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I

A Possibility of Utilizations and Future directions in National Defense Blockchain Technology

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〈 요 약 〉

본 기술보고서는 블록체인기술 아키텍처의 기본적인 개념과 특성을 알아보고 미래에 신뢰할 수 있는 핵심기술로서 국방분야에서의 확장 가능성과 잠재력에 대해 논의하고자 한다. 블록체인기술은 우리가 일하고 생활하는 방식을 바꿀 수 있는 새로운 기술이다. 이는 분산된 방식으로 컴퓨터 그룹에 의해 관리되는 데이터와 정보 거래 즉, 저장, 업데이트 및 암호화되는 개방형, 분산 및 공유하는 원장 기술이 그 바탕이 되고 있다. 지난 몇 년간 세계 여러 국가에서 이러한 기술과 관련한 산업 부문에서 비즈니스 및 서비스 운영 방식에 블록체인기술 적용을 추진하고 있다. 이를 통해 분산 네트워크와 다양한 비즈니스 산업에 응용할 수 있게 도움이 될 수 있고 유리한 장점이 있다.

우선 블록체인의 기본적 개념과 일반 분야에서의 응용사례와 최신 기술 경향에 대해 논의한다. 블록체인은 2008년에 비트코인 플랫폼으로 처음 소개되었고, 비트코인은 Satoshi Nakamoto에 의해 가명으로 만들어졌다. 피어 투 피어 및 분산 네트워크를 통해 디지털 통화(암호화폐)로 사용되었다. 그 이후 블록체인은 2장에서 세부적으로 논의한 바와 같이 암호화폐 사용 및 추가적인 애플리케이션을 넘어 금융, 의료 및 공급망관리 분야 등 많은 부문에서 산업 기반체계에 융합하기 위해 노력하고 있으며 세계 각국에서 막대한 투자와 기술개발 등을 추진하고 있다. 본질적으로 블록체인은 중앙 집중식 관리를 배제한 대금 결제와 같은 대부분의 전통적인 프로세스를 벗어나 중개자나 제삼자의 개입 없이 해당 당사자들이 직접 거래를 수행할 수 있도록 한다. 이를 통해 당사자들은 거래 상황을 쉽게 파악하고 다양한 서비스를 중개인의 개입 없이 요금도 지불하지 않아도 되기 때문에 시간과 비용이 절약될 수 있는 장점을 제공한다. 또한, 개방적이고 암호화된 공유 플랫폼이기 때문에 투명성, 불변성, 보안 및 추적성을 제공하나, 한편으로 이 정보가 변조되거나 수정된 데이터를 추적하는 주요 요소가 될 수도 있으므로 이러한 부문에 대해 주의를 기울여야 한다. 기술정보 보안을 포함하는 이점과 장점에도 불구하고 블록체인은 특히, 암호화폐 및 스마트 계약과 관련된 사이버 보안 위협 및 공격에 취약할 수 있다. 따라서 블록체인기술을 강화하기 위해서는 시스템 보안 분야에 대해서는 향후 지속적인 연구와 기술개발이 이루어져야 한다. 또한, 이 기술을 통해 4차 산업혁명 시대의 다양한 애플리케이션의 운영 효율성을 개선하는 데 사용할 수 있을 것이다. 본 사항에 대해서 3장에서 자세히 논의한다. 아울러 블록체인기술이 적용된 사물인터넷(IoT)에 대해서 의료, 물류 및 환경 목적과 아울러 군사 분야 등에 관한 활용사례를 살펴본다.

최근 국방 분야에서도 미래 전장 상황에서의 다양한 무기체계에 장착되는 다양한 센서, 액추에이터, 분석 장치 및 통신 장치 등을 상호 연결하고 구현함에 있어 IoT를 적용하는 경향이 점차 증가하고 있습니다. IoBT(Internet of Battlefield Things)의 궁극적인 목표는 무기체계 간의 상호 연결된 센서와 장치를 사용하여 전장에 대한 상황 인식을 제공할 수 있고, 미래 병사 체계에서도 역시 병사의

건강상태, 전투 위치 및 심지어 적의 움직임과 같은 정보를 파악할 수 있고 다양한 통제장치에서 더욱 나은 전술적 결정을 내릴 수 있도록 한다. 아울러 군인의 생명이 더욱더 효과적으로 보호할 수 있고, IoBT를 이용하여 전차, 기동차량, 군인 또는 군사용 드론에 장착되어 임무를 지원할 수 있다. 미래에는 나무와 바위와 같은 또 다른 사물에 IoBT가 부착이 되어 자료수집 장치의 일부분으로 포함될 수 있다고 한다. IoBT를 설계할 때 고려사항으로 군사용 애플리케이션은 임무 중요성과 역할에 대해 명확히 정의하고 다음의 몇 가지 엄격한 요구사항을 규정하여야 한다. 먼저 저전력 사용 및 경량 요구사항을 포함하여 전장 상황에 대한 신속한 반응체계 및 실시간 인식이 가능해야 하며 적들이 시스템을 위협하거나 변조할 수 없도록 데이터 통신을 보호해야 하는 능력을 갖추어야 할 것이다.

현재 산업 및 군사 환경에서 보안 및 프로세스 추적성이 손상되지 않고 특정한 시스템을 적용할 수 있도록 블록체인기술을 다양한 로봇 시스템에 적용하고 있다. 이 로봇은 블록체인기술을 통해 상호 연결될 수 있으며 스마트 계약 등 액션 트리거 역할을 한다. 무인 항공기(UAV) 및 드론은 적 지역의 지형 및 날씨로부터의 정찰 및 관측을 지원하기 위해 군사 분야에서 널리 사용하고 있다. 이 군사용 드론은 장착된 레이더, 비디오, 정지 이미지 및 적외선 등 다양한 센서를 통해 악기상 및 야간 관측 및 정찰 용도로 사용되고 실시간 데이터 정보 공유체계가 구축되어 있다. 해커의 관점에서 드론이 획득한 카메라의 영상정보 및 레이더 신호 정보와 같은 다양한 정보를 획득하려고 시도할 것이다. 드론 영상에 대해서 일반적이고 확장 가능하며 관리하기 쉬운 액세스 제어 시스템을 제공하기 위해 GPS 위치와 서비스와 함께 서버와 드론 간의 트랜잭션 로그를 유지한다. 이 기술은 분산형 블록체인 환경에서 구현하는 독립 서버 역할과 상호 작용이 가능하도록 한다.

4장에서는 군사용으로 특정 분야에 적용이 가능한 블록체인기술에 대한 체계설계 개념 모델에 대한 아키텍처를 제안하였다.

군사용 블록체인은 기존 군사 공급망 관리(MSCM; Military Supply Chain Management)의 데이터 보안을 강화하는 용도로 사용할 수 있다. MSCM은 국방 공급망관리의 다양한 계층, 즉 응용 분야, 계약 분야, 수요자와 공급자 네트워크 등을 연결할 수 있다. 이러한 다중 계층으로 구성된 컨소시엄 군사 블록체인을 사용하여 설계될 수 있다. 이를 통해 내부자(군 당국)와 외부자(공급자, 제삼자)가 공급망관리에서 협력을 보다 쉽게 할 수 있을 것이다. 이를 통해 다양한 거래가 불변하고 투명하게 이루어 질 수 있는 스마트 계약도 가능하다. 사이버 보안 분야에서도 기밀성, 무결성 및 진정성(CIA) 및 무단 변경 방지 등의 기능 구현을 보장합니다. 군용 블록체인에 대한 허가된 시스템은 군용 노드에 저장된 모든 데이터를 악의적인 공격으로부터 보호한다. 데이터 프라이버시를 보호하는 가장 좋은 방법은 외부인에 대한 스마트 계약을 통해 계약을 별도로 분리하는 것이다. 별도의 스마트 계약을

통해 공유 원장의 기밀 군사 데이터가 보호되며 안전하고 투명하며 변경 불가능하도록 프로세스를 구현한다.

마지막으로 블록체인 응용 분야와 미래 개발기술 추세 및 동향에 대해서 요약정리하였다. 그리고 향후 국방 분야에서 이러한 블록체인 기술개발 방향 및 다양한 응용 가능한 분야에 대해 제시하였다. 본 기술보고서를 향후 미래 국방분양의 블록체인기술 적용에 대한 잠재적 성장 가능성에 대해 살펴보았으며 이를 통해 군사 분야를 포함한 국방에 이바지할 수 있기를 기대한다.

〈 Summary 〉

This technical report introduces the characteristic of blockchain technology architecture and discusses the potential of blockchain technology to transform into trusted transactions. Blockchain is an emerging technology that can change the way we work and live. Blockchain is an open, distributed and shared ledger where transactions of data and information are stored, updated and encrypted that is managed by a group of computers in a decentralized manner. For the past few years, most industries sectors in most nations including Malaysia and South Korea are pushing blockchain as part of how they run their businesses and services. Those industries who use this technology to their advantage would benefit their businesses through its decentralized and distributed network.

Blockchain was first introduced as a platform for Bitcoin in 2008. Bitcoin was created by a pseudonym named Satoshi Nakamoto. It is used as a digital currency (cryptocurrency) over peer to peer and decentralized network. Since then, blockchain has gone beyond cryptocurrency usage and applications as discussed in Chapter 2. Many sectors such as finance, healthcare and supply chain are putting efforts to integrate blockchain into their infrastructures. This significant investments in blockchain technology lead to many use cases of blockchain. As it is decentralized in nature, blockchain allows the multi parties to do a transaction without any middlemen or a third party in most traditional processes such as payments. Hence, it saves time and money since no charge is paid to the intermediate party as service to verify and facilitate the transactions.

Since it is an open, encrypted and shared platform, blockchain offers transparency, immutability, security and traceability which also the main elements for tracing any tampered or modified data. However, despite its benefits and advantages that include security, blockchain is susceptible to cybersecurity threats and attacks especially related to cryptocurrency and smart contracts. Thus, future work and research in the area of blockchain system security need to be done to strengthen the blockchain technology. The fourth industrial revolution (IR 4.0) is an emerging technology that can be used to improve operational effectiveness for various applications. Internet-of-Things (IoT)

with blockchain technology has been widely deployed for military fields such as medical application, logistics and environmental purposes as discussed in Chapter 3.

Recently, there is an emerging trend of applying IoT in the military field which realizes an interconnection of all sensors, actuators, analytical devices and communication devices in the battlefield, which is the so-called Internet of Battlefield Things (IoBT). The ultimate goal of IoBT is to provide situational awareness of the battlefield using the interconnected sensors, actuators and devices such that information such as soldier's health status, soldier's location and even enemy's movement could be known and leads to a better tactical decision made at the control unit and soldier's life is more protected. The sensors, actuators and devices could be attached to tankers, vehicles, soldiers or even drones. In future, other objects such as trees and rocks may be involved as part of data gathering devices in IoBT. Designing IoBT involves several stringent requirements as the military application is mission-critical; besides low power and lightweight requirement, it must allow rapid response and real-time perception of battlefield situations, and secure data communication such that enemies are not able to threaten or tamper the system.

Nowadays, we have seen many robotic systems leveraging the blockchain technology, especially in industrial and military environments to accommodate certain system so that the security and process traceability is not compromised. These robots could interconnect over the blockchain and have action-triggers with smart-contracts. Unmanned Aerial Vehicles (UAV) has been used widely in military applications to support reconnaissance and observation from enemy, terrain, and/or weather. These military drones are often equipped with many sensors, radars, videos, still images and infra-red images for night surveillance using thermogram images. Hackers tend to steal the drones' data by tapping the drone camera. Because of these threats, intelligent approach for UAV privacy security using blockchain methodology has been proposed using image gathering of the UAV with blockchain security to provide data tampering prevention by encrypting the files using hashing technology. Moreover, timestamp has been implemented to keep a log of transactions between the server and drone with its GPS location to provide a generic, scalable, and easy-to-manage access control system for drone's footage. This technology helps accommodating consumer drones that interact

with mobile phones to act as independent servers working in a decentralized blockchain setting.

Chapter 4 proposes the system model architecture of the military blockchain. The proposed military blockchain is to enhance the data security of existing military supply chain management (MSCM). The MSCM shall be designed using consortium military blockchain which consists of multiple layers such as Application Layer, Contract Layer, Complementary Layer, Consensus Layer, Network Layer and Data Layer. The consortium military blockchain allows insider (the military authorities) and outsider (supplier/third party) to collaborate in supply chain management. The insider participants will be part of a private blockchain, while the outsider participants are running using a public blockchain. All participants are allowed to create transaction(s). However, only the insider has the authority power to validate any transactions in the blockchain with the approval of 51% of insider nodes. Thus, the proposed consortium is using Proof of Authority (PoA). To make the transaction immutable and transparent, a smart contract is introduced in this consortium military blockchain. It will ensure the security of data based on confidentiality, integrity and authenticity (CIA) and tamper-free. Permissioned blockchain system for military blockchain will be ensuring all the data stored within the military nodes are protected against malicious attack. The best way to protect data privacy is by separating the agreement through a smart contract for the outsider i.e. non-military and insider i.e military authorities. Through a separate smart contract, the confidential military data in the shared ledger will be secured. As a result, the system model of consortium blockchain for the military has been designed to cater MSCM process securely, transparent and immutable.

Chapter 5 concludes with summary of blockchain applications and discusses the trends in blockchain technology and applications especially in the field of military from the perspective of the two nations Malaysia and The Republic of Korea. The potential for future work is discussed in the end of the chapter. We are looking forward to contribute on National Defense including military fields through this research.

A Possibility of Utilizations and Future Directions in Military Blockchain Technology

Chapter 1. INTRODUCTION

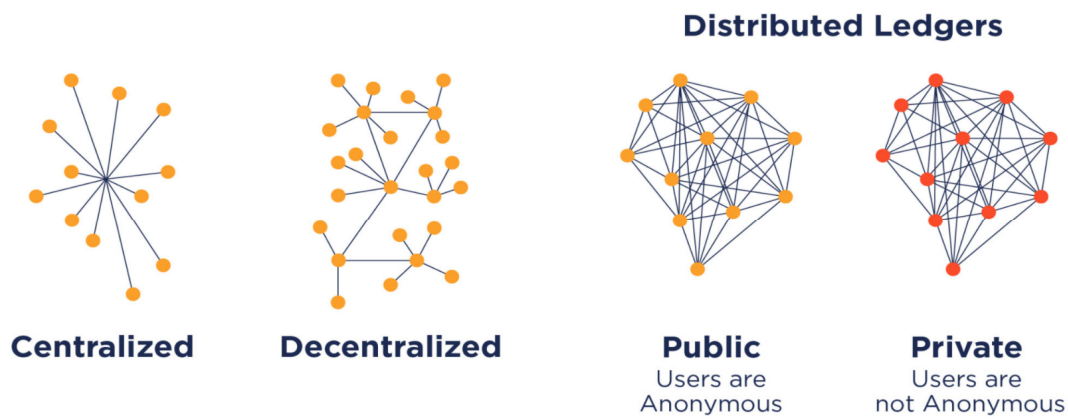
Blockchain technology has the potential to be the catalyst of the Fourth Industrial Revolution and it is foreseen that the blockchain will transform trusted transactions in the same way that the internet did for communications [1]. Arguably, the blockchain implementation has a much higher potential for the people of the developing world rather than the developed world. Malaysia is ranked 23rd in the recently published Global Competitiveness Index 2017-2018 of the World Economic Forum [2]. According to the latest Human Development Index released by the United Nations Development Program (UNDP), this country is also a high human development country with 0.789 points (59th in the world ranking). This projection is measured based on three (3) basic dimensions of human development, a long and healthy life, knowledge and a decent standard of living. However, in conjunction with the growth of this digital ledger, there are some legal and regulatory challenges in both developing and developed countries.

Blockchain technology is an application that offers the user an organised shared ledger for business, financial, logistics and other management-related sectors. Following the transition of informational technology, blockchain is considered as a secured platform for data sharing. Satoshi Nakamoto introduced the blockchain technology in digital currency for Bitcoin application in the year of 2008 [3]. In the implementation, blockchain technology had known for its uniqueness where transaction within the network does not require a third party for verification. The limited access on the informational data from the transaction can be neglected with the deployment of blockchain technology. Updated data from the transactions are recorded in a publicly accessible mode. The accessibility provides data transparency and trustworthy which also the main elements for tracing tampered data.

Blockchain technology is a digital ledger and also known as a distributed ledger with a database that keeps tracks of all the transactions. This technology overlooks the system

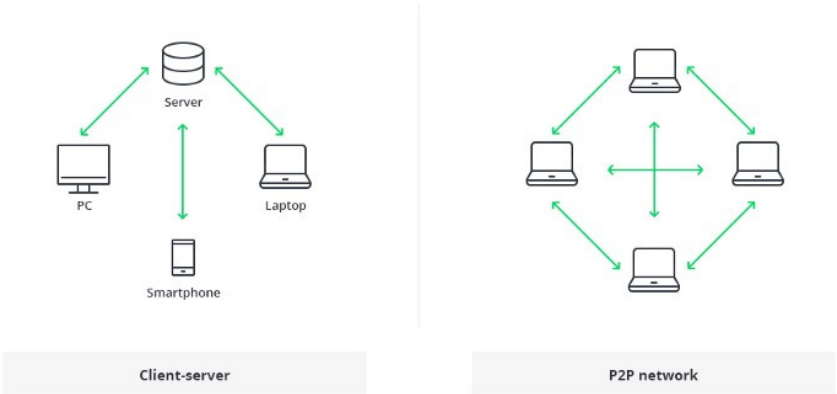
with centralized control by providing an alternative towards a decentralized ledger as shown in Figure 1. The input data are broadcasts to the nodes within the network. Every node in the network executes the same task and obtain the same data records.

<Figure 1> Figure shows the illustration of different type of ledgers and blockchain network [4].



There are several types of blockchain networks such as public blockchain, private blockchain, and consortium blockchain. Each of the blockchain types has its own advantages and limitations in the deployment aspects depending on the application field scenarios. A private blockchain is having a permissioned consensus protocol while public blockchain is permissionless. Blockchain network is connected with a server based on the compatibility. There are two types of servers such as Client-Server and Peer-to-Peer (P2P) server as shown in Figure 2. Client-server provides the user to connect with the blockchain network from various input devices such as laptop, PC, or mobile. The server allows public access from the environment into the network system. P2P server allows the transactions between the nodes to perform without the control of the central server. P2P server is also known as a decentralized distribution network system. Through P2P server network, individual nodes have an equal right to perform the task in data sharing and obtaining records of the transactions within the network. Among all the types of blockchain, consortium blockchain offers a partial server which composes of both Client-server and P2P server in the same blockchain systems.

<Figure 2> Figure shows the type of server in the blockchain systems [5]



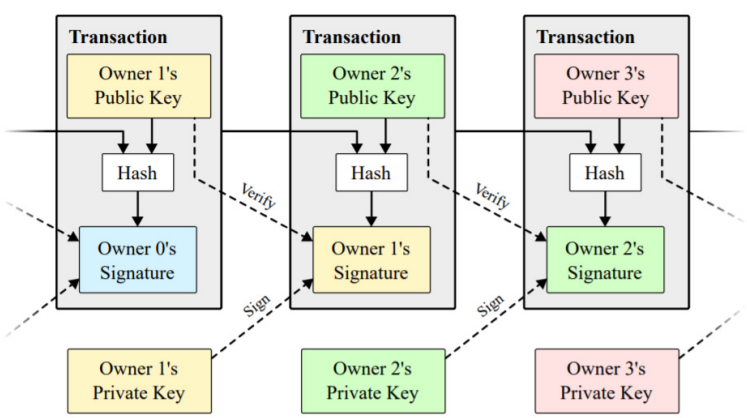
Blockchain consists of chains of the block that contains the information of every successful transactions. The main components of the blockchain include a block, transactions as the building block, miners and consensus protocol. A genesis block is the first block created from the first transaction and is also known as a starting block of the blockchain. The content of the new block created after the genesis block use the transaction hash from its previous block as a reference. Every transaction from the block is recorded with timestamp where the data and time of transaction history stored in the block.

