization submitted from the Korea Rail Network Authority to the National Assembly in 2014 estimated that it would cost 37,581.6 billion won for North Korea's rail modernization. If North Korea demands high-speed rail, enormous construction costs pose a problem. The construction cost of the high-speed rail is 48.1 billion won per 1km, which requires an investment of more than 13 trillion won, excluding labor costs. Experts mention that it is unknown whether the modernization of North Korean railways

will be set as a general double-track railway or a high-speed rail, but analysis finds that North Korea's rail modernization discussed between the two Koreas is somewhat different from the 'construction of new railway lines. The modernization of facilities such as rails and sleepers, electrification facility repairs, and improvement of locomotives and freight cars are absolutely necessary for North Korean[9].

North Korea's international railway network is connected to the China-Russia border regions and transports international cargo and passengers. The International Transpiration Bureau of the Korean State Railway is in charge of North Korea's border rail operation. International transportation offices are located in Sinuiju, Manpo, Namyang and Tumen River regions. Most of all, inter-Korean railway cooperation, system improvements and human resource development are urgently needed to link international railway lines, including North Korea, China, Russia and South Korea, to lead to a Eurasian railway. North Korea's main railway network is composed of basic lines, such as the west coast axis(Seoubu Line) that connects China to Pyongyang, the east coast axis(Dongbu Line) that connects Russia and the east-west transversal line represented by the Pyongra line, the northern circular line that circulates the northern inland, and the western circular line that circulates between North and South Hwanghae Provinces, centering on underground resource development and densely populated areas[10].

The major trunk railway lines in North Korea include the Pyongra Line(Pyongyang-Rajin, 781km) which forms the east-west transversal and eastern lines, the Gwangwon Line(Gowon-Pyonggang, 145km) which connects to the Pyongra Line on the heights and forms the eastern line, the Pyeongbu Line(Pyongyang-Kaesong, 187km) which forms the western line, the Pyeongui Line(Pyongyang-Sinuiju, 225km), the Chongnyon Ichon Line, which is the east-west transversal line(Pyeongsan-Sepo, 140km), the Manpo Chongnyon Line(Haesan-Manpo, 250km), the Paektusan Chongnyon Line(Kilju-Haesan, 142km), and the Manpo Line that connects to the northern line(Sunchon-Manpo, 303km). The Pyeongui Line is a railway line between Pyongyang and the Sinuiju Special Administrative Region, and is also an international railway line that connects to Tianjin and Beijing via Dandong in Liaoning Province, China. Not only the Pyeongui Line train but also passenger and freight trains, which run most of the domestic lines from Pyongyang to Nampo, Pyeongyang to Kaesong and Pyongyang to Rajin, depart from or pass through Pyongyang. The international train that runs to Moscow and Beijing also departs from Pyongyang. If one uses the international railway, which departs from Pyongyang, it takes nine hours from Pyongyang to Sinuiju, and 26 hours to Beijing. The Pyongra line connects to the Trans-Siberian Railway(TSR) via Khasan, Russia. The Pyongyang-Moscow section offers a round trip twice a week, and the trip normally takes a week

3. Railway Cooperation of Inter-Korean Border Regions and Its Significance

The inter-Korean summit was held in Pyongyang on June 13, 2000, when the leaders of the two Koreas agreed to connect the Gyeongui Line railways and roads in 2000 and then the Donghae Line railways and roads in 2002. The restored part of the Gyeongui Line railway was 27.3km section between South Korea's Munsan(12.0km) and North Korea's Kaesong(15.3km). The inter-Korean railway connection project was regarded as an important project in that it symbolizes the connection of the divided land and lays the foundation for inter-Korean economic cooperation. The Donghae Line, which was resumed in 2002, was connected from the Kumgangsan Chongnyon Station on the North Korean side to Jejin Station on the South Korean side, centering on the Military Demarcation Line(MDL). Around December 2005, South Korea's Jejin-MDL Line was completed, and the North Korean train ran to South Korea in May 2007 as a test run. However, the strained inter-Korean ties prevented any further operation. Since then, the nuclear tests continued after Kim Jong-un took office in 2012 resulted in the severance of inter-Korean exchanges, and there were no efforts to cooperate for inter-Korean railway connection[11].