The system model of the blockchain composed of an application layer, data layer, network layer, consensus layer, incentive layer and contract layer. The consensus layer is the important set up for decision making and to ensure synchronization of blockchain flow in the network. To achieve synchronization, a consensus protocol is used to control data transmission within the blockchain. There are various types of existing consensus protocol such as Proof of Work (PoW), Proof of Important (PoI), Proof of Authority (PoA), Proof of Stake (PoS), Practical Byzantine Fault Tolerance (PBFT), Delegated Proof of Stake (DPoS) etc. In an early application of blockchain mostly deploying the PoW protocol but there exists some limitation in term of efficiency. Throughout the improvement of the protocol, PoS is introduced. PoS have a capability in which the nodes allowed to create and adding new block based on validating systems. Through a consensus mechanism, only the validated transactions could generate a new block in the blockchain.

The implementation of blockchain in management sectors opens up towards enhancement in the traditional contract systems. The deployment of blockchain eases the operational systems within the sectors. Blockchain has improved the traditional system such as payment process, tender documentation, the process of updating data and other processes that requires a central authority involvement. Despite these complex documentation process, blockchain technology eases the contract flow process by deploying the smart contract. Smart contract for blockchain is self-executing transactions protocol that facilitates the negotiation in the P2P network system[6]. Through smart contract, mutual agreement between all the stakeholder in the network is achieved through the validation of the transactions within the blockchain network. Contract layer capable to avoid any manifestation of malicious behaviour from the generated transaction hash.

Hashing method in blockchain promising a secured data sharing platform where the data is recorded cryptographically. The user in the network is registered with a unique private key signature as an identification (id) to participate in the blockchain network and only could be known by the owner. All the data in the block are encrypted by the hash code. Every transaction has a unique hash code which is automatically generated from a successful transaction. The illustration of the verification with hashing is as in Figure 3. The users within the network is able to recognize the origin of the transaction from its generated hash code for every successful transaction. The main unique characteristic of blockchain is that each of the transaction hash history and the shared data is immutable.

<Figure 3> the illustration of the transaction method [3].



Blockchain technology plays an important role in a technological breakthrough to solve many of the existing problems that the global community has been facing. According to [1], it is not a new technology, even though this technology has been receiving wide coverage in the popular literature. Nevertheless, it is a combination of three proven technologies, private key cryptography, P2P networking and a consensus protocol. Some experts have considered this technology as the next big thing, after the advent of the Internet, and have predicted that this technology has the potential to transform trusted transactions in the same way that the Internet did for communication. The main advantage of this emerging technology is that it promotes an architecture of trust, immutability and transparency via any transactions. There are five main components of blockchain, as shown in Figure 4.

<Figure 4> Components of Blockchain

There is no universally accepted or standard definition for blockchain. In particular, a blockchain is a decentralized and distributed electronic ledger where the history and records of the transactions can be stored in a secure and trusted manner without engaging any involvement of third parties' validation such as banks or other regulators. According to [7], there are five main components of blockchain including digital ledger, P2P network, cryptography, validity rules and consensus mechanism. Blockchain uses various cryptographic techniques including cryptographic one-way hash functions,

Merkle trees and public key infrastructure (private-public key pairs) to protect user privacy and transaction information, and ensure data consistency, etc. P2P network is the mechanism used by blockchain to disseminate system information while keeping the whole system as a decentralized system where every node in the network is on the same level as all the other nodes and there is no central authority. Validity rules are the common set of rules of the network (i.e. what transactions are considered valid, how the ledger gets updated, etc). Besides, digital ledger is the list of transactions bundled together consisting of records in cryptography blocks that are used to record transactions across many computers which can be either public or private. Finally, there are different kinds of consensus mechanism algorithms used in blockchain to achieve the necessary agreement on the status of the ledger and the contributions by the various participants of the blockchain.

Chapter 2. BLOCKCHAIN IN GENERAL APPLICATIONS

2.1 Introduction

In general, blockchain technology has been implemented in other sectors such as financial services, healthcare, real estate and supply chains and logistics. Table 1 shows the benefits and challenges of blockchain implementation in the aforementioned sectors.

Most country are also actively exploring blockchain applications in its use cases. According to [12], since 2018, the Korean government has expanded its investment into blockchain R&D by allocating new funds and is conducting a thorough review on the legislation and regulations that may be hindering the invigoration of blockchain. Since blockchain eliminates the central server as it stores replicated blocks of information (called ledgers) across its network, it is a decentralized and distributed network which ensures data integrity and preventing tampering of data. Thus, it offers fault-tolerance as there is no single point of failure. In addition, its immutability, trust, transparency and full traceability of the stored transaction records and data make blockchain a desirable platform to be deployed on. The rapid adoption of the emerging blockchain technology has been recognized globally that it innovates many industries in the market. Since Bitcoin is the first popular application that adopted this technology [3], many

businesses have then changed their operations by making full benefits of its distributed and decentralized features as it eliminates the risks that associate with data being stored centrally. A wide variety of blockchain applications provide solutions for problems in areas ranging from financial services such as cryptocurrency to public, private and social sectors. The following sections give a brief overview on the usage of blockchain technology in finance, healthcare and supply chain management.

〈Table 1〉 Summary of benefits and challenges of blockchain in Industry

Sectors	Benefits	Company	Challenges
Financial Services	Able to easily exchange cryptocurrencies, cross trading for crypto, high transactional speed	Bitcoin Atom, Securrency, Aeternity, Circle	Primarily legal, regulatory, institutional and commercial [56]
Healthcare	Utilization and storage improvement of electronic health records, gather molecular-level data on Nano Tokens	Medical Chain Gem, Simply vital health, Nanovision	Patient consent, governance, security, privacy, and patient engagement [57][58]
Real Estate	Create a decentralized society and secure record of property information.	BitProperty, Ubiquity	Standardization property definition on blockchain lack of standard protocols for interoperability [59]
Supply chains and logistics	Products and parts ownership and location records able to track foodborne illnesses chain of custody and certification of supply chains, verify counterfeit products and fraudulent transactions	IBM BlockChain, Food Industry, Provenance, Blockverify,	System integration, transport worker privacy and involvement, Value and visualization [60] Performance expectancy, social influence, blockchain transparency, trust of supply chain stakeholders, behavioural intention and expectation [61]

Recently, studies have shown that the military has utilised blockchain technology in its defence applications and services [62][63]. McAbee et al. [64] incorporate blockchain technology in a military operation by providing a shared and distributed database for military intelligence. [65] discuss how blockchain can be used to store metadata describing information received from military application of the Internet of Things (IoT) devices. Blockchain is also used in military SCM applications [63]. This is to help track

military service spare parts throughout their life cycles. It ensure the spare parts are correctly processed and it provides means for complete traceability of these parts. The U.S Navy is turning to blockchain technology to track and manage aviation parts [66]. The primary goal of the project is to change the way they keep track of aircraft parts for the F-18 Hornet. However, data is entered manually, as soon as the system is ready to be developed and submitted to the service. The blockchain technologies can resolve the intellectual property right issues when they produce military standard parts by implement secured log for every print and to support small utility grid for establishing more resilient renewable energy production and consumption[67].

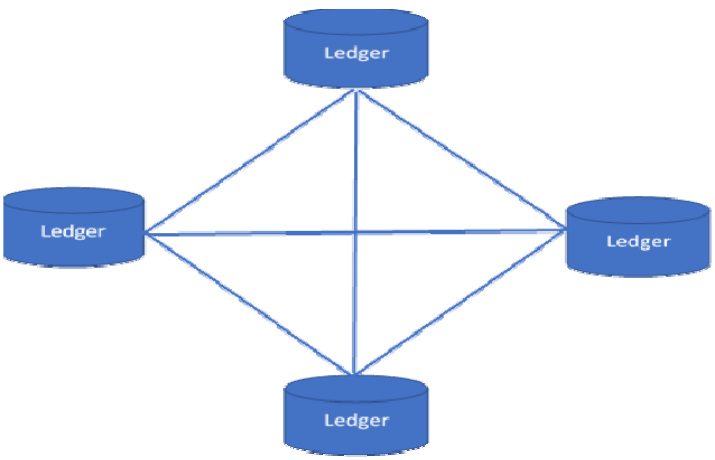
2.2 Existing applications of Blockchain Technology

As blockchain technology has the potential to reform the operation of businesses and their services, there are several domains and use cases have been investigated using the concept of blockchain. The following sections discuss a review of such practical applications which will help to understand and to demonstrate how this technology impact on different domains.

2.2.1 Blockchain in Cryptocurrencies and Finance Systems

Blockchain was first heard through bitcoin and digital currency (cryptocurrency). The Bitcoin became the first application of blockchain which was proposed and conceptualised by a pseudonym named Satoshi Nakamoto for cryptocurrency in finance sector [3]. Since it is a distributed and decentralized in nature (as shown in Figure 5), blockchain allows the cryptocurrency transactions among two or more parties without the need for a central trusted authority or third agent like a central bank to record the transaction in the ledger. Cryptocurrency blockchains are commonly maintained through a consensus mechanism like Proof-of-Work (PoW) mechanism whereby miners can show to the rest of the network that they have invested significant resources to assist in the validation of transactions.

<Figure 5> Decentralised and Distributed Ledger in Cryptocurrency Network



As of September 2019, Bitcoin is the top cryptocurrency and the highest market capitalization among the other cryptocurrencies [13]. Since 2008, blockchain applications have then reached its high level uses cases in financial sectors especially in other cryptocurrencies market with the launch of the like of Ethereum, Litecoin and Ripple. Ethereum for example is open access to digital money and data-friendly services for everyone [14]. It is a community-built technology behind the cryptocurrency Ether (ETH) and thousands of applications that can be used today.

Many believe that blockchain and its use in cryptocurrency technology will allow shifting from traditional money transactions to digital ones supported by means of using secure ledgers in the coming years [15]. It is also discussed in [16] that all major banks in the world such as UBS, Deutsche Bank, Bank of Santander and Bank of New York Mellon are actively exploring the application of blockchain technology to speed up the digital payment, thus reducing the time and cost in the transaction. Payment can be performed cross border and directly between the two parties (sender and receiver) without the charge by the third party via the distributed network.

While cryptocurrency and finance sectors remain the most successful implementation of blockchain, they possess some risks and vulnerabilities that cybercriminals have targeted this sector to perform illegal activities such as selling illegal goods, money laundering and business scams. Thus, the law (including privacy law) and dynamic

regulation for cryptocurrency and finance are essential to mitigate such risks and threats. Another issue that even though all cryptocurrency transactions and balances are publicly seen in the network including the addresses of the sender and the receiver in the permissionless blockchain, the identity of the user behind them are not normally registered and become anonymous. Such anonymity in nature, the user or the participant is remaining anonymous to all the transactions made in the network (e.g. during the Bitcoin payment of a ransom to anonymous cybercriminals). Thus, to facilitate the lawful investigation of suspicious cryptocurrency transactions, such as those used in cybercriminal activities, there has been increasing interest in future in designing a forensically friendly cryptocurrency architecture [17].

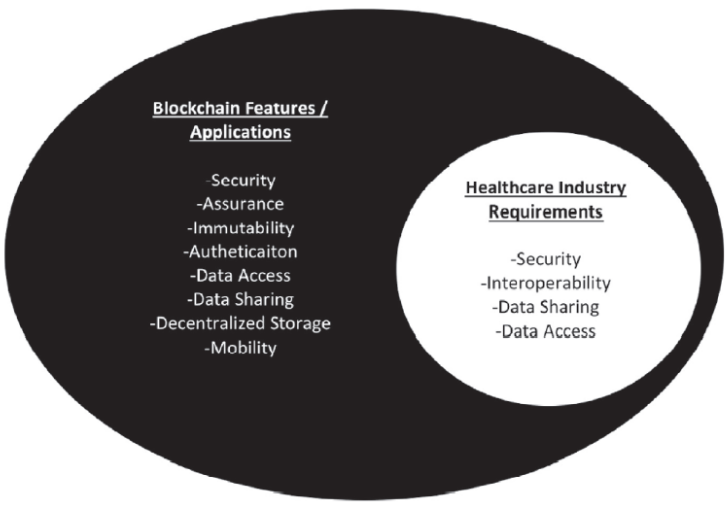
2.2.2 Healthcare

Currently, the electronic health records possess the limitation and problems that involve complex data-sharing agreements between hospitals, physician providers, public health departments, and the Centers for Disease Control (CDC) during recording, accessing and sharing patient data. Blockchain can be introduced to reduce such problems and shall create a transparent and legally compliant manner [18]. Due to the advanced features of blockchain such as distributed and decentralised ledger, consensus mechanism, digital signature, hash chains and reliable storage, it provides numerous services including traceability, integrity, security, and non-repudiation [19]. Thus, these services make blockchain has great application potentiality in the fields of healthcare as it can preserve the privacy of its health data and record as shown in Figure 6 [20]. In this way, blockchain can be used to store and protect patient's health information from being tampered and restrict private and sensitive information from being accessed by unauthorized users.

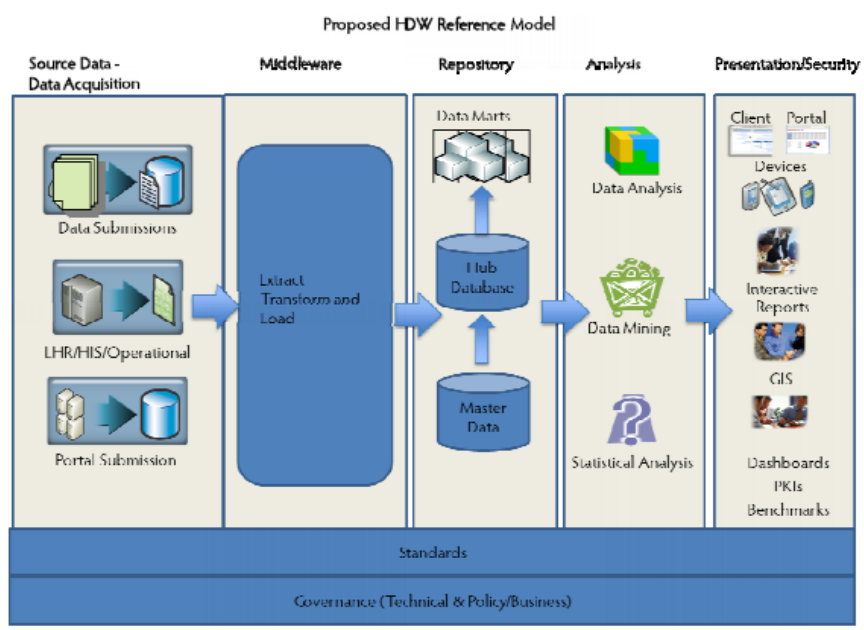
In [21], major challenges in the healthcare industry includes patient's security and privacy regarding data sharing and also the research or commercial demands of health data. In Malaysia, sharing healthcare data is important as it can be leveraged to better manage and improve the nation's health system especially during Covid-19 pandemic. Also, it provides a valuable source of data for research especially data from patients with COVID-19. Thus, a platform such as data sharing will benefit from making well-informed decisions and planning in Malaysia's health sector. Currently, Malaysia

has the Malaysian Health Data Warehouse (MyHDW) which connects the public, private hospitals and clinics to share a variety of information and knowledge including a patient's medical records intended to improve decisions on patient care. MyHDW flow of information is shown in Figure 7 [22].

〈Figure 6〉 How Blockchain meets Healthcare Requirements



〈Figure 7〉 MyHDW Reference Model [22]



In the field of healthcare, a number of several privacy and security breaches worldwide are increasing every year and the industry in the US experiences more data breaches recently [23]. Based on the trend, there have been some public concerns expressed about the privacy in Malaysia's MyHDW that the highly sensitive, personal data in compliance with the data privacy laws and security regulations such as Health Insurance Portability Accountability (HIPAA). Thus, one solution would be a proposed blockchain decentralized storage based which provides immutability, confidentiality, integrity and privacy-preserving for information sharing and data warehouse. This can be allowed by using cryptography to ensure the immutability, confidentiality and tamper proof (i.e. integrity).

Another use of blockchain technology is to prevent medicine counterfeiting by ensuring the identification and traceability of pharmaceutical products throughout the supply chain. One example of anti-counterfeiting blockchain application is using scrambled QR (quick reaction) code security as a method to track the medicine from producer to the end consumer [24]. Thus, the consumers can check and being verified that the medicine is genuine or not, making the fake medicine produced by counterfeiters has no market.

2.2.3 Supply chain management (SCM)

Currently, in the supply chain management (SCM) system, the supply chain itself involves various players in the business process such as manufacturers, suppliers, distributors, retailers and customers. The produced product then travels upstream through a sales network. However, along the way, the complete information in regard to the product details (including the payments) that flows through the supply chain is not available to the various players. Therefore, transparency and traceability have always been critical issues in supply chain processes. Blockchain is viewed as a solution for SCM traceability problems [25]. Walmart has introduced blockchain technology in its food supply chain process. They have created a food traceability system that would be able to track their food products from the farm to their stores. In a case when food gets contaminated, the blockchain system can transparently track the contaminated product quickly as they have stored tall the transactions of the products from the farm to their stores. Through

a pilot test in 2017, the developed technology proved that it is able to obtain crucial data such as suppliers, the process of production and shipment details using a database that stores information from the pallet to the individual package [55].

With the introduction of blockchain and its distributed ledger, it allows the major players to have duplicated transaction records, shares the ledger and able to keep track of the process flows. The manufactures can trace problems related to the product in terms of its materials and components. It can also track purchase order and invoices, stock levels and goods received information. Smart contracts in blockchain can be automated for payments to be made when it is triggered by time or from a verified data transaction. The advantages of this feature may put thrust among the parties and reduces manual errors. Industrial pilots such as Provenance, Walmart and Everledger have illustrated the capability to improve the visibility of physical movement, asset transfer and quality assurance [26].

To summarize, currently, the world is aggressively developing related technologies to apply them to various industrial sectors and businesses as blockchain technology has many benefits for individuals and organisations. In this chapter, we have shown how blockchain has progressed beyond the application of cryptocurrency and now we have seen such a wide range of uses that makes blockchain technology more attractive. It is worth to see in future how governments can leverage policy and blockchain technology to stunt public corruption [27].

It is believed that blockchain and distributed ledger technologies carry strong potential in practical, real-world applications, and encourage interested parties to join in the community to further explore the relevant use cases and implementations in their respective domains. In the next chapters, we shall look at the application of blockchain in the military domain.

Chapter 3. BLOCKCHAIN IN MILITARY APPLICATIONS

3.1 Introduction

In recent years [28], Internet of Things (IoT) devices are collecting ubiquitous data in a centralized form; hence security and space problems are generated and compromised [31]. Usage of Blok Chain (BC) is used to mitigate this problem by implementing a decentralized database in IoT devices [32]. Any transactions in BC should be immutable, secure, explainable, digitally signed, and validated which is used in many applications such as healthcare, agriculture, smart home, military, government, and smart transportation [33].

An IoT device ecosystem consisted of a control mechanism where these sensors can control other devices in the system, and it can be controlled by other devices in the network. The connected ecosystem offered by IoT has shown the potential of enormous challenge for security, performance, availability, and cost factors of the solutions. On the other hand, in defense, the ability of IoT technologies to combine networked devices and machine intelligence will impact the performance on a battlefield too. IoT technologies on the battlefield such as warfighting resources e.g. sensors, munitions, weapons, vehicles, robots, and wearable devices will be linked to perform tasks such as sensing, communicating, acting and collaborating with human warfighters. This manifestation of IoT ecosystem is premeditated to help the warfighter to undertake coordinated defensive actions and conduct a variety of attacks on the adversary through collaboration, communication and joint planning, and execution is referred to as Internet-of-Battlefield-Things (IoBT)[29].

The battlefield of the future will be in the new era where it involves Intelligent of Things for combat gear embedded with biometric wearables for sensing, communicating, acting, collaborating and human warfighters[30]. These devices are designed with sensors, munitions, weapons, vehicles, robots, and human-wearable devices [29] as in Figure 8. These new predictive battlefield analytics include data collection, data processing and eventually assisting soldiers in sense making, undertaking coordinated defensive actions, and unleashing a variety of effects on the adversary to improve situational awareness, risk assessment, and response time.

〈Figure 8〉 An overview of the Internet of Battle Things, where a variety of systems and devices will communicate and collaborate on the battlefield [29]

Nevertheless, the massive and distributed data scheme of IoBT devices will create security and privacy challenges. Firstly, the underlying IoBT networking and communication infrastructure needs to be flexible and adaptive to support dynamic military missions [31]. This dynamic change to the communication infrastructure from centralized to the decentralized system is needed. Second, it is important to ensure the authenticity of the information made available through the IoBT devices. There is a need for a trusted platform to ensure the information consumed by the human warfighters is accurate and secured. A leak of information can lead to a failed mission. There is a need for a robust platform that promotes a tradeoff between resilience and risk of conducting operations in a decentralized fashion.

In supply chain and asset management, maintaining data integrity in Defense System is a key component for security practices where it involves situational awareness and command and control information tracking. Blockchain technology is a potential

solution to achieve data integrity. It is known as tamper-resistant digital ledgers which rely on cryptography techniques implemented in a distributed fashion. The immutability of the distributed data in a blockchain is the strongest features when the chain is long, and the number of witnesses is large. Hence, this is a challenge in tactical networks when processing power, memory and bandwidth are limited. However, there are ways in which blockchain might be applicable to offer data integrity where it is not currently a significant consideration, which may support future cyber operations by providing auditing, resource management and authentication functions [32].

3.2 blockchain used in Military Intelligence

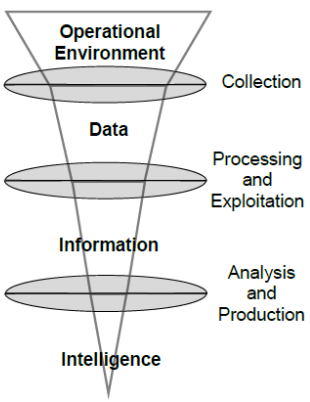
Military Intelligence is a military discipline that uses information collection and analyzed approaches to provide guidance and direction to assist commanders in their tactical missions to enable timely decision-making. The military intelligence community can be divided into five intelligence organizations that play a vigorous role in the collection, analysis, production, and dissemination of intelligence materials [33]. Each military intelligence component has its collection requirements and processes aligned to its core mission [34]. The source of intelligence in information collection may have comes from public sources, photointerpretation of high-altitude pictures of a country, published journals, radio spectrum eavesdropping and so on. This intelligence information is analyzed to predict the adversary's capabilities and vulnerabilities. Human intelligence skills are also necessary at this stage. Critical vulnerabilities will be deduced in a way that makes them easily available to the intelligence advisors' personnel who broadcasted this information for policymakers and soldiers. Finally, the final intelligence information will be disseminated through a dedicated database or command and control system to the different decision-markers, e.g. commander.

Figure 9 depicts a core tenant of intelligence tradecraft adopted from Joint Publication 2-0 [35], which sets the overarching doctrine for U.S. military intelligence. The aim is achieved by providing an analytical assessment of data from a range of sources including tactical, operational and strategic level. To do so, the collection, processing and exploitation, and analysis and production processes must be efficient and effective

at carrying only the relevant facts through to the next phase of intelligence production as in Figure 9 below.

Tactical intelligence is focused on support to operations at the tactical level and would be attached to the battlegroup. At the tactical level, briefings are delivered to patrols on current threats and collection priorities. Tactical intelligence is used by commanders, planners, and operators for planning and conducting battles, engagements, and special missions.

<Figure 9> Relationship between data, information, and intelligence [32]



Operational intelligence is focused on support or denial of intelligence at operational tiers. The operational tier is below the strategic level of leadership and refers to the design of practical manifestation. Strategic intelligence is concerned with broad issues such as economics, political assessments, military capabilities and intentions of foreign nations.

Nowadays, we have seen many robotic systems leveraging the blockchain technology, especially in industrial and military environments to accommodate systems so that the security and process traceability is not compromised [36]. The blockchain introduces data protection via decentralized infrastructure where users have their data on their devices, or a private cloud encrypted by their private key. The data is owned by the user and there is no spread or collection of such data on a centralized server. For example, a swarm of “Cop Robots” that patrol the streets greeting people and looking

for miss-behaviors [36]. These robots could interconnect over the blockchain and have action-triggers with smart-contracts. These could run when they spot a person hurting another, to have the intelligence approach to opt the best strategy to approach the scene or to call for help.

To produce more secure, autonomous, flexible and even profitable robotic swarm operations system in industrial applications, from targeted material delivery to precision farming, the combination of blockchain with other distributed systems have been proposed [37]. This paper describes how blockchain technology can offer innovative solutions to four emergent issues in the swarm robotics research field. These four emergent issues in swarm robotics technology are:

- data confidentiality
- distributed decision making
- adaptive to environment control
- legal and safety regulations

Furthermore, this paper elaborates on new security, decision making, behavior differentiation and business models for swarm robotics by providing case scenarios and examples.

UAVs have been utilized in many sectors these days. The use of drones in the military applications have increased to a large extent. The drones used in military can be in various sizes including small drones for intelligence and surveillance, to medium-sized armed and large drones for spying purposes. Military drones are often equipped with many sensors, radar, videos, image intensifiers and infra-red imaging for the night and low-light detection. They can also carry missiles. Nevertheless, these drones can be easily attacked by hackers. These hackers steal important information in drones by tapping the drone camera. In 2009 some Iraqi militants were able to get access to the drone footage where they have gained a lot of leak information about the military intelligence [38]. The drone will be easily compromised when they are controlled remotely in a wireless environment. Drones that can be reprogrammable are also susceptible to be compromised. These exposures allow hackers to crack the programming suite resulting in loss of information, money or even lives which can be

dangerous to humans.

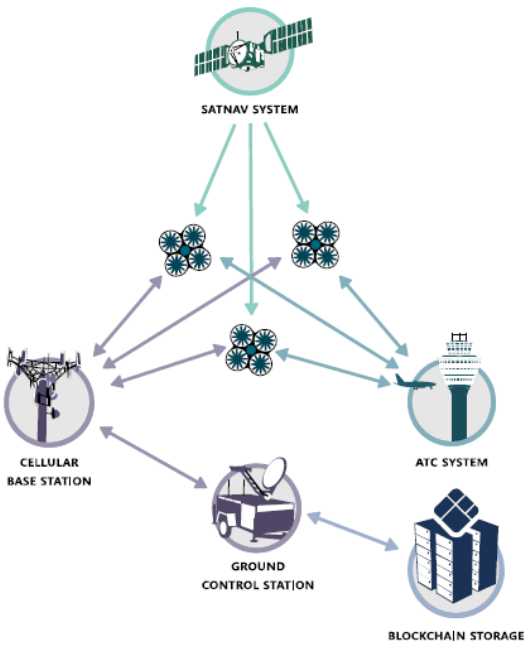
Because of these threats, intelligent approach for UAV and Drone privacy security using blockchain methodology has been proposed using image gathering and sense of the UAV with blockchain security to provide a security mechanism by encrypting the files using hashing [38]. Timestamp has been implemented to keep a log of transactions between the server and drone with its GPS location to provide a generic, scalable, and easy-to-manage access control system for drone's footage. This technology can be implemented on any consumer drones with mobile phones to act as independent servers working in a decentralized blockchain setting.

Another paper discussed on using Blockchain in UAV is proposed by [39] where each UAV in the UAV's communication network (UAVNet) is a blockchain node. This system employed an onboard functionality for creating and reading transactions from the block, as well as communication tools for exchanging transactions with other UAVs. Falsification of any of these UAVnet data may cause significant negative consequences. UAVNET can produce data such as:

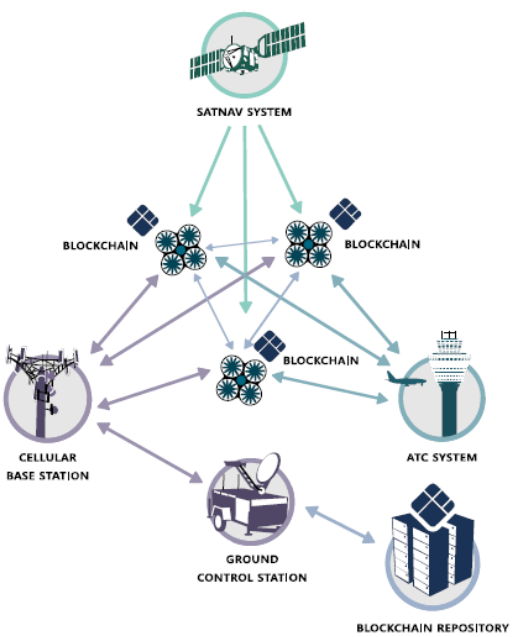
- UAVs' Identification (UAV ID)
- Fly route control program with routing sheet
- Flying Coordinates (route sheet)
- Sensors/LIDAR's data
- Flying schedule

Here, each of the data types can be written and updated in the block of blockchain for reading for decision purposes. For instances, flying route control and flying schedule can be implemented into smart-contract. The fulfillment of the conditions of the smart contract is an indicator of the completion of the UAVs' flight mission. Blockchain minimizes the threats and protects the integrity of blocks' data and storage data when via hash (Checksum) features of this data [36], [37]. In the case of UAVNet, it is not enough to ensure data integrity in external storage where there is a high probability of an attack in communication channels between UAV and Ground Control Station (GCS) or the Satnav communication channel as in Figure 10.

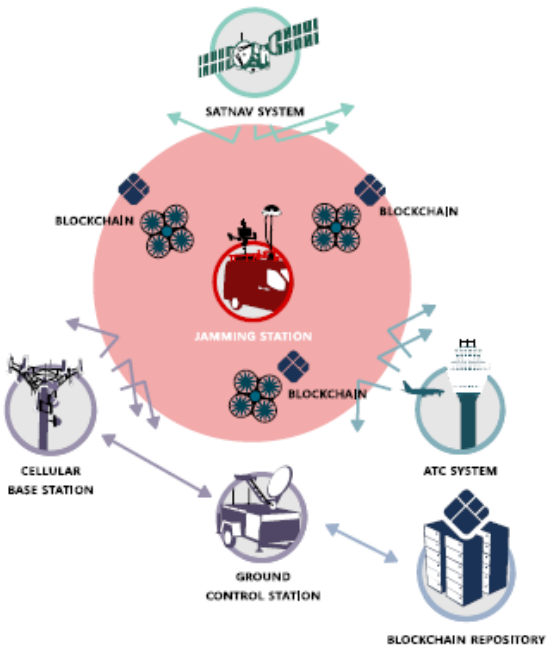
〈Figure 10 (a)〉 Blockchain as an External Storage [39]



〈Figure 10 (b)〉 Blockchain as a distributed control and security system [39]



<Figure 11> Blockchain used in Jamming Station [39]



In Figure 11, blockchain is used in managing and storing data of a fly route control program (smart-contract) with the ability to operate without obtaining coordinates from the Satnav system. This scenario will also guarantee the autonomy of the UAV when communication channels from other components of UAVNet are lost. The UAV stored the readings of the sensors and flying schedule of neighboring UAVs only in the fully automatic mode until it is out of jamming zone range to minimize the consequences of such a threat.

3.3 blockchain used in Military Assets and Shipment

The modern military logistics and supply chain involve so many participants, which potentially introduce numerous failure points, unnecessary costs, and result in inaccuracies and misrepresentation within the logistics activities. By providing a single source of truth and supporting intelligent automation, blockchain can address these challenges. The benefits of blockchain in military logistics can range from increased delivery speed, traceability, safety, and reduced costs. As a result, the warfighter on

the battlefield can be assured that when supplies reach them, they are meet their requirements and have not been tampered with. Moreover, the benefits of blockchain can extend into the manufacture of weapons systems and other military equipment. Blockchain can ensure that all components and subsystems are authentic and meet requirements and that the supply chain has not been tampered with. Further, by closely tracking the origin of individual components, blockchain as combined with IoT can ensure that the defense manufacturing supply chain has not been tampered with or that bad actors and proscribed suppliers have not in some way entered the chain.

Counterfeit is a global issue where its potential harm to consumer goods as well as military assets is profound. The Global Brand Counterfeiting Report predicts the total of global counterfeiting may reach USD 1.82 Trillion by next year [40]. The reported counterfeiting products are ranging from household products to defense spare parts. Moreover, the US Department of Defense estimates there are about more than 15% of military counterfeit spare parts including weapons and vehicles [41]. In order to ensure the authenticity of the delivery goods or assets, Defense Advanced Research Projects Agency (DARPA) is developing microscopic chips to help crackdown on knockoff parts destined for weapons and satellite systems.

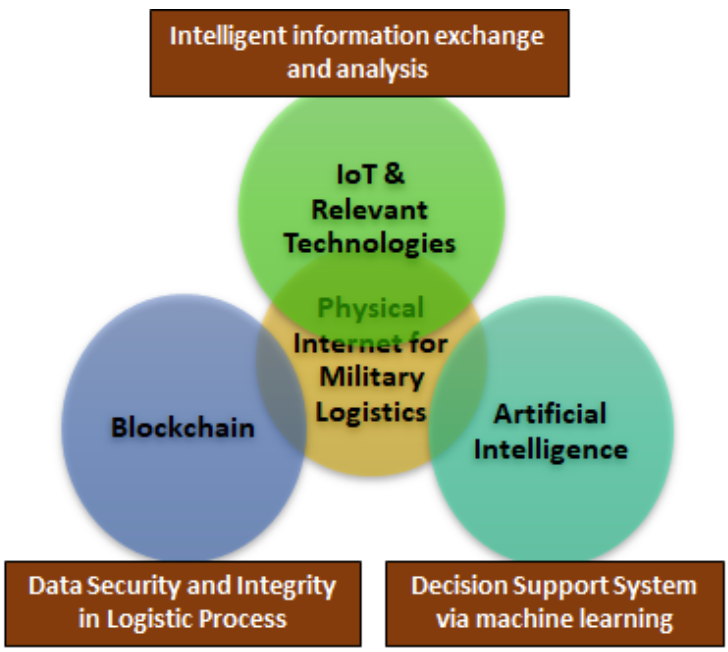
Blockchain architecture that has the core characteristics of decentralization, accountability, and security will improve the process of current supply chain management in military assets and shipments. This technology notifies all involved parties on the movement of spare parts where it can assist multiple parties to track and trace blockchain records action at the same time without a loss of data. Therefore, integrating blockchain in the current military supply chain management will counter-attack the counterfeiters by uniquely mark and later identify electronic components in its supply chain. In [40], they proposed a blockchain framework focusing on Navy defense shipment to improve the asset tracking including military weapons, gear, and spare parts.

In logistic management, the Physical Internet (PI, or π) paradigm has been developed to overcome current logistic implementation system since it can address the grand challenge characterized by unsustainable and inefficient performance of logistics

operations and procedures [42]. To obtain the global sustainability and efficiency in military logistic operations, this paper highlighted a full-fledged PI that can be a promising option for military logistics activities in the future. In Figure 12, the three key technology areas that will be adopted are:

- PI with Internet of Things (IoT)
- PI with Artificial Intelligence (AI)
- PI with blockchain

<Figure 12> Physical Internet Platform for Military Logistics



Many new digital technologies including blockchain implementation at various military applications hold insights for manufacturers and users. Some robust ecosystems with blockchain integration are emerging to produce smart and secured connected products. These ecosystems are growing in the military's battle against counterfeiters and knockoffs that potentially place their personnel and the public in harm's way.

Chapter 4. MILITARY BLOCKCHAIN ECOSYSTEM

4.1 System Model Architecture of the Military Blockchain

In the early implementation of military blockchain is only offering the automated digital ledger focus on the transaction's operations. As blockchain evolves from cryptocurrency to contract and decentralized application, a military blockchain system shall run without a cryptocurrency (no mining fee). Every transaction in the decentralized applications shall run and follow a smart contract. This will operate the transactions management while seamlessly integrating with the existing military applications/systems.

To implement this type of military blockchain architecture, some alteration and enhancement must be done based on the existing system flows system. This improvement will ensure the current processes are secured using blockchain in the backend process. Data secrecy protection from the involvement of the non-military authorities is possible to be achieved in the shared ledger platform by improvising the blockchain protocol features.

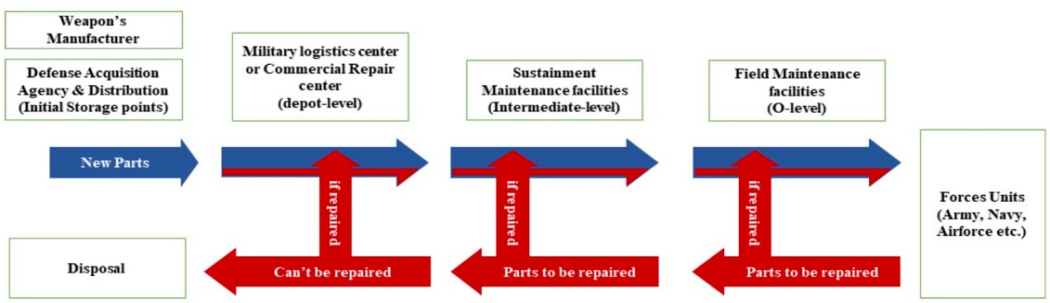
The current blockchain protocols are including Proof of Work (PoW), Proof of Stake (PoS), and Proof of Authority (PoA), DPoS (Delegated Proof of Stake), PBFT (Practical Byzantine Fault Tolerance) and Ripple. Each of them has their strengths and weaknesses. The existing consensus protocol is designed as a validating mechanism and offering incentives (rewards) to the successful validator (miner). However, this protocol is prone to system vulnerabilities such as malicious behavior, potential cyber-attacks, and collusion.

For instance, PoW algorithm is using intensive energy to validate transactions. While, PoS algorithm allows validators to simultaneously create blocks in multiple chains and automatically deducting coins owned or deposited. A good consensus and traceability protocol which based on the existing protocol should consider a good fault tolerance and how to make the best use of it in the appropriate application scenario. Thus, the proposed consortium is using Proof of Authority (PoA).

Majority of blockchain technology implementation is using a private blockchain as a whole system which composed of the basic layer of blockchain. The blockchain

architecture for military blockchain is created based on the blockchain proposed for managing the supply chain in the industrial application. Operation logistics is considered an important element to support military operations. The military operation includes providing the Armed Forces with a resilient supply system [43]. The current Military Supply Chain Management (MSCM) is complex and complicated. Figure 13 shows the flow of repair parts from/to the functions and related organization in common MSCM.

<Figure 13> Common MCSM workflows



Activities such as information and knowledge sharing among involved parties are prone to the cybercriminal. Protection of such private and confidential documents are very important. Therefore, a military supply chain derives a critical need for decentralized and digitize transactions in the modernity ledger.

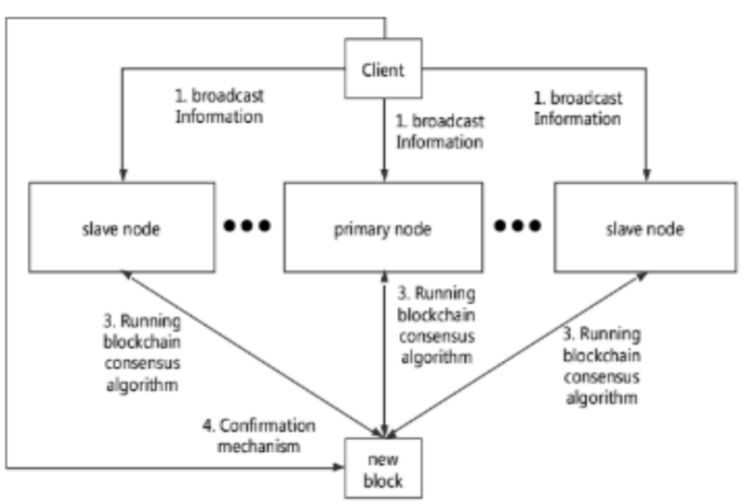
All the military supplier must register to the MSCM blockchain as a certified company. It must have a traceability certificate too. Also, the depot will register and award an authority privilege to their personnel. One of the personnel job scopes is to check the originality and authenticity of the spare parts. A decentralized blockchain is introduced to replace the current procedure in receiving the spare parts in the depot. The recommendation above also takes into accounts all the factors of cyber resilience, which are policy, process, technology, and people. The military blockchain is using a. consortium blockchain. Depot administrator will become the owner of this blockchain, and he/she has full privileges on these supply chain. The privileges are including reading access to transactions, and authority to override on the blockchain. This type of

blockchain applies to defence sector due to the nature and sensitivity of the information.