At the Panmunjom Declaration on April 27, 2018, the leaders of the two Koreas agreed to connect the Gyeongui Line and Donghae railway lines, a symbol of inter-Korean exchange. Paragraph 6 of Article 1 of the Panmumjom Declaration states that in order to achieve the balanced development and

joint prosperity of the national economy, the two sides decided to actively implement the projects agreed in the 2007 October 4 Declaration and take practical measures to connect the Donghae Line and Gyeongui Line railways and roads and modernize them in the first place[12].

On June 26, 2018, the South and the North resumed the Inter-Korean Railway Cooperation Talks at Panmunjom for the first time in ten years, followed by a joint inspection and a groundbreaking ceremony of North Korean railways for the connection of 2,600km inter-Korean railway between the Gyeongui Line and the Donghae Line on November 30 after the 9.19 Pyongyang Military Agreement in 2018[13].

The joint inspection for inter-Korean railway cooperation was carried out for 18 days(November 30-December 17, 2018) from the Gyeongui Line to the Donghae Line, and its target was railway sections with a total length of 2,600km(Sinuiju-Pyongyang-Wonsan sections, including the 412km-Gyeongui Line and the 781km-Donghae Line). The main objectives of the joint inspection are to identify the current status of railway facilities through joint field surveys of North Korean railways, to use the survey results as basis data for rail modernization, and to implement basic plans, additional investigations and design practices after the joint inspection. In accordance with the joint survey results, the Gyeongui Line can be opened after the renovation of the section that runs from Kaesong and Sariwon, and complementary measures will be taken for the Donghae Line to renovate the section from Mt. Kumgang to Anbyon County and promote the modernization project. After the joint inspection, the groundbreaking ceremony was held at the end of December of the same year, but the time period for the actual construction work of North Korea's rail modernization may vary depending on the progress toward North Korea's denuclearization[14].

There are a total of four sections that can be connected between the two Koreas in the future. These include the Gyeongui Line, the disconnected Gyeongwon Line(Baekma Highland-Pyonggang, 26.5km), the Kumgangsan Line(Cheorwon-Naekumgang(inner Kumgang), 116.6km), and the Donghae Line(Gangneung-Jejin, 110.2km). Given the utilization of North Korea's rail modernization and its connection with the industrial complex, the Gyeongui Line can be linked to the TKR section of the Gyeongui Line-the Gyeongbu Line, and the TCR section of the Gyeongui Line-the Honam Line through the improvement of the Pyeongbu Line(Kaesong-Pyongyang) and the Pyeongui Line(Pyongyang-Sinuiju) sections, which are the axes of the Gyeongui Line. The next major project is to connect the Donghae Line sections. The improvement of the Kumgangsan Chongnyon Line, the Pyongra Line and the Hambuk Line, which are the axes of the Donghae Line in North Korea, will make it possible to link it with the TKR and TSR. On June 7, 2019, South Korea joined the Organization for Co-operation between Railways(OSJD) as a regular member on North Korea's approval and was allowed to participate in the operation of 280,000 km international railway lines, including the TSR and Trans-China Railway(TCR) [15]. Accordingly, South Korea can transport logistics and passengers to Europe through the TSR and TCR via the North Korean railway. However, in terms of technology, the unification of the railway systems between the two Koreas such as rail gauges and electric power systems should precede the rail modernization project in North Korea.

4. Railway Cooperation of China-North Korea-China Border Regions and Its Implications

The first border station on the Korean peninsula is Sinuiju station; the railway line connects to mainland China after the opening of the Yalu River Railway Bridge. The customs office of lines that connect to China, such as Sinuiju-Dandong, Namyang-Tumen, and Manpo-Jian are the first-grade customs through which people from a third-country can pass. The line connecting to China was built with the same standard gauge as China during the Japanese colonial period. North Korea imports food and the necessities of life from China through trading companies, and the Dandong and Sinuiju line accounts for 80% of product distribution, and the Hunchun and Rajin-Seonbong line for 20%.

In particular, Sinuiju Chyongnyon station is the northern terminus of the Pyeongui Line(Pyongyang-Sinuiju 224.8km), and it is located at 224.8km from Pyongyang in Yochon-dong, Sinuiju-si, North

Pyongan Province. The Pyongyang-Beijing section railway has operated passenger trains since June of the same year in accordance with the "Chosun-China Direct Railway Operation Agreement" signed between North Korea and China in January 1954. The total length is 1,349km, the average time is 22 hours, and it operates four times a week. Also, the Namyang-Tumen section railway had been in operation since the 1960s after North Korea made the "Border Travel Train Operation Agreement" with China to communicate and exchange with the ethnic Koreans in the Yanbian Korean Autonomous Prefecture. However, as the number of North Korean defectors using this border train increased, North Korea stopped operating the train. Third, the operation of the Manpo-Jian section railway is currently suspended[16].

In June 2010, China's Tumen city secured the right to use Piers 3 and 4 of the Chongjin Port. In collaboration with North Korea, the city initiated the repair work of a 170km railway section between Tumen and Chongjin to build 200 freight trains to operate this railway, a 40t container to be used for freight transport and a large crane used for loading cargo in Chongjin Port. In February 2011, North Korea decided to establish an entry-exit route to North Korea with China. The current border cities through which China can enter North Korea include Dandong(Sinuiju), Jian(Manpo), Tumen(Namyang), and Hunchun(Rason). As part of a project to develop border regions in China, concentrated efforts have been made to build transport infrastructure such as railways, roads and bridges. In the joint development plan for the Rason Economic and Trade Zone, it was announced that the Rajin-Seonbong-Namyang railway would be renovated in the short term, and the Hunchun-Hunryung railway that connects Hunchun of China and Rason of North Korea would be built in the long term. China planned to proceed with a renovation and double-track project for the Hunchun-Namyang-Rajin line and build a new railway to Rajin Port[17].

In December 2013, China also planned to build a double-track railway for the Pyeongui Line section as a part of economic cooperation between North Korea and China. The project financing method was BTO(Build-Transfer-Operate) in which the ownership reverts from North Korea. To develop the border regions and promote the stabilization of the Yanbian Korean Autonomous Prefecture, China decided to modernize a total of five railway lines, including the Tumen-Namyang-Tumen River-Khasan line(126km), the Tumen-Chongjin line(171.1km), the Heorung-Nanping-Musan line(53.5km), the Tumen-Rajin line(158.8km) and the Longjing-Kaisantun line(2.5km) by 2020. The main reason for China's interest in North Korea's rail modernization and investment in building the entry and exit routes for transport infrastructure such as railways and roads connected to North Korea is to secure mineral resources in North Korea. Most of North Korea's mineral development contracts with foreign countries were signed with China. More than 96% of the mineral resources in North Korea were exported to China, and the rate was as high as 99% as of 2016 In early September 2018, Liaoning Province undertook a project to connect railways, roads and communication networks with North Korea as part of the 'One Belt, One Road'(Land and Maritime Silk Road) strategy perused by China. The Liaoning Provincial Government has made a development plan document called the "One Belt, One Road, Comprehensive Test Zone Construction Plan", which proposes the creation of the 'Northeast Asian Economic Corridor', which encompasses North Korea, South Korea, Japan and Magnolia, and the promotion of a project plan to connect Dandong, Pyongyang, Seoul and Busan with railways, roads and communication networks[18].