In general, the main interest of military logistics and acquisition management is to ensure how well to equip and sustain its own equipment's especially weapon systems for their operations in the battlefield. In order to do this, armed forces must maintain and manage carefully their inventory items. These inventories which are used in repairing weapon systems need to be continually monitoring starting from products manufacturing company to the storage locations, and continues to the military units, to repair facilities, and lastly to the disposal storage. This extensive network in the military supply chain involves personnel, man-hours, resources, facilities, and repair parts are very important to the operational success of their forces.

The consensus mechanism performance is an important element in the blockchain technology as it affects the user and members within the blockchain. The implementation of consortium blockchain for military message passing is proposed in a research done by Kavya K R and Smt. Kavitha M. Based on the research, a new approach of consensus algorithm called as Hierarchical Pattern-Based Clustering (HPBC) algorithm is introduced to improve issues on the lack in performance of the blockchain PoW [44]. Figure 14 below shows the blockchain system model for the HPBC algorithm.

〈Figure 14〉 The system model for the HPBC algorithm [45]



The basic characteristics of blockchain as follows:

ⅰ. there will be no trusted central authority that will control the blockchain, and

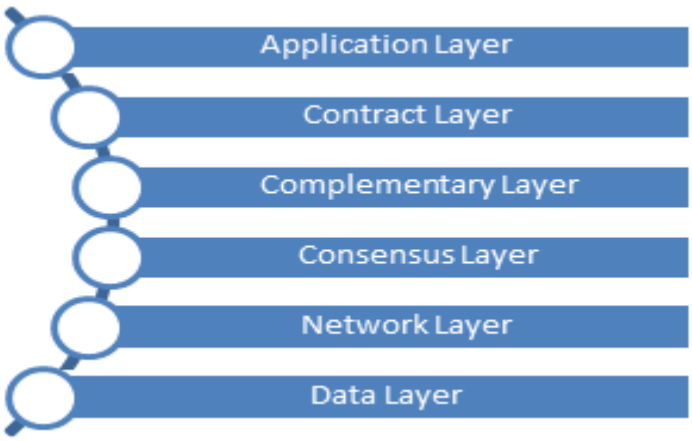
ⅱ. no control over the participant's action to retrieve the information shared within the system.

These characteristics give benefits in term of the data transparency and visibility; however, it will affect the data integrity between "insider" and "outsider" of the block participants [45]. Based on the existing blockchain for Military Supply Chain Management (MSCM), the blockchain architecture proposed is based on private blockchain where the supplier and military authorities will share the same ledger [45][46][47][48]. If the systems follow the existing military private blockchain system, the supplier will be able to retrieve the updated information of the transaction process within the military blocks. The limitation in term of the confidential data protection will be at risk as the supplier is included as part of the blocks in the private blockchain systems.

Military data is compulsory to be maintained in secrecy especially the data related to the information on the movement of the military's routine operation. The involvement of outsider in the case where the supplier is required to be the part of the participant in the blockchain in the current defense system application might become a contributing factor towards breaching of the confidential data. These issues will lead to the possibility of the intrusion of an attacker on the military systems and this will lead to cyber security's fallacy. The possibility for cyber hacking from the outsider on the military's information system to occur in the future needs to be put into the military information's risk management consideration.

Therefore, MSCM should be built using a consortium Military Blockchain which composed of private blockchain and public blockchain. The consortium Military Blockchain consists of multiple layers such as Application Layer, Contract Layer, Complementary Layer, Consensus Layer, Network Layer and Data Layer as shown in Fig. 15.

<Figure 15> Consortium Military Blockchain Layer



Each layer supports the secured and immutable transactions between all participants including insider and outsider. Below is the description for each layer in the proposed consortium military blockchain:

i. Application Layer: decentralized application to work seamlessly existing systems, or application which is using blockchain technology as a backend system.

ii. Contract Layer: automate and intelligence military information systems, reducing the uncertainty, diversity and complexity of human and other factors bring to military management.

iii. Complementary Layer: a programmable incentive mechanism to avoid all kinds of misbehaviors and achieve positive behavior incentives.

iv. Consensus Layer: encapsulate various types of consensus algorithms to achieve autonomous and credible decision-making.

v. Network Layer: guarantees self-organizing and decentralized features of military information systems

vi. Data Layer: guarantees the data or intelligence reliability, credibility and security of military information system.

For instance, when a participant is sending a transaction, “pay supplier A the amount of USD 100,000”, a node will be created. Then, the transaction must follow the

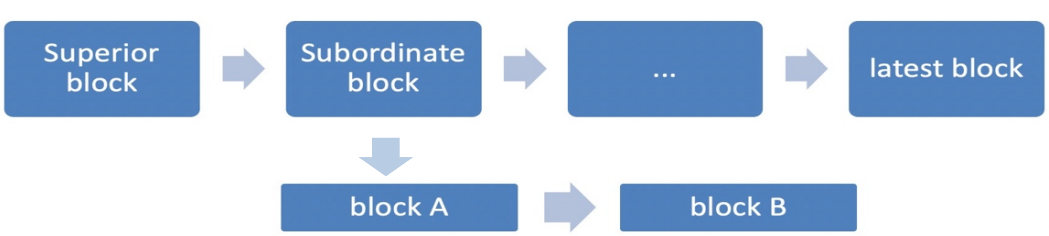
information in a contract layer to automate the further process. A group of validator nodes must verify the transaction, and they will receive some token/incentive based on the complementary layer. If the transaction is genuine, then, it will be approved in the consensus layer. The node will be added in the blockchain network and the data layer will strengthen the transaction and also the node's security based on CIA.

4.2 Consortium Military Blockchain Implementation

The blockchain is composed of the Client mode which is an Application Programming Interface (API) network system. The Client chain includes the consortium promotor from more than one affiliation that allowed to send quotation on the product to the founding members from the military depot. To ensure the quotation shared is genuine and not contain unrelated information, the consortium promotor requires to undergo operating rules which working to only filter the required information. Block of the founding members proposed is set as a superior block. The superior block is the first block of the blockchain that control the first transaction of the purchased order. The role of this block including to select and distribute the best quotation to subordinate block, to collect purchase requisition, verifying transaction of the purchased product and access the information of the ordered product movement. Figure 16 shows the MSCM conceptual blockchain network.

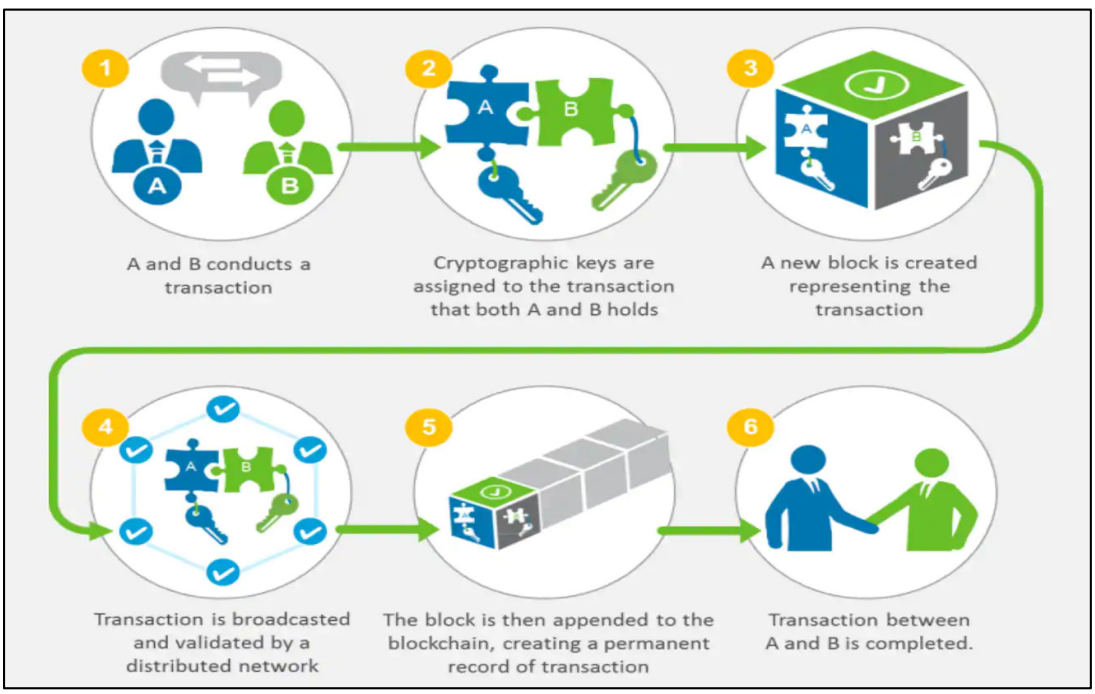
The decision making and order placement by subordinate block is connected by the smart contracts [49]. Smart contracts are computer programs that enforce rules without needing a third party.

<Figure 16> MSCM Conceptual Blockchain Network



In the proposed system, the smart contract is set for the transaction validation within the subordinate block. Contract owners create digital tokens after producing or obtaining physical products. The movement of the verification processes is set to follow a strong consensus layer. This combination is an alternative algorithm to improve data security and privacy while tracing the transactions within the military block upon usage. Figure 17 shows the transaction process on a blockchain network proposed by [50].

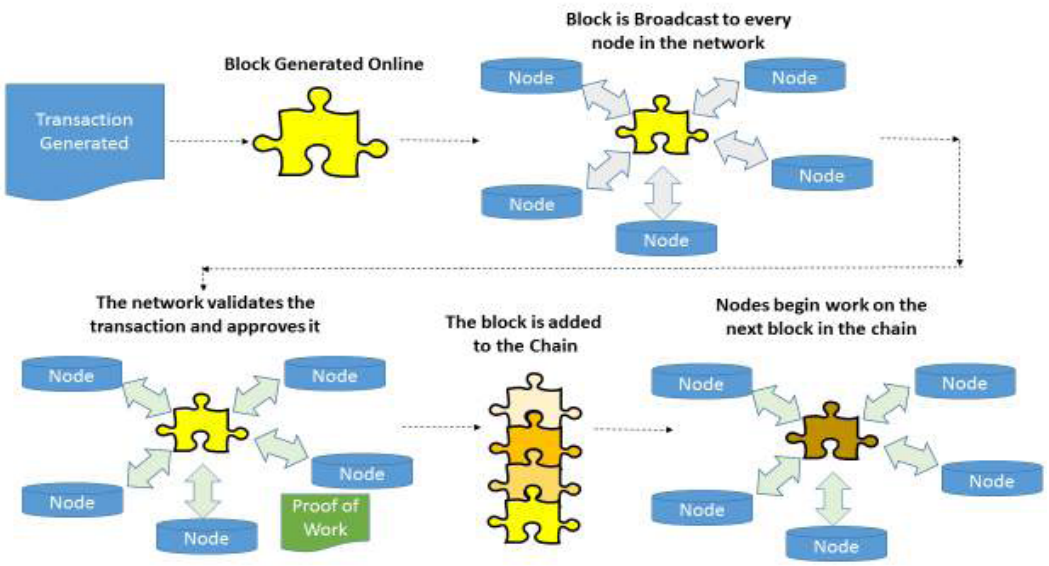
<Figure 17> Blockchain Process [50]



The blockchain process starts when two persons A and B are conducting a transaction. Cryptographic keys using public key infrastructure (PKI) will be assigned to the transaction. Then, a new block will be created to represent the transaction. Before the block is added to the blockchain network, the transaction will broadcast in the blockchain network to be verified. The verification process depends on the selected consensual protocol. If the transaction is verified, then the block will be appended to the blockchain network. Thus, the transaction is recorded. Finally, the transaction between A and B is completed. Any changes to the recorded transaction on that block are disallowed. Process will start from the beginning if any person would like to edit

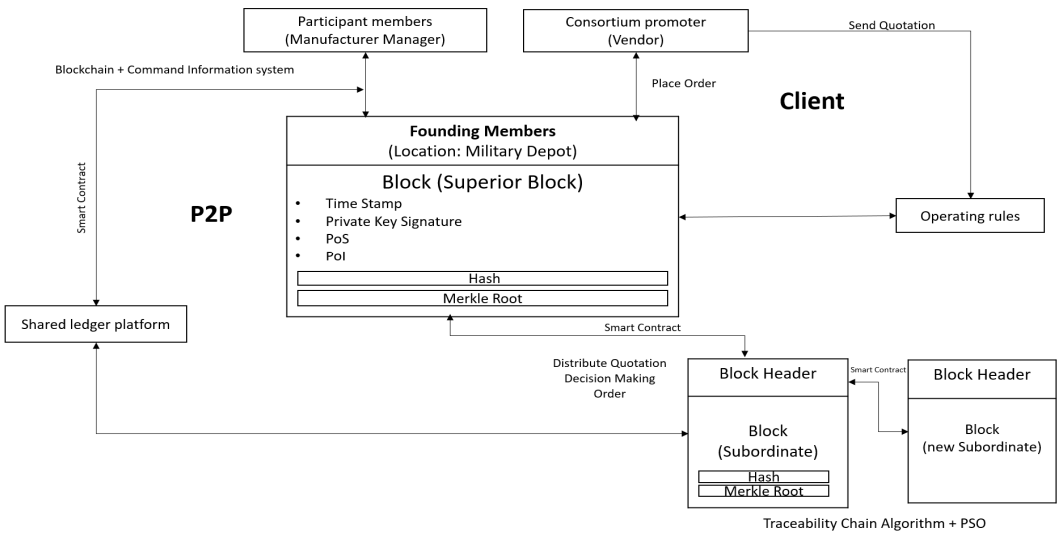
or delete the recorded transaction. Figure 18 shows the detail process of blockchain after the transaction is generated.

〈Figure 18〉 Blockchain Process [51]



MSCM may apply this blockchain process by creating a block for a transaction. For example, when a supplier A is issuing an invoice, a new block will be generated. The act of issuing an invoice is a transaction in a blockchain process. Let's call the transaction as Transaction 1 in the new block, Block#100. It will be broadcasted in the private blockchain (military side). Then, nodes in the blockchain network will mine the Transaction 1 for verification. Nodes in the blockchain network could be dedicated computers, military personnel, etc. Nodes must check the validity of it to either accept or reject it. These nodes will use Proof of Authority to validate and approve Block#100. Once Transaction 1 is approved, nodes will save and store information about Block#100. The information of Block#100 such as previous hash value, timestamp, payload, block signature, etc. Later, the nodes will broadcast and spread Transaction 1 history in a blockchain network. This will expedite the synchronization process with other nodes in the blockchain network.

<Figure 19> Example of System Model of Consortium Blockchain for Military



The private blockchain includes the blocks of participant members, founding members, and subordinate block. The block is operating using P2P Network layer and this private blockchain is implementing the secured blockchain and command information system. The role of the participant members is limited only to verify the certification of the purchased product, providing full products documentation and views the verification agreement from the superior block. The participant member can share and verify but not allowed to either update ledger history or creating a new subordinate block. Figure 19 shows an example of a system model of military consortium blockchain.

4.3 Consortium Military Blockchain Implementation

The consortium military blockchain architecture is designed based on permissioned blockchain. Permissioned blockchain system for military blockchain will be ensuring all the data stored within the military nodes are protected against malicious attack. The permissioned blockchain or also called a private blockchain is the most ideal blockchain for the military. Several requirements need to comply in designing military blockchain based on the legal and regulatory for data protection settings. Defense Advanced Research Projects Agency (DARPA) proposed research on the deployment of

private blockchain; however, the improvement on the blockchain technology is still in research progress.

Blockchain technology applications for the military are various not limited to military logistic and military message communications. Kavya K R et al. proposed a consortium blockchain to improve PoW algorithm for military message communication [44]. The military should select the type of blockchain (network topologies) depending on the purpose of decentralized applications/systems. It is suggested that any involvement with the outsider (non-military) should be separated with the insider blockchain network. In addition, smart contract must be crafted/personalized for each application/system. This will make the application/system runs smoothly and faster. And the most important is the data is secured and tamper-free.

As a recap, consortium blockchain is a semi-decentralized in which the system allows multiple organizations to participate together [44]. This type of blockchain is an ideal blockchain which complies with the demand of military activities requires the involvement of the various parties from multiple affiliations in line with the military authorities. The consortium blockchain gives arise to improve the issues on data privacy, where the features in the system can protect the military confidential information from non-authorities. The best way to protect data privacy is by separating the agreement through smart contract for the non-military and military authorities. Through a separate a smart contract, the confidential military data in the shared ledger will be secured. This will help to lower the fallacy percentage of the military data management risks on the cyber attacker's intrusion from the outside source.

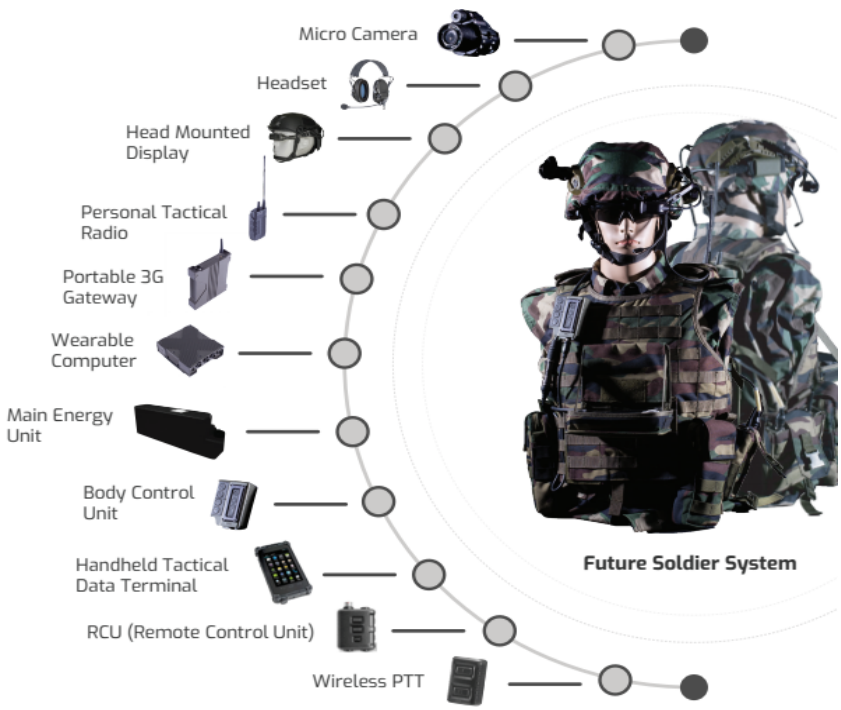
Chapter 5. Future direction and conclusions

currently, the world is aggressively developing related technologies to apply them to various industrial sectors and businesses as blockchain technology has many benefits for individuals and organisations. In this chapter we have shown how blockchain has progressed beyond the application of cryptocurrency and now we have seen such a wide range of uses that makes blockchain technology more attractive. In general, blockchain technology has been implemented in other sectors such as financial services, healthcare, real estate and supply chains and logistics. This technology shows the benefits and challenges of blockchain implementation in the aforementioned sectors.

In the next coming years, the defence strategy between two countries will be in leveraging for new military based applications that implements blockchain technology in critical areas such as cyber defence, secure communications, resilient communications, supply chain management and Internet of Things. During battlefield, the army suffers a lot due to the unavailability of information of injuries to its personnel which may increase the death/permanent disability toll. It is observed that the causalities are caused by injuries rather than the direct assaults in the battlefield. To overcome this matters, an Intelligent of Battlefield Things (IoBT) secured ecosystem including health monitoring and tracking system for soldier might be one of the technology to be discovered.