Meanwhile, in February 2000, North Korea and Russia signed a 'DPRK-Russian Treaty of Friendship, Good Neighborliness and Cooperation' and President Putin visited North Korea in July of the same year. In a series of summits between South Korea and Russia in February 2001 and between North Korea and Russia in August 2001, there was an exchange of opinions about the revitalization of the TSR through North Korea's railway network connections. Russia had more interest in North Korea's rail modernization than China and urged active participation. To be specific, it carried out four investigations into the North Korea's rail modernization from 2001 to 2003. The representative railway line from North Korea to Russia is the Tumen River-Khasan line which was opened in 1951 as a standard gauge and broad gauge mixed-line[19].

The Tumen River station is connected to Khasan station on Russia's Far Eastern Railway line via the Korea-Russia Friendship Bridge. The Pyongyang-Tuman River-Khabarovsk-Moscow international train

is in operation, and runs three times a week. The Tumen River station is the only land gateway on the Korean peninsula to Russia and allows for land transportation to the Korean peninsula-Russia-Europe through TSR. At the same time, it has a position as a gateway to allow Russia to use nonfreezing ports such as Rajin and Chongjin Ports in the Pacific region of Russia, which poses difficulties in developing and using an ice-free port.

Since 2008, the two countries have promoted the modernization of railways between Russia's far eastern border city Khasan and North Korea's port city Rajin as a major business of the Rajin-Khasan project in which Russia and North Korea invested at a ratio of 70% owned by Russian Railways(RZD) and 30% through the establishment of a joint venture called Rasonkon Trans. The purpose of this project was to connect the railway between Rajin and Khasan, promote the modernization of Rajin Port and develop the Rajin Special Zone, including the complex logistics business. Russia provided all the costs of the construction, estimated at 9 billion rubles(about 300 billion won, 220 million dollars). Russia also agreed to erase 90% of earlier debts that North Korea owed to the former Soviet Union, thereby helping North Korea to reduce foreign loans. By resolving the foreign debt issue, Russia laid the foundation for expanding and advancing into the economic cooperation between North Korea and Russia. The Russian daily 'РИА Новости' reported that Russia and North Korea signed a deal to write off $11 billion of Soviet-era debt. On September 17, the Deputy Minister of Finance С. Сторчак said that an agreement was made to adjust North Korea's debt to 11 billion dollars, reducing 90% of its total debt and to use the remaining debt(more than one billion dollars) in joint project areas, such as education, public health and energy to be implemented in North Korea as aid conversion debt[20].

In September 2013, a 54km section of the Rajin-Khasan railway line was connected as part of a huge project that links TSR and TKR, and 52km of main line and 2km of branch line from Rajin to Rajin Port were included in the line. New composite gauges that combine Russian broad gauge and North Korean standard gauge were installed to promote the rail modernization and resolve differences in the tracks. The railway opening ceremony was held in Rason Industrial Complex. At the ceremony, Yakunin(В.Якунин), the president of Russian Railways, mentioned that the newly opened railway would be used for trade in resources, such as coal. The president Yakunin also emphasized that the railway in this section would be the shortest route between Europe and Asia as part of TSR and TKR[21].

In October 2014, Russia launched the project 'Pobeda', which means victory, to modernize the transport infrastructure, including railways, in North Korea. The groundbreaking ceremony was completed with the aim of modernizing and improving the Pyongdok Line section(Jaedong Station-Gangdong Station-Nampo Station) in North Korea. The Pyongdok Line is an industrial railway that connects North Korea's largest coal-producing region. The payment method is that Russia owns North Korea's rare mineral resources and development rights in exchange for establishing North Korea's railway modernization. Russia and North Korea set up a joint special management company, which takes over the ownership of North Korea's railways. If everything goes as planned, significant improvements will be made in North Korean railways, and the modernization of North Korea's major trunk lines will be achieved in the future.