The future system will consist of several sensors that can be worn or mounted on the soldier's body to track their health status and current location using Mobile X-band Satellite Communication and GPS technology that can be monitored via dashboard monitoring as in Figure 20. Besides, this system can be equipped with blockchain technology to secure the health and tracking data, as well as the communication data between soldiers and to/from the Command and Control Centre. The proposed system supports sustainable development by using integrated IoT sensors with solar-powered technology (renewable energy) and/or rechargeable batteries to predict current health condition of soldiers thereby improving the predictability of battlefield events, as well as supporting disaster response and recovery efforts. This knowledge helps us make informed decisions about policies design in cyber-security related to IoT and use our resources more efficiently in designing secure and reconfigurable IoBT networks.

<Figure 20> Future Soldier System [54]



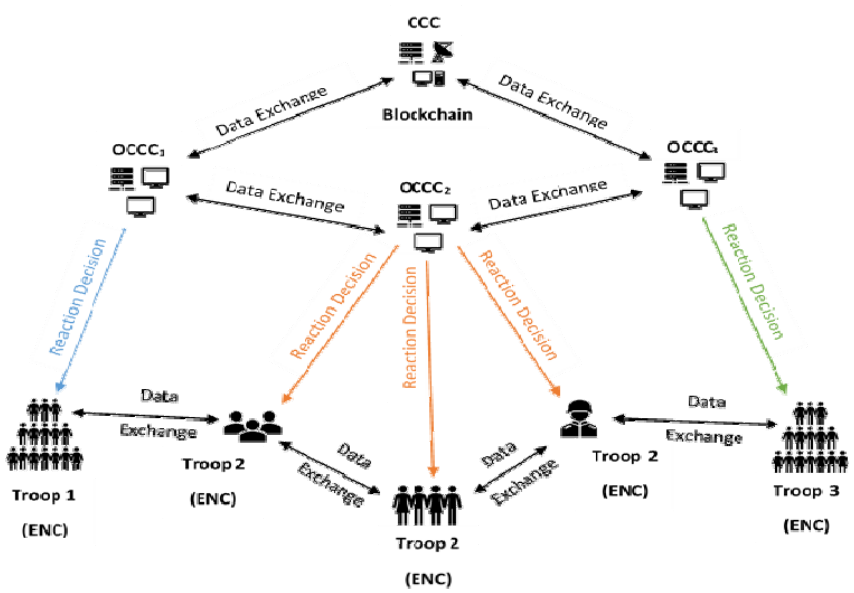
Furthermore, future research in blockchain will be in securely data communications and transmissions in inter-domain cooperation, that is the communications between soldier to soldier or between troops and data transmissions (including health data) to the command and control center.

One of the promising techniques in security is to implement a distributed architecture using blockchain technology to protect data transmission and information sharing between soldiers, and also to/from command and control center. To tackle this problem, one can implement blockchain system based on weighted Practical Byzantine Fault Tolerance (PBFT) and the blockchain-based data transmission control scheme to build an automatic and adaptive data transmission control scheme for the Mobile X-band Satellite Transmission Data Link (STDL) as illustrated in Figure 21. It achieves automatic data transmission and realizes information consistency among different STDL entities. Besides, by applying smart contracts based on blockchain further enables adjusting data transmission policies automatically. This proposed transit encryption (ENC) allows data

remains encrypted when it's moving across the network as shown in Figure 21.

The impact of this future research is vast. Through this future collaboration projects, more talents for the nation will be produced especially in defense technology and cybersecurity field. Moreover, the collaboration promotes international networking with local and international industry to customize the requirement of localization of the product to meet Malaysia and Korea armed forces. This shall stimulate the domestic economic capital, reducing dependability on foreign labour specialization as well as an in-kind contribution in term of hardware and technical consultation. Through this project, it shall publish a policy paper in a newly expanded niche area (Cybersecurity in the IoT ecosystem) towards achieving the digitalization transformation via National Industry 4.0 Policy.

<Figure 21> Proposed IoBT ecosystem for Future Soldier Communication



The project would also assist the policymakers (including the stakeholder Ministry of Defence and Ministry of Health) and the government via National Defence Policy, Defence White Paper, National Security Policy and National Health Policy to focus on the health and well-being of the soldiers in order to enhance the armed forces' performance in protecting and defending the nation in addition to the equally important

of physical, psychological and social facets of our soldiers. In Environment, the research promotes low power consumption and rechargeable battery towards the Green environment. Besides, this system also promotes sustainability by using renewable energy solution which is solar-powered technology in line with the National Policy on the Environment that has been established for continuous economic, social and cultural progress. In economy-site, according to a new market research report "Internet of Things (IoT) in Healthcare Market by Component (Medical Device, Connectivity Solutions, Systems and Software, Services), Application (Telemedicine, Clinical Operations and Workflow Management, Medication Management, Connected Imaging, Inpatient Monitoring), and End User - Global Forecast to 2025", published by Meticulous Research® , the IoT in healthcare market is expected to grow at a CAGR of 29.9% from 2019 to 2020 to reach $322.2 billion by 2025. Malaysia's and Korea's economy will also get its boost from this type of IoT provider especially in military applications, thus enhancing its GDP growth.

The military system should implement the concept of the future soldier and embark on the development of the Future Soldier Systems which consist of a network of systems designed to function as a single integrated system. Doctrinally, the goal of the Future Soldier System is to assist commanders and their forces with the visibility to execute attacks against the best targets at the most opportune time with the most effective weapons in an adaptive and flexible environment.

In addition, future work is required to explore the tradeoffs among blockchain length and network size by considering power, memory and bandwidth limitations. Blockchain technology has successfully brought the modernity in replacing the conventional ledger system with the electronics digital ledger. The benefits are including reduction of operational cost, traceable transaction, secure and reliable. This motivates various industries to adopt blockchain technology to eliminate data breaching and other cyber crimes. Apart from leveraging on the efficiency benefits that the blockchain technology brings, the usage of blockchain technology may be the solution to cybersecurity quandaries and alleviate the vulnerability of government organisations, public or private, to being victims of cyber-attacks. In the future, blockchain technology will be part of our life seamlessly. Blockchain technology will be the backend system for most

applications. Some examples to accelerate the development of blockchain adoption in the future are including e-commerce. Blockchain technology will enable global e-commerce to create a fast and free international transaction for business-to-business (B2B) and business-to-consumer (B2C). Besides, blockchain technology assists the supply chain management (SCM) in tracing and tracking products and services. Monetary management, such as funds, donations, etc, should adopt blockchain technology, where every transaction will be transparent to donators and public. Military applications must apply blockchain technology in the command and control (C&C) during battlefield for security enhancement. Moreover, tamper-evident Financial Digital Traits may eliminate money laundering, phishing and scamming. Despite all the blockchain technology benefits, the main question is “will the government adopt blockchain technology for its citizenship?”.

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II

Non-traditional Security Cooperation between South Korea and Europe during the COVID-19 Pandemic

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〈 요 약 〉

코로나바이러스는 현재의 우리 삶을 이전과는 다르게 변화시켰다. 세계는 코로나바이러스의 대유행을 맞아 바이러스가 경제, 정치 및 보건 등 다양한 분야에 끼치는 부정적 영향들을 최소화하고자 서로 힘을 모으고 있다. 코로나바이러스를 극복하는 것은 어느 한 국가 또는 지역의 문제가 아니기 때문에 세계는 바이러스라는 공통의 도전 하에 어느 때보다 긴밀하게 서로 협력할 것을 요구 받고 있으며, 안보 분야 역시 예외가 아니다. 인류 공동의 안위를 위협하는 코로나바이러스에 대처하기 위한 국제협력의 필요성이 점점 더 부각되는 상황에서 국제사회는 국가 간의 보다 적극적인 협력을 요청하고 있다.

이와 관련, 특히 주목되고 있는 개념 중의 하나가 기존 안보 개념을 확장한 비전통적 안보(Non-Traditional Security)이다. 베리 부잔이 지적한 바와 같이 전통적 시각의 안보는 그가 비전통적 안보라고 부르는 정치 안보, 경제 안보, 사회 안보, 환경 안보 등 다양한 비전통적 영역을 포괄하는 방식으로 확대될 필요가 있다. 이러한 견해는 현재 진행되고 있는 코로나바이러스의 세계적 대유행 상황에서 특히 주목받고 있으며, 구체적으로 환경 안보의 한 부분인 보건과 관련하여 많은 연구들이 진행되고 있다.

유럽연합의 외교안보 담당기구인 Common Foreign and Security Policy (CFSP)는 전통적 안보영역과 함께 비전통적 안보영역에 초기부터 매우 큰 관심을 보여왔다. 유럽연합 회원국들은 경제, 문화, 과학, 교육 등의 비전통적 안보 분야 내 여러 사안과 관련, 회원국들 뿐만 아니라 비회원국들과 함께 공동으로 안보 위협을 해소하기 위한 적극적인 노력을 기울여 왔다. 유럽연합은 특히 한국과는 무역과 위기 관리 측면에서 힘을 모았으며, 북한과도 대화를 계속하려는 노력을 게을리하지 않았다. 전통적으로 유럽연합이 한반도 안보 문제에 간여하는 정도는 크지 않았지만, 비전통적 안보 영역에 대한 관심이 높아지고 있는 현재의 상황에서 비전통적 안보 영역을 매개로 유럽연합이 한반도 안보 우려를 해소하는 데에 과거보다 더 큰 역할을 할 수 있을 것으로 기대한다.

코로나바이러스의 세계적 대유행의 초기 시기 CFSP는 적절한 대응을 하지 못했으나, 유럽연합 회원국들 내 발병률이 치솟는 상황에 이르러 주도적으로 회원국들 간의 협력과 연대를 도모하고 있다. 또한 유럽연합은 유럽연합 밖의 상황에 대해서도 지대한 관심을 가지고 있으며 이를 위해 Team Europe이라는 프로그램을 운용하고 있다. 아직까지는 Team Europe의 주된 활동영역이 아프리카, 카리브해, 태평양 지역 등의 가난한 나라들을 돕는 것에 치중하고 있지만, 점차 아시아지역으로도 활동영역을 높여가고 있는 상황이다. 이와 관련 특히 북한 주민들을 코로나바이러스로부터 보호하는 활동을 펼치는 데 있어서 한국과 유럽연합의 협력은 필수적이기 때문에, 코로나바이러스 관련 유럽연합과 한국의 협력 강화의 필요성은 더욱 부각되고 있다.

비전통적 안보는 전통적 안보의 영역과 구별되거나 또는 간접적인 연관성만을 가지는 것을 넘어 그 자체로 전통적인 안보 영역을 위협할 수 있기 때문에 전통적 안보와 별개라고 간주될 수 없다. 현재의 코로나바이러스의 세계적 대유행 상황에서 북한이 한국에게 보이는 도발은 전통적 안보와 비전통적 안보가 서로 연계될 수 있음을 보이는 하나의 예라고 할 수 있다. 즉, 의료환경이 극도로 열악한 상황에서 코로나바이러스의 북한 내 전염을 막고자 한 북한 당국의 과도한 조치가 예기치 않는 사건을 촉발하면서 한반도의 평화를 위협하는 상황을 만들어 낸 것이다. 다른 어느 나라 못지 않게 한국이 현재 처해있는 안보 문제들을 해결하는 데에 비전통적 안보와 실제 안보 위협 간의 연관성을 파악하는 것은 매우 중요하며, 이를 위해 무엇보다 북한의 현 상황에 대한 충분한 이해가 필요하다.

북한 경제는 국가 수립 단계에서부터 외국에 상당한 의존도를 보여왔다. 1956년 8월 종파사건 이후 김일성은 자신의 개인숭배를 비판하는 소련과 중국으로부터의 내정간섭을 피하기 위해 "주체"를 내세우면서 경제부문의 자립을 주창했다. 그러나 실제로는 소련 및 동유럽 사회주의 국가들의 몰락을 가져온 사회주의의 단점들에 더해진, 독재 유지 및 강화를 위한 "경제의 정치에의 종속화"로 국가 경제가 제대로 운영되지 못하였다. 따라서 북한은 겉으로는 자립을 말하면서 실제로는 외국에 의존하면서 경제를 꾸려 나갔다. 소련의 붕괴로 지원이 끊긴 상태에서 중국의 도움이 거의 없던 시기인 1990년대 중반의 대규모 아사 사태는 북한의 경제적 자립이 얼마나 허구에 가까운 주장이었는지를 보여준다.

북한의 핵 및 미사일 개발로 인해 미국을 필두로 한 국제사회는 북한에 대한 경제 제재를 가하고 있으며, 특히 2017년의 유엔 대북제재는 이전과는 차별화되는 포괄성 및 높은 강도로 인해 북한의 경제에 치명적인 영향을 끼쳤다. 이로 인한 경제난 타개를 위해 김정은 위원장은 미국과 협상에 나섰으나 성과는 기대에 훨씬 못 미쳐 제재 해제는 물론 제재 수준의 완화도 얻어낼 수 없었다. 2019년 여름, 경제난을 타개하기 위해 김정은 위원장은 중국의 시진핑 국가주석과 정상회담을 가지고 기존 대북 제재가 포함하지 않은 관광분야에 대한 양국의 협력을 도모했다. 예컨대, 중국으로부터의 대규모 관광객 유치를 통해 외화난을 어느정도 타개하고자 한 것이다.

경제 위기로 북한 내 의료체계가 붕괴된 상황에서 코로나바이러스의 북한 내 전파는 매우 치명적이다. 북한 지도부는 이를 막기 위해 국경봉쇄에 가까운 조치를 취했고, 이로 인해 중국인 관광객을 통한 외화 획득이라는 북한 지도부의 구상은 수포로 돌아가게 되었다. 가뜩이나 국제사회의 대북 제재로 위축된 북한 경제는 코로나바이러스의 세계적 대유행 상황에서 보다 큰 어려움에 처하게 된 것이다. 이러한 상황에서 개성지구 남북공동연락사무소의 폭파, 서해에서 북한군에 의한 한국인 공무원의 피살 등이 연달아 일어나고 있으며, 이는 2018년부터 본격화된 남북 간의 관계 개선에 어두운

그림자를 드리우면서 한반도의 안보를 위협하고 있는 상황이다.

북한에 대한 대북 경제 제재의 완화는 단지 북한 사회의 안정 뿐만 아니라 한반도 전체의 평화와 안정에 도움이 된다. 유럽연합과 한국은 모두 코로나바이러스의 세계적 대유행의 종식 및 바이러스가 안보에 끼치는 부정적인 영향을 최소화하기 위해 함께 노력하고 있다. 특히 후자와 관련 주목받는 유럽연합의 최근 행보 중 하나로 코로나바이러스의 세계적 대유행 시기 국제사회가 일부 국가에 가하고 있는 경제 제재를 일시적으로 일부 유예하는 데에 유럽연합이 UN 등 다른 국제사회 구성원들과 보조를 맞추고 있는 것이다. 예컨대, 지난 4월 CFSP의 수장인 보렐은 UN 제재대상국인 코로나바이러스 대유행 상황에서 이란과 베네주엘라에 대한 미국의 제재를 일부 완화하고 인도주의적인 도움을 제공하는 것에 대해 공개적으로 요청한 바 있다. 그의 이러한 주장은 국제사회의 대북 제재에도 그대로 적용할 수 있다. 즉, 유럽연합과 한국이 코로나바이러스의 대유행 상황에서 북한에 대한 제재를 일부 완화하는 데에 힘을 모을 수 있는 것이다.

코로나바이러스의 대유행 시기 북한의 경제 상황을 개선시키기 위한 한국과 유럽연합 간의 협력은 지역 안보와 안정에 큰 도움이 될 것이다. 과거 유럽연합은 북한 핵 문제 해결에 있어서 별 영향을 끼치지 못했으며 이는 유럽연합이 한반도 문제에는 외부인에 불과하다는 인식을 만들어 냈다. 그러나 코로나바이러스의 창궐이라는 비전통적 안보의 위기 상황에서 유럽연합이 예컨대, 대북제재의 완화 문제에 있어서 적극적으로 한국과 협력함으로써 유럽연합은 한반도 문제에 있어서 과거와는 다른 역할을 떠맡을 수 있다. 이를 위해 대화와 협의가 어느 때보다 중요하며, 여기에는 한국과 유럽연합 뿐만 아니라 북한도 적극적으로 참여할 필요가 있다.

I. Introduction

COVID-19 has a significant impact on people's daily lives today. The world is finding measures to cope with the enormous challenges that the COVID-19 pandemic has posed in various areas such as economy, politics, and public health. To guarantee solidarity and human rights amid this pandemic, policy makers, activists, and scholars are working on mitigating the unrelenting challenges through enhanced and expanded cooperation among nations. International cooperation has never been more important.

The corona virus calls for international cooperation in the field of security as well. The pandemic is driving us into a volatile, complex and uncertain world, and non-cooperativity will exacerbate the situation to the extent that human kind cannot bear. Scientists are increasingly assuring that the current pandemic will persist at least for years. Its consequences will affect not only economic, political, and social upheaval but also violence, conflict, and even war among nations. UN Secretary-General António Guterres recently appealed for a global ceasefire and put forward a proposal to tackle a multitude of grievous ramifications of this pandemic (Guterres 2020). Major powers, however, have not undertaken any concrete actions in support.

One method to urge international concerted efforts for security is to achieve consensus among nations on expanding an existing dimension of security and, in that sense, many people take note of non-traditional security by Barry Buzan. Along with traditional security which concentrates on the military issues, Buzan argues that the notion of security should include non-traditional dimensions of security such as political, economic, societal, environmental security. In particular, he contends that the environmental dimension, which includes climate change and public health, calls for international actions because no single country can cope with it on its own (Buzan 1991, 19). His novelty draws increasing attention as the ongoing pandemic is, though not in the realm of traditional security, posing enormous security threats at the moment.

Non-traditional security, however, is not separate from traditional security. Non-traditional security can put the traditional dimension of security under threat. One example is the recent provocations of the Democratic People's Republic of Korea (North Korea) against the Republic of Korea (South Korea). From summer North Korea's move

has been unusual (again), which culminated in the homicide of a South Korean person who allegedly attempted to defect to North Korea to prevent transmission of the corona virus on September 22. To North Korea of which the public health system almost broke down in the midst of the economic crisis in the 1990s, COVID-19 is indeed catastrophic. Also, the poor country has severely suffered economically due to the virous. Under harsh sanctions especially since 2017 by the United Nations, North Korea has relied upon tourist industry to earn foreign currency by attracting tourists – mostly Chinese tourists – from outside and thus invested much of its very limited state budgets in it. However, owing to the pandemic, the plan was no longer viable. Hence, on the Korean peninsula, non-traditional security is closely correlated to traditional security.

The European Union (EU) and South Korea can work together to relieve COVID-19-led security tensions on the Korean peninsula and also on the globe. The Common Foreign and Security Policy (CFSP) is the organized and agreed foreign policy of the EU. The CFSP is chaired and represented by the EU's High Representative, currently Josep Borrell. He recently argued as follows:

> We have to go back to that because many people do not believe that they can engage in humanitarian assistance to Iran or Venezuela without falling under the American sanctions. And we have to clarify this, because the situation in these countries is completely out of any human consideration and we are going to call again for the relief of the sanctions (Borrell 2020).

Borrell's emphasis on the need for relief from sanctions against countries like Iran and Venezuela during the ongoing pandemic can also be applicable to the case of North Korea. At present many international organizations call for relief of sanctions during this pandemic, and the EU is one of the most vocal entities in agreement with it. If South Korea can successfully collaborate with, or have the support of, the EU on sanctions relief for North Korea, the discretion that South Korea has for peace and prosperity of the Korean peninsula and in East Asia will be considerably enhanced.

This paper is to explore the possibility of international cooperation between the EU and South Korea in a bid to tackle the pandemic-related security threats possibly waged by North Korea. One of the most practical methods to stave off security threats from

North Korea is the relief of sanctions and, thus, we will concentrate on the task in the paper. The ensuing chapter explains the CFSP's historical experiences defining security and stability, which is followed by the CFSP's COVID19-related stance including the organization's ideas and activities with regard to sanctions relief. Then, we will examine North Korea under sanctions, focusing on the economy. The next chapter will explain impacts of COVID-19 on North Korea today. Later, this paper presents policy observations and recommendations towards an South Korea-EU cooperation for in providing COVID-19 assistance to North Korea. The paper ends with a brief conclusion.

II. Historical Overview of the European Union's Common Foreign and Security Policy

In order to assess how South Korea and the European Union (EU) might engage together in a cooperation policy in a non-traditional security area, and namely provide COVID-19 sanitary assistance to North Korea, it is useful to have an understanding of the main drivers of EU external policy and of the instruments it has developed over the years to conduct it. This chapter is devoted to giving an historical overview of the Common Foreign and Security Policy's elaboration, whereas the third chapter will discuss the emergence of a specifically COVID-19-driven European policy.

The drive towards European integration was crucially motivated by a search for collective security (Marsh & Mackenstein 2005, 2-4). Even before the Twentieth Century, both thinkers and political figures envisioned a union of the European states, or even proposed some wide blueprint for it via treaty instruments, as a solution to the continent's history of recurring dynastic, religious and national conflicts. The particular devastation of the two World Wars originating in Europe gave new urgency to this search. It is interesting to note that an early impetus in the direction of collective security via a multilateral organization took place in the interwar period of 1919-1939. Indeed, the League of Nations, with its seat in Geneva, not only provided a framework in which the search for collective security was conducted by an essentially European membership. It was also there that the notion of security was broadened to begin reaching for areas that are referred to today as "non-traditional areas" of security, that is, going beyond

the notion of preventing international armed conflict. The potentially total nature of war demonstrated between 1914 and 1918, and the political upheavals of the postwar period characterized by revolution and the emergence of new national states, enlarged the scope of threats to human security, in particular in creating large fluxes of displaced people and refugees, as well other disasters such as famine, poverty and epidemic outbreaks. The League of Nations was thus an important training ground for certain future decision-makers who, after the League's failure and the renewed devastation of the Second World War, would propose a more serious integration of Europe after 1945. This experiment, crucially, would also go hand-in-hand with the policy of the United States of America, determined after 1945 to consider that Europe's security, broadly defined, was part of US national security policy (Marsh & Mackestein 2005, 4-6). Indeed, Secretary of State George C. Marshall's famous commencement speech at Harvard in June 1947 argued that

> "Our policy is not directed against any country, but against hunger, poverty, desperation and chaos. Any government that is willing to assist in recovery will find full co-operation on the part of the United States. Its purpose should be the revival of a working economy in the world so as to permit the emergence of political and social conditions in which free institutions can exist." (Merrill & Paterson 2005)

The filiation between the European integration process and the Marshall Plan is well-known, as such an integration was the essential political condition for the granting as well as the implementing of United States economic, financial and material aid to the Western European States which accepted it. Moreover, the plan's formal name, "European Recovery Program", suggested the wide definition of security and the interlinking benefits that could be drawn from achieving it in non-traditional areas. For the first time, a proper regime of international security on the continent was subordinate to the achievement of economic and social security. The post-1945 period saw Western European decision-makers, with the help of their American partners, be especially creative when defining forms of cooperation outside the traditional areas of high politics and political and military alliances that could generate collective security (Hill & Smith: 2011, 405). It certainly helped that the military and political dimension

of security were, for the most, handled by the existence of the North Atlantic Treaty Organization (NATO), that ensured a security solidarity between North American and Western European states of the kind that the bilateral treaties that the United States would sign with several East Asian nations including the Republic of Korea in the following decade. This context, and the aborted plan of the European Defense Community in 1951-1954, ensured that European integration, in particular under the intellectual and practical impulse of Jean Monnet, would concentrate on economic, and therefore social means of integration. After experimenting how this community method could work in the crucial industrial sectors of coal and steel, a broader enterprise was attempted with the European Economic Community (EEC).

The EEC in its first years not only proved it could successfully establish an efficient trade block that brought the economies of its member states closer and allowed them to negotiate with a common position in the multilateral, global trade talk rounds of the GATT. It also devised a Common Agricultural Policy that aimed at supporting the agricultures of the Member States while ensuring food security for their populations and interlinking their domestic markets. It saw a steady progress of jurisprudence and international legal power to achieve judicial security for individual and moral entities within the EEC judicial space in the direction of freer competition and higher standards of social security. It proved attractive a model enough that within six years of its founding, new countries were indicating their wish to open negotiations to join the original six Member States, and the move to enlarge the membership would not cease until the second decade of the Twenty-First Century. It even began to conclude organization-to-organization, region-to-region cooperation agreements. Not least, despite the emphasis on the Community being economic in nature and most of its policy-making, it could become the matrix for cooperation in the domain of politics, once again with the aim of bolstering security. It is important to note, despite the criticism of defenders of continued, unrestrained national sovereignty, that the integration of European countries, while often finding new areas of action, has relied on the will of Member States to increase their ways of cooperating even in areas traditionally belonging to the sole prerogative of national governments. This proceeds naturally from the "Monnet method" of integration, which suggested that each

successfully demonstrated experiment of cooperation could create spillover effects and impetus for new cooperation. Perhaps as a historical accident, the evolution of the functioning of the EEC which had a community policy-making mode exemplified by the Common Agricultural Policy and the Common External Trade Policy also kept a strong intergovernmental mode, which France in particular had insisted upon in 1965-1966. This appeared in the crucial executive and decisional role given to the Council of Ministers, an intergovernmental assembly of government members of a certain portfolio, whether Foreign Affairs for the major institutional and strategic decisions, or agriculture, finance, trade, home affairs, justice. The emergence from the 1970s of the European Council, bringing all the Member Heads of State or Government in biannual grand summits has further reinforced this mode. It also quickly appeared that prior, intergovernmental agreements, of the types allowed by the institutionalized Franco-German dialogue, or those of the BeNeLux countries, eased the negotiating process among Member States regularly engaged in the EEC's Brussels headquarters or its Parliament in Strasburg. This, and the practice of a country-rotating,six-month presidency of the Council of Ministers, created over time an important impetus: it became natural for both political leaders, chief executives as well as individual ministers, and the senior civil servants of government departments whose policy briefs fell under a Community area, to engage with their counterparts in the other member states. This working culture probably increased through the 1970s and 1980s when the turmoil of the world economy, and the attempt to fight inflation and its effects through concerted monetary policies in the enlarged European Community made European cooperation a defining experience in the careers of an entire generation of European decision and policy-makers, as it would be for the following ones since. Since the early 1970s, this also included the diplomatic corps, with the establishment of regular communication links through the "Correspondent Européen" or Coreu network, and the ad hoc implementation of what was significantly referred to as the "European Political Cooperation" (EPC). EPC did not mean that the Member States already conducted a common diplomatic policy beyond the area of multilateral trade negotiations (Marsh & Mackenstein 2005, 11-12; Keukeleire & Delreux 2014, 39-42). However, it suggested that the Member States could search for ways of making their foreign and security policies converge, in areas that were not covered, for instance, by the clauses of the

North Atlantic Treaty (Hill & Smith 2011, 102-105). Moreover, this notion of a broader definition of the factors of European security implied both an interest in the geographic neighborhood of Europe affecting its strategic situation; it also included notions that wider aspects of human security and prosperity in this neighborhood were necessary factors of general security for Europe too. The 1980 Declaration of Venice relative to the Israeli-Palestinian conflict, while establishing a relatively coherent European line of behavior towards the wider ramifications of this conflict, was probably the first important demonstration of a European interest in the wider security and stability of the neighboring region across the Mediterranean, and a founding stage for European attempts to contribute to the Middle East peace process that had been dominated by the US and Soviet superpowers.

The end of the Cold War, the unification of Germany, the opening of possibilities for countries of Central and Eastern Europe to open future membership negotiations coincided with a decision to set up a truly single market, a European Union (EU) with both economic and political integrations underway. The 1992 Treaty of Maastricht drew on the lessons of the EPC in creating, alongside the pillars of the Economic Community and that of the legal body governing Justice and Home Affairs, that of the "Common Foreign and Security Policy" (CFSP). This certainly represented a great challenge to sovereignty conscious Member States, not just the traditionally Atlanticist-minded, such as Great Britain and Denmark. It would also rattle the practices of professed European integrationists like Germany, that were conscious of their specific, historical legal and constitutional constrictions on security and defense policies, or like France, a permanent member of the United Nations Security Council and a country with a truly global, and often sharply individual scope to its foreign policy. In these circumstances, it ins unsurprising that the clauses of the Treaty of Maastricht, later updated by the Amsterdam (1997) and Lisbon (2009) provided for a CFSP that would be conducted under the intergovernmental mode of policy-making. This made the national governments of Member States, their diplomatic apparatus as well as their defense establishments, the foremost actors in the elaboration of such a policy. Correspondingly, the most integrated arms of the EU, the Commission or the Parliament, would have little room for initiative in this policy area. Noticeably, this also translated in a very modest share of the Union's

budget devoted to such a policy while the traditional areas, with greater domestic than international impact, of the Common Agricultural Policy and the regional cohesion funds retained up to this day the lion's share of EU provisions and expenses (Joannin 2019, 342).

The maintenance of the intergovernmental primacy in the CSFP and ultimately deriving policies has important consequences, both historical and up to the present day, as well as important lessons for anyone studying this model of external policy and broad security cooperation. An intergovernmental mode of decision making implies an intense, and at times lengthy degree of prior negotiation between the Member State governments towards a converging position. This does not differ from what occurs when securing the common negotiating line for, say, the WTO trade negotiations, or the environmental stance taken as a block in the UN Climate Conference of the Parties meetings. The impetus of the Member States forming coalitions on a certain line, with the added push given by the country holding the six-month presidency putting issues on the agenda as a priority substitutes itself to any norms or lines of behavior proposed by the Commission and other Brussels-based agencies through their right of initiative that is the usual procedure for other integrated policies. Even when part of the negotiating process does take place in Brussels rather than through capital to capital dialogue via the customary and established diplomatic channels, that negotiation remains conducted in a strictly intergovernmental mode. Witness the composition of the Committee for Politics and Security, known by its French acronym COPS, that has become since the 1990s one of the foremost working groups that bring together the Member States' Permanent Representatives in Brussels. Significantly, and like the EU's Military Committee, it resembles in its working procedure to similar instances in NATO. This still requires negotiation between the Member States and in no way a sort of federal structure or mentality. Further proof of this is that for the EU to even be recognized a competence in areas of security policy, despite the ambition to set up CFSP beginning in 1992, it had to reconcile on several occasions through crucial bilateral state-to-state agreements the opposing positions of Member States with a major say in the direction policy should take. This has even been a multi-year process, because the particularly acute reservations of Great Britain to the CFSP representing a challenge to the NATO

framework of ensuring European security had to be addressed. The Anglo-French Declaration of Saint-Malo in 1998 like Lancaster House Agreement in 2010, twelve years later, demonstrate how Member States have definitely not yielded their prerogative in setting, in their sovereign capacity, by their own actions and designs, what will ultimately be allowed to the EU to do. The reminder is crucial and still accurate to this day: the prior consent and decision to act decisively by any government party to such a cooperative venture is essential for the process to be initiated and taken through. While it is true some Constructivist-minded scholars will argue against this admittedly Realist-oriented conclusion, there is little evidence in the history of CFSP since 1992, that is the last three decades, that non-governmental actors have successfully determined and steered to their visions the EU's external and security policies at the expense of Member State government prerogatives.

This is also an essential explanation to understand the limitations of the CFSP, and indeed of the whole of the EU as an international actor despite their often-proclaimed ambitions to be so with decisive weight. The 1990s immediately put these to the test and indeed the EU was found badly wanting to meet security threats in its near vicinity, namely, the chaotic descent of the Western Balkans into war on the dissolution of a federal Yugoslavia. Member States failed to conduct that prior reconciliation and convergence of their policies towards the belligerent parties or a possible political settlement. This played out as much within the EU as with the UN. It wasn't until tremendous loss of life and long-lasting damage to the region, its societies as well as its economy, society and infrastructure that a forceful if delicate intervention against Serbia would be undertaken, using NATO, before the brokerage, by the United States especially and the ad hoc "Contact Group" of powers that also included Russia and the UN, of the Dayton Settlement could take place. When trying to negotiate in those years, the EU would dispatch a delegation of the so-called Troika, that is the representative of the country currently holding the EU Council Presidency, plus that of its immediate predecessor and its incoming successor. While this highlighted the intergovernmental role, it often failed to impress on the opposite party, especially if this was engaged in aggressive action, that such a Troika carried authority and truly spoke forcefully for the power of the Twelve-, soon to be Fifteen-strong block of Western

Europe including four of the G7 economies. Near the turn of the Millenium, it was agreed a single negotiator might appear more authoritative, hence the creation of the office of High Representative. It is unsurprising in retrospect that this was given over to Javier Solana, who had held the prior position as NATO Secretary General. Still, the first holder of the office of High Representative lacked much of a diplomatic apparatus to back him up, a position vis-a-vis recognizable EU authorities like the president of the European Commission or the rotating president of the Council. Hence, it was the intention, in the next round of institutional reforms which the EU would undertake in the first decade of the Twenty-First Century, to define institutionally the High Representative as a Vice President of the Commission and support this office with a European External Action Service. These innovations were placed at the heart of the drafting of yet another institutional treaty, first in the form of an expected "constitutional treaty", and then, after the failure of its ratification by the refusal of French and Dutch voters in 2005, in the "Treaty on the Functioning of the European Union" (TFEU) or Treaty of Lisbon. Perhaps the surest sign that this office had now acquired a significance, and put a truly "European Diplomacy" on the map as an actor of international security, was the role played over sevral years by the High Representative as the European negotiator in the lengthy process of discussion with Iran on its nuclear program, which ultimately resulted in the concluding of the 2015 Vienna Accord.

For all the importance given to external policy offices and institutions, and giving them the means to perform the tasks conceded to them by the Member States, the EU's CFSP still faced another concrete challenge in the form of its content, aims and ambitions. European integration had been a response to the needs of reconstructing postwar Europe and helping its Western half to become robust enough to resist the appeal of the communist model when chaotic political, economic and social conditions persisted. The end of the Cold War presented Western Europe with a challenge of a different order, which was to improve and manage relations with what became known in a large sense as the "neighborhood": that is, countries that could be considered geographically and historically part of Europe, in the Central and Eastern parts of the continent, but also some geographically extra-European countries located to its South and South-East. Some of these countries faced their own ordeal after having been forcibly included into

the Soviet sphere of influence as well as in the socialist economic system, whose failure had triggered the fall of the communist regimes in 1989-1991, while others especially to the South still faced the legacies of colonial and post-colonial times in terms of their development. As the wars of the former Yugoslavia quickly demonstrated, allowing chaotic situations to persist in these regions would never be without effect on the EU's prosperity, stability and security, for such situations generated refugee fluxes, border tensions and sometimes internal divisions among the Europeans in relation to them and what ought to be done. As Europe could never escape the consequences of such situations amongst its neighbors, a fundamental part of its external policy ought to engage with them in several ways. The EEC had already begun to create frameworks for dialogue and negotiation with other regional organizations, most notably ASEAN in Asia, the Africa, Caribbean and Pacific nations group associated with the Lomé trade conventions. There were also agreements that provided for the European Commission's representation in several individual countries.

The post-Cold War context called for a kind of policy engagement that would have a completely different dimension. The countries to the East and to the South of the EU had already for some time considered forms of association. Turkey, in particular ever since its foundational 1963 association agreement with the EEC had conceived the future of its relationship to Europe in terms of an eventual full membership into the Union, and had by this time already formulated one unsuccessful application in the 1980s. Its late 1990s bid was destined to go much further since the EU would recognize it officially as a candidate country and even open a certain number of chapters in the negotiation. However, for the Central and Eastern European countries in the immediate vicinity of the EU, membership was seen not only in more concrete terms, as the European identity of these countries generated less controversy, but it was also, in the short to medium term, an indispensable element of their transition away from the socialist economic model and single party rule by the Communists under the overbearing presence of the Soviet Union. The most advanced of these countries, and those who had impressed by the swift and relatively smooth political revolutions in 1989 to reintroduce their democracies, namely Poland, Hungary and a still united Czechoslovakia lost no time in lodging formal applications to join the soon-to-be EU,

right after the formal dissolution of the Warsaw Pact returned to them their full sovereignty in the conduct of their international policies. This presented the Western European leaders with a double challenge: how eventually to significantly enlarge a Union that was exclusively composed up to them of Western member states with their advanced democracies, flourishing market economies with more of less developed social security characteristics, to countries undergoing both a political and economic transition that brought considerable shock to their populations. To these populations, joining the EU was a key stage in catching up with their prosperous Western neighbors. To the Westerners, the question was whether the process could be harnessed and orderly enough to bring in these new members as prepared as possible to function within the rules that had had to be adapted from 1957 onwards and especially the important integrationist step taken from 1992.

It is this that the EU originally conceived of enlargement policy and process as an essential component of its nascent Common Foreign and Security Policy. Enlargement occurred first using the well-known instruments of the association agreements, those aiming at future candidacies and membership were even referred to as "Europe agreements". More concretely, the process was spread in time, as with the integrationist process for the existing members consisting in calendar phases, for instance within the Economic and Monetary Union designed over the length of a decade. In this interval, each candidate state would not only be negotiating its acceptance into the EU, it would be simultaneously implementing an agenda that was a prior condition to this acceptance. These were the notorious "Copenhagen Criteria" formulated in 1993. They consisted, apparently simply enough, in a functioning liberal democracy, a functioning market economy, and the introduction into the candidate's legal order and system of the European legal corpus, known by the French term of "acquis communautaire", one that was indispensable for each member to function with the EU's Single Market. The lure of membership was therefore used by the EU to channel the transitions of the different candidate countries away from their previous regime, and especially in the case of the most keen to integrate, the countries of Central and North East Europe, this proved to be a nearly two-decade long stimulus. Skepticism about the process, most interestingly, only set in some of these countries after they had reached their goal when

in 2005 the EU went ahead with its most spectacular single enlargement in its history, taking in ten members including three former Soviet and one former Yugoslav federated republics. Besides, it must be stressed that, especially in the case of Hungary, the shock of the 2008 financial crisis caused lasting economic and political damage that served to propel into power governments that were much more reluctantly "pro-European" than their predecessors.

This enlargement once achieved quickly raised the question of undertaking the next step of the European Union's engagement with its neighbors. An EU whose center of gravity had importantly shifted eastwards, not as much southwards, also had to question itself on future relations with the countries to its fringe. Most importantly, this raised the question of what kind of relations and engagement to conduct with the Russian Federation, whose size would always be problematic to allow for a membership, still conditioned by how fully European the Russians would represent themselves. The question was also valid for other former Soviet republics, now formally independent and sovereign but towards which, after chaotic developments in the 1990s, the new Russian leadership was undertaking a policy of bringing these countries back under a certain degree of control. The mid-2000s were characterized by several "Color Revolutions", most notably in Ukraine and in the Caucasus, which questioned these countries willingness to return too deeply under a Russian umbrella, and often expressed, on the contrary, Western-looking aspirations among their younger populations.

The EU therefore developed a concept and a new policy, explicitly referred to as the "European Neighborhood Policy" (ENP) to separate it both from Enlargement Policy and from the Common Foreign and Security Policy (Keukeleire & Delreux 2014, 250). Even if, in concrete terms, the officials in charge of these distinct policies, especially the Commissioners and their respective Directorate-General staffs, were often brought to work together and drew from the same budgets, the expected aims of such policies were often similar and not unlike those of previous European external policies. Stability in Europe, stability on the borders of Europe was the desired effect. This, in particular, would be achieved through various forms of engagement, in particular through institutionalized dialogue at various levels, from the head of state down to the administrative, on a variety of issues of mutual interest. Association and Partnership

agreements would be used as the usual frameworks for these relations and updated when possible. The EU could offer technical assistance in the field of legal governance, market economy consolidation, educational and trade opportunities on a case-by-case basis. The crucial experience, in many of these cases, was to build contact networks with the officials of the partner countries and to foster as much of a regular, common working culture between them and their European counterparts. Sometimes, the lessons of the EU's enlargement process could be applied to ENP. Indeed, politics sometimes trumped the apparently pedestrian question of the quality of the progress achieved by the transitioning partners. The EU found it had been pressed, after what seemed an orderly process towards membership by the countries of Central and Northeastern Europe, to offer also membership to those of the South-East, and the entry into the Union of countries such as Romania and Bulgaria gave pause for thought, after evident political and economic governance problems subsisted in these new members were quickly revealed. This, along with the still delicate process of engagement with the countries of the Western Balkans suffering from the aftermath of the bloody break-up of Yugoslavia, did not fail to have an impact on the laborious conduct of the ENP. Whereas the 1990s might have been characterized as a rather optimistic period in EU external policy engagement, the 2000s, and even more the 2010s, would be marked by the increasing caution and lowered expectations of the Europeans.