The main reasons for Russia to promote North Korea's rail modernization are due to securing the mining rights to North Korea's mineral resources, gaining competitive advantages over China, and strengthening Russia's influence in the Asia-Pacific region. As such, although there are various reasons why Russia hastened the opening ceremony of the railway that connects Khasan to North Korea's Rajin Port across the Tumen River to settle in Rajin Port, another reason behind the depiction lies in Russia's counter-action to the expansion of China's One Belt One Road initiative. The intention is to secure its interests in North Korea's Northeastern part and the East Sea, which borders Russia's Far Eastern regions.

5. Conclusion

The geopolitical perspective also emphasizes its role as a land transit nation for continental entry into Central Asia, Eurasia and Europe, and transport of Russian oil and natural gas energy as North

Korea is surrounded by China-Russia border regions, South Korea and the demilitarized zone. Through the land transport route of Russian oil and natural gas and North Korea's mineral resources, North Korea gains profits through tolls and resource exports from South Korea and Japan. In this respect, the implementation of railway cooperation between North Korea and China is in-line with that of China's One Belt One Road initiative, and Russia is also active in the promotion of South Korea's New Northern Policy and ROK-DPRK-Russia economic cooperation.

Despite these various advantages, it is the most urgent task to resolve North Korea's nuclear issue and lift economic sanctions against North Korea. After the breakdown of the 2019 North Korea-U.S. Summit in Hanoi at the end of February, the North Korea-U.S. relations reached a stalemate, and the international community's extensive sanctions have continued. With the inauguration of Joe Biden as the 46th president of the U.S. in February 2021, there are growing expectations for North Korea-U.S. talks. However, given the U.S.'s cautious stance on North Korea-U.S. talks, it is expected to take quite a long time to secure motivational forces for North Korea's rail modernization and the expansion of railway connections in the China-Russia border regions.

Although there was little sign of progress with North Korea's active participation in inter-Korean railway connections, on-site surveys for North Korea's rail modernization and a groundbreaking ceremony for the inter-Korean railway after the 4.27 Panmunjom Declaration in 2018, practical results were not achieved due to the limitations in resolving North Korean nuclear issue and intensive sanctions against North Korea. Moreover, in the aftermath of COVID-19 pandemic, which has hit the world after the end of 2019, no further progress has been made not only in the inter-Korean railway connection, but also in the international railway cooperation due to border closures on North Korea-China-Russia border regions.

As the expansion of international cooperation and participation of the international community may lead to the opening of the closed North Korean society and the instability of the Kim Jong-un regime, questions still arise as to whether North Korea will select such international cooperation. As seen earlier, Kim Jong-un has keen interest in North Korea's rail modernization, and transport infrastructure, including railways, around the China-Russia border regions is expected to reduce logistics costs, increase transport volume, expand investment in border regions and economic development districts, and increase economic support[22].

Given that a transportation network to connect railways and roads served as an important link in the unification of East and West Germany in the early 1990s, it is expected that the inter-Korean railway connection will help overcome divisions and ease military tensions, thereby contributing to building peace and prosperity on the Korean peninsula. Ultimately, it will cost a lot of money and time to realize the TKR-TCR, and TKR-TSR linkage, considering the limitations of solving North Korean nuclear issue and North Korea's rail modernization; however, the realization of which will lead to peace on the Korean peninsula and expand toward the international railroad cooperation with Eurasia and Europe, not limited to China's three northeastern provinces and the Russian Far East.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	JY	-Set of concepts ☑
		-Design ☑
		-Getting results ☑
		-Analysis ☑
		-Make a significant contribution to collection ☑
		-Final approval of the paper ☑
		-Corresponding ☑
Corresponding Author*	YJ	-Play a decisive role in modification ☑
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑
		-Participants in Drafting and Revising Papers ☑
		-Someone who can explain all aspects of the paper ☑