Even while the crisis of 2008 also created internal tensions among the EU member states given the delicate economic and financial situation of some of its oldest and important members, the recent period cast in sharper light the difficulty for the members to agree on the appropriate direction and priorities of EU external action. It is not surprising, also, that in this context, despite some often grandly stated strategic aims, the share of the EU pluriannual budget falling under the chapter known as "The EU in the World" has remained a much smaller portion of the essentially domestic-oriented ones of the Common Agricultural Policy and the Regional Cohesion Funds. Some of the older member states have become quite reticent to the notion of enlargement, if not that of engagement with other regions, as the difficulty to negotiate specific agreements with Canada, the United States and the Latin American organization Mercosur have demonstrated. There has also been a noticeable divide among the interest that the

Member States, who control the setting of the agenda for the EU's Common Foreign and Security Policy as well as Enlargement, ENP, region-to-region engagement, will give to one area rather compared to another. In the case of the ENP, a block of countries, often the northern, central and eastern members, have considered that a fundamental priority lay to the East, towards Russia and the former Soviet republics, either in the hope of harmonizing the entire area into a pacified space shared with the EU, or with the3 wish to help the smaller countries escape from an overwhelming Russian pretense to tutelage. Another group of countries that include not just the Mediterranean members but also countries with an important extra-European imperial heritage, have precisely looked with more interest to the countries to the South and East of the Mediterranean, the Middle-East-North Africa region as well as to Sub-Saharan Africa. It must be said this preoccupation was not new and was particularly well expressed before the 2005 enlargement gave greater weight to those interested in Eastern Europe's neighborhood. With the 1992 "Barcelona Process", sometimes tellingly referred to as the Euromed partnership, the smaller, more Western and Mediterranean centered EU had inaugurated an ambitious engagement scheme reaching towards the southern and eastern shores of the Middle Sea. It may be stressed this was also seen as a key European method to contribute to the current Middle East Peace Process that then yielded high expectations owing to the beginning of the Oslo process between Israel and the Palestinians, buoyed by a particularly strong US engagement in the region. Euromed also struck by its concentration on what would be referred to nowadays as non-traditional security, focusing on areas of cooperation where state sovereignty would not feel impinged upon, via economic and human issues.

While Euromed had been hailed for its original strategic vision, the facts, just like in the case of the CFSP, would eventually demonstrated that not all of these aims were within reach in the space of a decade. As the Century turned, many of the partner countries either complained of the lack of progress on the policy issues engaged through this process, or they would show themselves reluctant to open up opportunities for their civil societies, many of them remaining under authoritarian rule that did not operate in the same ways as the Europeans would expect to. When the question was put forward by France especially in 2007-2008 to create a "Union of the Mediterranean"

to consolidate and institutionalize the relations created by the former Barcelona Process, a significant part of the EU membership was less interested and even vocally complained that this was of less importance to them than relations with Russia and the former Soviet Republics. Whereas the Mediterranean Union scheme would soon be reduced to little significance by the collapse of many regimes in North Africa and the Middle East, a shock that has not resorbed to this day and at the time of writing especially, an "Eastern Partnership" was established from 2009 to embody more particularly ENP issues and engagement reserved to countries to the immediate East of Europe. Interestingly, this has occurred in the context of a rather more complicated European relationship with Russia under the later government and presidential mandates of Vladimir Putin. Reinforcing these ties using the instruments of the Association and Partnership Agreements has become more difficult with some of these expected partners. The negotiation of the EU-Ukraine partnership derailed abruptly in 2013 and later triggered the split between the Ukrainian population and the previous government that appeared to heed to Russian pressure not to conclude the agreement with the EU. There followed the Maidan revolution, the Russian reaction to it with the unilateral annexation of Crimea and a full-scale separatist war in the Donbas regions. These events have brought considerable interrogation to the Europeans, some arguing that the EU should not encroach with its engagement policies on what they consider to be a legitimate sphere of Russian exclusive influence, others arguing that it is precisely to roll back such influence and allow the concerned populations to choose alternative relations with the West that such policies should be pursued.

The political divide among Europeans on their external relations therefore does not only cover one between those Europeans more interested in the South and those more interested in the East. It is also among those who set a priority on an accommodating relationship with Putin's Russia, and those concerned with standing up to it. It is also among Atlanticist-minded Europeans and those wishing a degree of distancing between the EU and the United States policies. It is also, finally, between outward and inward-looking Europeans, between those setting a priority on the growing internal challenges that each Member State may face on their future demography, society, economy and political cohesion, and those who dream of an EU with an ambitious

international and indeed global presence. It is fair to observe that such divides can also occur on the question of engagement with countries or organizations further away from Europe. On the question of China, for instance, one can easily see a similar dilemma and contrasting opinions among the Europeans.

The EU has also developed a framework for its relations with the Asian countries for a few years now (Keukeleire & Delreux 2014, 203-206, 290-293). While there were some historic bilateral approaches that were initiated with Japan as a historic economic and trading partner, and later with China as it began its ascent in the years following Deng Xiaoping's new course, there was also an organization-to-organization approach with ASEAN, later expanded when the ARF was initiated. It is interesting to note that the Europeans were perhaps reacting to the outset of the APEC as well. This resulted in the framework of the Asia-Europe Meetings (ASEM) that have also thought to bring about the same kinds of multiple engagements at Head of State, Ministerial and Administrative levels. Yet, the example of the EU's relations with South Korea offers a particularly rich frame of relations linking the EU to an individual East Asian nation. Indeed, after formal relations established in the mid 1990s, these have progressed in the second decade of the Twenty-First Century. South Korea is bound to the EU by the fullest range of Association Agreements and is the only Asian country with three functioning instruments, the Framework Agreement of 2010 and its accompanying Free-Trade Agreement and the Agreement establishing a framework for South Korea participation in EU crisis management operations (EEAS: 2015-2020). This late instrument is of particular interest in the perspective of a South Korea-EU engagement with North Korea in non-traditional security issues. South Korea indeed has the experience and the contacts of working with the EU in ways that the state of EU relations with North Korea do not allow. With North Korea, the EU has a policy of "critical engagement" and it seeks dialogue where possible (EEAS 2017). Nevertheless, the absence of the EU in the Six Party Talks has left it as the margin of the question of security on the Korean peninsula, nuclear and ballistic missile proliferation, that sharply contrasts with the active role that the Europeans once had in engaging on similar issues with Iran.

There is therefore an area that could be open to exploration in the relations between the EU and the Korean peninsula, and the South Korea could help initiate this with

original proposals in how to engage with North Korea.

III. European Common Foreign and Security Policy in the era of COVID-19

As we have seen, both the institutional mode of European integration as well as empirical experience of the post-Cold War, globalizing world, has led to the EU's development of original external policy and security instruments which touch frequently on the non-traditional areas. Despite this, and because of growing awareness in recent years of recurring crises of an increasingly global scale, scholars have pointed to the unfinished work in the domain of EU external policy on health (Keukeleire & Delreux 2014, 237-241). Several crises since the turn of the century, many involving respiratory diseases such as SARS in 2003, H1N1 flu in 2009, MERS in 2012, but also mosquito-borne diseases like dengue, chikungunya, zika, and hemorrhagic fevers like Ebola in 2013-2016, have warned policy makers that international epidemic outbreaks are threats that require both collective monitoring and collective, coordinated responses on the same level as what exists regarding military threats or economic crashes. It is interesting to note that the coronavirus has struck Europe precisely at a moment in time when the essential political focus was on a "neighborhood issue", that is, negotiating the future framework of relations between the EU and its former member the United Kingdom which exited the Union on 31 January. At this very date, the alarm was already spreading in Asia, and within days Europe's first brutal cluster would be declared in Italy. It is noteworthy that the early wave of COVID-19 has affected especially badly the biggest of the EU's member states, especially in Western Europe, namely Italy, Spain, France, along with the UK, and also to a lesser extent Germany. This is understood for demographic reasons as well as the important degree of openness to globalization of these major European economies, comprising all four European G7 members, and also countries with a sizeable involvement in, and dependence upon the tourism sector. This appears to have contributed to the early spread of disease during the 2020 winter and spring holidays, as would also be the case by the later summer. The early European responses were eloquent in the form of an adoption of general lockdowns, imitating the model proposed by China with the strict sanitary quarantine imposed on the Wuhan metropolitan area,

but less was achieved, for want of means to begin with, in terms of emulating the early example of South Korea's targeted tracing and testing of infected persons and infection clusters. The lockdowns represented a trauma for a Europe that prided itself on freedom of circulation within its Single Market. They also illustrated a significant rupture of solidarity among members with even some important humanitarian considerations swiftly brushed aside by the tight closure of borders. This underlines the point made in the previous chapter regarding the continued clout of national governments even within the framework of the European Union, especially regarding sanitary security. With little objection from Union authorities, national governments across Europe shamelessly impounded for their own use paid-for medical supplies that were about to be shipped to severely affected countries. They also engaged in sometimes indecent competition within producing countries, in China in particular, to acquire personal protective equipment, surgical masks especially, sometimes deliberately stoking public anger via the media when blaming other countries, European or American, for the failure to secure enough supplies. Only in the late spring did some schemes demonstrating more solidarity, including the airlifting of patients from overwhelmed areas to foreign countries with still resilient capacities within their hospital intensive care units, begin to mend the image of European countries behaving very selfishly in the face of this extraordinary crisis.

It is striking that at the time of writing, a full ten months into the health crisis, the emphasis in Europe's handling of it remains for a large part in national if not local dimensions. The lockdowns also suspended the usual functioning of the EU decision-making councils. After a brief reintroduction in person from mid-September to mid-October, because of the infection of several personalities at the latest meetings, the videoconferencing format is being reintroduced as the more usual form of peer-to-peer consultations by the member state governments. COVID-19 will be the specific order of the day for the forthcoming 29 October extraordinary council (Reuters, 2020). On 23 October, the EU sanitary agency has expressed grave concern for the sanitary situation of 23 out of 27 member-states along with the UK. A quick glance at the EU's official communication on coronavirus shows a decidedly inward-looking approach as it states that "The EU is mobilizing all resources available to help member

states coordinate their national responses, and this includes providing objective information about the spread of the virus, the effective efforts to contain it and measures taken to repair the economic and social damage brought by the pandemic." (European Union, 2020).

The information link to the European External Action Service is entitled "Latest news on EU actions, repatriation efforts and solidarity stories from around the world" (*ibid*). Placed under the headline of High Representative Josep Borrell's statement, that "The coronavirus has not only Europe but the entire global community in its grip and is the world's common enemy. An enemy we can only defeat with a global approach and cross-border coordination" (EEAS, 2020), the policy is described as an effort by "Team Europe" to support various partner countries with a "package… [of] almost 36 billion euros" (*ibid*). Three priority missions have been chosen, addressing the humanitarian needs generated by the immediate health crisis, strengthening the health, water and sanitation systems and "mitigating the immediate social and economic consequences" (*ibid*). The actions highlighted have concerned a diversity of countries in Africa, Latin America and Asia, in particular Timor Leste which has featured prominently. The latest, 13th Asia-Europe meeting was held on 7 September last in reduced format, Cambodia acting as host, involving 51 countries along with the EU and the German six-month presidency, Singapore as ASEAN representative and Russia; it naturally focused on the COVID-19 pandemic and emphasized "strengthened multilateral cooperation to accelerate the development and delivery of vaccines, diagnostics and treatments, as well as facilitating open scientific research, innovation and technical cooperation among ASEM partners, the private sector and other relevant stakeholders including civil society." (EEAS, 2020). The second area of concern was "working together to accelerate sustainable socio-economic recovery, stimulate economic development and financial resilience, and minimize the potential of global economic recession by restoring growth, investments and sustainable connectivity. » (*ibid*).

As was noted, the High Representative, Mr Borrell, has quite early in the crisis timeline emphasized a number of reasons why the EU's approach to the pandemic should have its global dimensions and concerns. He detected in March that the pandemic was creating a "new world" and "It is now that we have to demonstrate what European and

global solidarity really means". In April, the concept of "Team Europe" was deployed to help "our sister continent Africa and the Southern Neighborhood, as well as the Western Balkans, the Middle East, and parts of Asia, Latin America and the Caribbean". Borrell also expressed in May the EU's concern that "the coronavirus pandemic will very likely deteriorate our security environment in the years to come, increasing the need for a stronger European Union security and defense policy, and for a stronger Union in the world." In June, he emphasized the EU's wish for "a strong WHO to deliver", and also noted that the success of the recovery plan would determine Europe's global role and position, and it might also stimulate its autonomy in strategic matters. (EEAS 2020).

In summary, the European policies aimed against COVID-19 on the international stage are being tied to traditional policy modes and instruments used by Europe's external relations policy. These policies seek to maintain and deepen ties with long-standing partners, especially those in the immediate European geopolitical neighborhood. The European policies also appear to focus more importantly on the provision or facilitation of services for partner countries rather than developing common medical campaigns and efforts. This appears, interestingly, to mirror the intra-European situation itself where it has proven so difficult for the Member States to act really collectively and in a properly coordinated way, that would require as much preparatory work and diplomacy as the financial means put to use.

However, it will not have escaped readers in Asia that these elements of the European policy to combat COVID-19 across the world set a particular priority towards countries considered the least developed, which, in the words of the EEAS statement, concerns "parts of Asia". Indeed, the countries of North-East Asia where the early signs of the disease appeared, namely China, the Korean peninsula and Japan are considered in Europe as developed, though the state of North Korea or the contrasting levels of Chinese provinces do not enter into these considerations. It is perhaps also a natural consequence of the longstanding development assistance relations that exist between Europe and what it calls the "sister continent" Africa. Smaller Asian countries such as Timor Leste are also seen as in greater need of European assistance. It is also perhaps the case that the European mindset in which this health fight is undertaken against

the coronavirus is conditioned by the prior example of another highly symbolic health crisis, that of HIV/AIDS. This is perhaps paradoxically more influential in the formulation of the current European anti-COVID policies than the more recent memories of the West African Ebola outbreak in 2013-2016. For many years, one of the major problems, that could have informed the outlook of European decision-makers, was that the slowly emerging pharmaceutical treatment against HIV/AIDS raised difficult pricing, patent and licensing issues between the wealthy countries including European ones that conducted the research and development of such drugs, and the poor countries which suffered not only from a huge number of cases but also from the difficulty to acquire the necessary medicine at discount prices. One sees in the current formulation of European assistance policy on COVID-19 aimed at poor countries a wish to bypass the kind of tensions that were raised at the apex of the HIV/AIDS crisis. It will not have escaped Asian readers either that European-Asian trade disputes, though not all of them concerning every one of the EU's Asian partners, have often focused on issues of intellectual property, and on non-tariff barriers based on diverging health norms. There is no current vivid competition between European manufacturers of the COVID-19 vaccine and Asian counterparts, although it is not impossible there will be a procurement battle between the Europeans and the North Americans for instance. The Russian vaccines that were put into distribution at an earlier date this autumn will also constitute a more likely competitor to European productions. While this constitutes a more reassuring prospect that the EU member states and their usual Asian partners could cooperate rather than compete on COVID-19 assistance policies as well and the development of treatments, it may be the case that European priorities on COVID-19 will not much look towards Asia.

However, the following chapters might prove an important argument to European decision-makers that they could find an essential interest in getting involved. While South Korea's measures and policies have been observed in Europe with a view to drawing lessons on how to contain the outbreak, how the pandemic has affected North Korea is much less discussed in Europe. South Korea is likely more informed of the situation and the security problems that this raises, and in raising the issue in its discussions with the Europeans, it can help re-focus the modes through which the EU

will conduct anti-COVID policies as well as shift the attention to the specificity of the pandemic in the Asian region.

IV. North Korean economy and the UN sanctions

North Korea's economic development has taken form of a transitional economy – not the strengthening of the socialist planned economy – with marketization as its most important feature in the process. History shows that the reform of real-existing socialism practically meant "more markets and less plans" because of innate shortcomings of the planned economy in enhancing productivity, and North Korea is no exception. Liberal democracies, based upon modernization theory, assume that capitalist economic development leads to democracy in the long run. Accordingly, the intensification of capitalization in North Korea can bring about fundamental change not just in the economy but also in politics. As we have witnessed, the ongoing sanctions against North Korea are wreaking havoc on its endeavors to adopt capitalism in its economy.

The economic crisis of North Korea in the 1990s was not a sudden catastrophe. The economy had deteriorated over a long period of time due to the regime's subordination of the economy to politics for dictatorship, along with the socialist system's innate shortcomings such as comprehensive central planning. Amid the crisis, largely because of the discontinuance of food rationing by the state, the socialist country experienced widespread starvation and social disorder. According to Hwang Jang-yop, the former International Secretary of the Korean Workers' Party, the Party estimated that up to 3.5 million people had died from starvation or hunger-related diseases (Hwang Jang-yop 1999, 305). Also, hundreds of thousands of North Koreans who tried to avoid malnutrition and starvation defected from the country. The unprecedented economic situation diminished the dependency of the people on the state and led them to depend on themselves for survival. More and more North Koreans relied on markets, instead of the public distribution system, and thus marketisation from below expanded quickly throughout the country.

At the farmers' markets, which existed from 1958, the state allowed farmers to sell surplus farm products as an incentive to work harder. The state considered the market

to be a necessary evil for social stability and also as complementing the state distribution network. In the middle of acute food shortages and the consequent easing of restrictions on freedom of travel, they were substantially expanded in number and scale. Most towns in North Korea had a farmers' market which sold daily necessities and industrial products as well as farm products (Yang Moon Soo 2011, 240). Besides, inside and outside the market, a black market was created where almost all goods in the farmers' market were traded (Lee Mu-cheol 2008, 105). Spontaneous marketisation spread far and wide.

Marketisation made significant progress from the late 1990s as farmers' and black markets spread to every corner of the country (Yang Moon Soo 2011, 181). At first, North Koreans in their spare time sold their personal property or stolen goods from their workplaces to survive and support their families. As time went by, some who had retired or housewives fully engaged in peddling. Some workmen skipped work and conducted business in markets. In order to do that, they received fake medical documents from doctors in exchange for bribes or obtained permission from their bosses in return for money or contributions in kind (Jeong Wu-gon 2004, 99, 104-105; Yang Moon Soo 2004, 181). Soon, amongst those people, professional brokers appeared who purchased goods made in China in a border town or in a big city and sold them in a local market with large margins (Kim Chang-hui 2004, 180-181).

The number of young and middle-aged men who took part in trade activities increased rapidly; as a result, on the whole, about 70 to 80 per cent of women and about 40 per cent of men engaged in market-related activities (Chung Chung-gil and Jeon Chang-gon 2000, 101). Not all of them worked as sellers. For example, some engaged in semi-legal or private farming, and some were employed in private businesses as hired workers. In everyday life, the importance of markets was overwhelming as ordinary people obtained about 60 per cent of their grain and about 70 per cent of daily necessities from markets (Jeong Gwang-min 2005, 8).

During the economic crisis, in lieu of the party which had lost control of the everyday activities of the people, Kim Jong-il under the slogan of Military-First Politics sought to make use of the military's strong discipline and organizational abilities in preventing any popular uprising. To this end, against the backdrop of a catastrophic budget deficit,

he allowed the military to raise its own working funds. The government transferred operating rights of many collective farms, railways, factories, and enterprises to the military. Furthermore, the military set up trading companies and opened branch offices throughout the country, as trade with foreign countries was the most profitable business (Haggard and Noland 2011, 81–99; Smith 2015, 226–28)

In late 2005, however, as the economy was showing signs of gradual recovery, Kim Jong-il changed the general policy line. Taking advantage of the economic recovery, he attempted to rehabilitate the Party to suppress and control the market, and urged the military to commit itself to its original duty of defending the national territory (Lankov 2015, 123–25). The key figure in the scheme was Jang Sung-taek, who made a comeback as the chief administrator of the party-led reorganization of the economy. He sought to restrain the market and reinforce the role of the party in the management of the national economy. In December 2007, Kim Jong-il separated the Office of the Administration from the OGD and appointed Jang as head of the newly established Administration Department (AD) of the party. The Agency of People's Security, now under the umbrella of the AD, stepped up its law enforcement activities, including restraining markets and maintaining public order. Moreover, the new policy required the military to return to its original role of defence. The excessive economic activity of the military had caused a laxity of military discipline and had damaged the smooth recovery of the national economy at large. In accordance with the policy direction, Jang restructured the trade sector and, in doing so, played a central role in reducing the trade volume of the military (Park Hyeong-jung 2008, 1-2).

These measures empowered Jang but sharpened the intra-elite conflicts over power and money and soon precipitated a full-fledged internal struggle between Jang and his rivals in Pyongyang. The power struggle between them ended with the demise of Jang Sung-taek in December 2013. However, the process of purging and executing him ushered in renewed political and legal establishments that could remove enemies in power struggle by charging them with treachery to the supreme leader. The revised Ten Principles for the Establishment of a Monolithic Ideological System was a key instrument for that purpose (NK News December 11, 2014).

The military and the OGD are currently at the helm of the economy, the two victors of the power struggle. Their victory has brought vast rewards. Powerful figures in those institutions took large shares. For example, Oh Geuk-ryul in the military took back the management rights of the Najin Port Development Project as well as gold mines, fruits and fishery farms. Hwang Byung-seo in the OGD appointed his foster-daughter Lee Young-ran as head of Section 54. She is the daughter of his predecessor Lee Young-chul. The authority of the cabinet was enhanced, but its jurisdiction in managing and reforming the economy is still substantially limited as it cannot regulate a great number of businesses that are practically controlled by the military and the OGD. The military and the OGD are seeking immediate economic benefits rather than pursuing the sweeping economic reforms which are crucial to solving North Korea's economic slump. Foreign investment, in that sense, is more likely to be the medium for influential figures in Pyongyang to accumulate wealth than the source of nationwide economic reform. By the same token, the marketization of the economy will be maintained as long as the military and the OGD reap enormous profits from the current economic situation (Dong-A Ilbo September 16, 2015).

In short, the economic crisis propelled senior officials in the military and the Party into market-related activities, which began with the acquisition of wealth by top-ranking generals in the late 1990s with the unfolding of the military-first politic. Widespread marketisation led not only ordinary people but also officials in the state to engage in business, and the higher their rankings were, the easier they became rich. From the late 1990s, power and money were closely linked to each other and, thus, power struggle involved a conflict over money. In North Korea today, economic interest became a decisive force for power struggle, and the consolidation process of Kim Jong-un's power corresponded to heightened intra-elite competition for economic interests.

In North Korea today, as Table 1 shows, major trading companies belong to powerful organizations of the Party, the military and the cabinet. These companies are parent companies which have many subsidiary companies.

Table 1. Major Trading Companies in North Korea

Company	Control Organization	Company	Control Organization
Daeseong Trade General Bureau	Office 39, Party	Eunha General Trading Group	Light Industry Dept., Cabinet
Myohyang Trading Group	Office 39, Party	Pyongyang Tobacco Export-Import Group	Light Industry Dept., Cabinet
Leunglado General Trading Group	Office 39, Party & Pyongyang Party Committee	Korea Daeyang General Group	State Development General Bureau, Cabinet
Gumleung Export-Import Group	Munitions Industry Dept., Party	Neungla 888 Trading Group	Kumsusan Palace of the Sun
Eundeok Trading Group	Munitions Industry Dept., Party	Jamsaem Trading Group	Military Security Office, Military
Daeyang Trading Group	Officer Management Dept., Party	Birobong Trading Group	Reconnaissance General Bureau, Military
Younggwang Trading Group	International Dept., Party	Cheongbong Trading Group	Reconnaissance General Bureau, Military
Gwangmyeongseong General Trading Group	United Front Dept., Party	Yungseong Trading Group	Support Bureau, Military
Ryongak Mt. General Trading Group	Second Economy Committee, Party	Eunpa Mt. Trading Group	Border Guards, Military or Ministry of State Security
Jangseong Trading Group	Pyongyang People's Committee, Party	Korea Songsan Economic and Trading Group	General Political Bureau, Military
828 Trading Group	Kim Il Sung Youth League	Dongheung Trading Group	Ministry of State Security
Okryu Trading Group	External Service General Bureau, Cabinet	Shinheung Trading Group	Ministry of People's Security
Bonghwa General Trading Group	Ministry of Trade, Cabinet	Dongyang Trading Group	General Escort Office

Organizations such as Office 39 and Light Industry Department of the Party have many general trade companies (that have many subsidiary companies). Especially, the companies appearing in bold text are most active at the present. They are in control of powerful organizations and/or de facto controlled by powerful figures in Pyongyang. 828 Trading Group, for example, is controlled by Choe Ryong-hae. The main business partner of China's Dandong Hongxiang Industrial Development Co. was Korea Songsan

Economic and Trading Group. The Chinese company also worked with 828 Trading Group (The Guardian September 26, 2016).

North Korea, like any other (small-sized) country, relies on trade with foreign countries for sustaining and expanding its economy. Furthermore, the subordination of the economy for the dictatorship by the Kim family worsened its economy for decades. Historically, although it emphasized *Juche* [self-sufficiency] in the economy from the late 1950s, it could not stand on its own feet. As Table 2 shows, North Korean economy's downward tendency from the early 1960s was only reversed when it received large foreign loans in the early 1970s. In the late 1980s, when Pyongyang condemned Moscow as a revisionist, it still heavily depended on its support of energy such as crude oil and coke. One of the main reasons for the tragic famine in the 1990s was the shortage of fuel after the collapse of the Soviet Union, in which trade with Moscow shrank from 2.46 billion USD in 1990 to 0.46 billion USD in 1991 (Gwon 2005, 148-9).

Table 2. Economic Growth Rates of North Korea, 1953-1990 (%)[1)]

Year	GDP Growth Rates
1953-1956	30
1957-1960	21
1961-1965	9.9
1966-1970	5.4
1971-1975	14.2
1976-1980	4.0
1981-1985	3.6
1986-1990	1.4

In North Korea today, the biggest constraints to the economy are the sanctions applied by the United Nations, the United States, Japan, South Korea, and so on. In particular, the sanctions by the United Nations, which are shown in the table below, have been

1) Economic growth rates from 1953 to 1980 are estimated from North Korea's official figures (NMP), and those from 1981 to 1990 are estimated from South Korean ministry of unification's figures (GNP). See, Byung-Yeon Kim, Suk Jin Kim, and Keun Lee (2007) 'Assessing the Economic Performance of North Korea, 1954-1989: Estimates and Growth Accounting Analysis', *Journal of Comparative Economics,* 35:3, 567.

particularly damaging its economy and, among them, the sanctions in 2017 were the heaviest in their impacts by cutting off North Korea's trade and halting any form of its economic cooperation with foreign countries.

Table 3. Major UN Sanctions against North Korea

Resolution	Date	Trigger	Provisions	Sanctions
UNSCR 1718	14 Oct. 2006	1ST nuclear test	- DPRK to abandon its nuclear and ballistic missile activities and to return to the NPT and the Six-Party Talks	- Ban exports of heavy weaponry, some materials and technologies, and luxury goods to DPRK - Freeze financial assets of entities supporting DPRK nuclear programs
UNSCR 1874	12 June 2009	2nd nuclear test	- Repeated provisions from UNSCR 1718 - DPRK to join the Comprehensive Nuclear Test Ban Treaty	- Expand arms embargo to imports and exports of weapons - Inspect DPRK cargo if needed - Prohibit financial support for DPRK except for aid purposes
UNSCR 2087	22 Jan. 2013	1ST satellite launch	- States to monitor entities related to the DPRK regime	- Impose stricter sanctions based on UNSCR 1718 and UNSCR 1874
UNSCR 2094	7 March 2013	3rd nuclear test	- Condemn DPRK's uranium enrichment	- Limit DPRK regime from bulk cash transfers and international banking system
UNSCR 2270	2 March 2016	4th nuclear test and 2nd satellite launch	- States to end training of DPRK nationals - DPRK to abandon chemical and biological weapons and to act in accordance with the Biological Weapons Convention and the Chemical Weapons Convention	- Expand the arms embargo to small arms and light weapons - Obligate inspections on cargo to or from DPRK - Freeze assets of North Korean government and Worker's Party entities associated with prohibited activities
UNSCR 2321	30 Nov. 2016	5th nuclear test	- States to downsize staff at DRPK diplomatic missions and consular posts	- Prohibit DRPK from exporting minerals, iron and iron ore, and more - Limit bank accounts held by diplomats and missions - Suspend scientific and technical cooperation with DRPK

Resolution	Date	Trigger	Provisions	Sanctions
UNSCR 2371	5 Aug. 2017	Two ICBM tests	- Reiterate its support for the Six-Party Talks - North Korea to accede to the Chemical Weapons Convention	- Prohibit North Korean exports of coal, seafood, and lead - Allow the UNSC to deny international port access to vessels violating UNSCR - Ban countries from allowing in additional North Korean laborers
UNSCR 2375	11 Sep. 2017	6th nuclear test	- Reiterate its support for the Joint Statement of 19 September 2005	- Ban North Korean textile exports and natural gas imports - Limit refined petroleum product and crude oil imports - Prohibit states from authorizing North Korean nationals to work in their jurisdictions - Ban all joint ventures with DPRK entities
UNSCR 2379	22 Dec. 2017	I C B M launch	- Acknowledge that DPRK revenue from exports and workers overseas contribute to nuclear weapons and ballistic missile programs	- Direct states to expel all North Korean workers - Ban North Korean exports of food, agricultural products, minerals machinery and electrical equipment - Ban North Korea from importing heavy machinery, industrial equipment and transportation vehicles

Source: Marcus Noland October 2018

North Korea today witnesses a new type of economic activities, which we can call an early stage of capitalist economic development, and Donju or individual capitalist is leading the rapid change in the economy. A growing number of Donjus are engaged in various areas such as lending money, running restaurants and, most notably, manufacturing goods by borrowing production facilities from the state and employing workers. According to a survey of North Korean defectors in 2015, Donjus are managing about 65 percent of restaurants, 57 percent of shops, 26 percent of local factories, and 21 percent of factories in Pyongyang. The role of Donju is rapidly expanding in the Kim Jong-un era. For example, Donjus played a crucial role in early completion of the construction projects of Yeomyeong Street, Changcheon Street, Eunha Scientists

Street, Wiseong Scientists Housing District, Mirae Scientists Street by investing money and procuring construction supplies from China (MaeilJonggyosinmun June 4, 2019).

Figure 1: Mirae Scientists Street

Source: Yonhap News October 29, 2015.

As shown in Table 4, North Korea with Kim Jong-un as a new leader recorded five years of steady economic growth until the year of 2017 when the United Nations imposed a series of crippling sanctions on it.

Table 4. North Korea's annual GDP growth rate in the Kim Jong-un era

Year	2012	2013	2014	2015	2016	2017	2018	2019
GDP Growth Rates	1.3	1.1	1.0	-1.1	3.9	-3.5	-4.1	0.4

Source: Trading Economics 2020.

The sanctions dealt a heavy blow to North Korea's economic development, causing the economy contract 3.5 percent in 2017 and 4.1 percent in 2018. However, interestingly, it recorded a positive growth of 0.4 percent in 2019. There were a number of reasons for the economic rebound. For example, it resulted from small-scale trade with China However, the most important and noteworthy cause was that North Korea's capitalist path is on track to the extent that it is not easily swayed by Western sanctions. Considering the fact that it is practically impossible to abolish small-scale border trade between North Korea and China, we can expect that North Korean economy would not shrink again as it did in 2017 and 2018.

V. COVID-19 in North Korea

The economic crisis in the 1990s dismantled North Korea's social safety nets including public health and, since then, its health care system has not worked properly. Amid food shortage medical personnel sold medicines in the market for survival. North Korean people had to pay money to purchase medicines and, due to the low supply of medicines, most of them could not afford to buy them. As a result, ordinary people relied on various types of medicines or drugs compounded by unqualified individuals (Jeong Wu-gon 2004, 97). The shortage of medicines is still rampant especially in local areas and, thus, it is common for people to bring medicines along with them when they go to hospital. In this situation, the North Korean leadership was terrified of COVID-19 from the early stages of transmission.

On January 28, North Korea declared a "national emergency anti-epidemic system" against COVID-19 and established the anti-epidemic headquarters with Park Myeong-su as the head of the newly established organization. Around that time, the North Korean government closed borders and banned foreign tourists and, from early February, it ordered all international flights and railway services to be suspended. Since then, all people had to wear masks and could not visit public places such as restaurants, spas, and Ski resorts. Schools were also closed, and university students in Pyongyang who came from elsewhere were confined to campus (Yonhap News 19 March 2020). Ordinary people, due to the shortage of medicines, which were even worsened by the blockade of borders with China, were recommended to eat Kimchi, garlic, and red pepper as often as possible to enhance resistance against the corona virus. Those North Koreans who were suspected of being infected with COVID-19 had to stay home until they were diagnosed by medical workers and, if needed, the whole family had to be put in designated quarantine facilities to prevent contagion (The Diplomat 6 August 2020).

A number of South Korean media argued that COVID-19 had already spread to North Korea. For example, on February 7, Daily NK stated that five people in Sinuiju died because of the epidemic, and JoongAng Ilbo reported that one female in Pyongyang was infected (Daily NK 7 February 2020; JoongAng Ilbo 7 February 2020). However, officially, there is no case of COVID-19 in the North until today (NK News 10 October

2020). According to the World Health Organization (WHO), North Korea tested 3,374 people as of September 17 for the corona virus, and the test results were all negative. WHO Representative in North Korea Edwin Salvador said that at least 31,163 people had been quarantined until September 17 (Hanguk Ilbo 1 October 2020). The WHO's announcements to outside world were based upon the information provided by the North Korean government. Thus, it is possible that the numbers could be manipulated to a greater and lesser degree although Russian Ambassador Alexander Matsegora said that there is no reason to doubt Pyongyang's claim of a "clean land" free of COVID-19 (NK News 17 April 2020).

Practically it is difficult to grasp whether North Korea has a confirmed case of COVID-19 or not when it deliberately tries to hide it. What is critical at this juncture is the fact that Pyongyang is taking a national emergency at an unprecedented level to prevent infection of the virus. The level of anti-epidemic measures has not tempered as time went by. Rather, from July 25, the government raised it to a "maximum emergency system," after a North Korean – who had defected to South Korea three years ago – who crossed the border into the North Korean border city Kaesong was suspected of being infected by the virus. Allegedly, Kim Jong-un was furious for the man's crossing without any check from North Korean border guards. The maximum emergency system called for a much stricter degree of anti-epidemic measures of more rigidly enforcing social distancing, forbidding social gatherings, imposing a border lockdown, and so on (New York Times 25 July 2020).

North Korean state media echoed the government's intensive measures against the novel corona virus. On July 31 Rodong Sinmun, the official daily of the Korean Workers' Party, warned that citizens and officials are "still not awake" to the pandemic and demanded a high level of vigilance in the fight against the virus. It said that still many North Koreans failed to abide by anti-epidemic measures with "lax attitudes" although Kim Jong-un and the party established rules properly. In an article titled "Are you not awake yet?" Rodong Sinmun stated that some citizens did not wash their hands and sanitize spaces and some medical personnel failed to take the temperature properly and performed work without proper equipment. Also, the article said that, although wearing masks are mandatory, some citizens and workers do not follow the rules, by not wearing masks

deliberately and asked "for whom, then, do you think such anti-epidemic mask-wearing policies were made?" These kinds of warnings frequently appeared in other media such as a five-minute propaganda program aired on Korea Central TV (KCTV) on July 30, in which the anchor said that North Korea "would not be able to recover from the consequences of even a single person becoming infected" with the virus and demanded people to "overcome deviations of the previous period of prevention efforts" (NK News 31 July 2020).

Pyongyang has not requested any help from outside but received it, albeit not publicly – North Korean media have never covered the issue because officially North Korea is a COVID-19 free country. For example, in mid-June, the Swiss Agency for Development and Cooperation delivered disinfection kits, including cleaning gloves, goggles, and WATA-Standard electrolyzers, to 30 North Korean hospitals by road from Dandong, China to Sinuiju, North Korea. The 30 sets of disinfection kits are worth about 58,201 USD (NK News 17 July 2020). On August 13, South Korea's one non-governmental organization and Gyeonggi Province jointly delivered anti-COVID-19 items to North Korea via the Dandong-Sinuiju route. The items, such as 10,000 protective suits, diagnostic kits for 10,000 tests, thermal imaging cameras, are worth about 674,000 USD (Seoul-Pyongyang News 13 August 2020).

Kim Jong-un boasted, "Nothing can be bartered with the life and safety of the people although we could suffer a huge economic loss" (NK News 20 May 2020). But as time went by it became increasingly unbearable for the small-sized country to sacrifice the economy for strict anti-epidemic measures. The United States is aware of North Korea's ongoing economic suffering. In a webinar hosted by the Center for Strategic International Studies in September 10, U.S. Forces Korea commander Robert B. Abrams said that North Korea's imports of goods from China significantly decreased because of COVID-19. "If you just look back at the sanctions of 2017, those dropped Chinese imports by about 50% – and then they rebounded last year," he said. "With the border shutdown of COVID-19, (North Korea) dropped imports from China by 85%" (NK News 10 September 2020). However, the worst has not yet come. Even for the world's richest countries, Bill Gates argues, the COVID-19 pandemic will not end at least until the end of 2021 (Business Insider 8 August 2020). In the same vein, the World Health Organization

(WHO) warns a vaccine for COVID-19 will be vital in the fight against the virus, but the vaccine will not easily end the ongoing pandemic and there is no guarantee that the world will find it (CNBC 21 August 2020).

Recently, tourism contributed a lot to the economic rebound of North Korea, which registered a positive economic growth in 2019 still under heavy sanctions by the United Nations, the United States, Japan, South Korea, and so forth. The boom in the tourist industry began from the latter half of 2019 largely because of the influx of 35,000 Chinese visitors. In June, Xi Jinping made a state visit to North Korea and had summit talks with Kim Jong-un. Afterwards, Xi gave orders for the China National Tourism Administration to expand the number of tourists to North Korea into at least five million. Xi's order was allegedly specific as he directed all public officials and teachers (including kindergarten teachers) to travel to its southern neighbor. The number was surprisingly high especially considering the total number of Chinese tourists to South Korea in 2018 was 4.78 million (Weekly Chosun 7 October 2019). Under the UN sanctions, in which China also participated, China could not help North Korea economically as before. The summit talks between North Korea and China managed to find one method – boosting North Korean travel industry with Chinese tourists – because it was not, at least explicitly, against the sanctions.

Encouraged by the friendly measures by China, North Korea even invested a lot its scarce resources to constructing tourist facilities in a bid to attract more Chinese tourists by developing tourist complexes outside Pyongyang, such as the Wonsan-Kalma coastal tourist zone in Hamgyeong Province. Donju played a crucial role in constructing apartment buildings in Yeomyeong Street, Mirae Scientists Street, Eunha Scientists Street, and so on in Pyongyang. However, this time, the North Korean government invested its own budget in developing tourist zones across the country (ShinDong-A 24 May 2019). On October 25, 2020, North Korea issued a notification to South Korea, calling for dismantling of tourist facilities in Mount Geumgang Tourism Zone, which were constructed by South Korea in early 2000s. North Korea intended to build new and modern facilities in the most well-known tourist zone for foreigners after the removal of old and practically useless South Korean facilities because of the sanctions (Hankyoreh 15 November 2019).

Due to the COVID-19 pandemic, however, Pyongyang's scheme to place tourism as a core engine for economic development in the midst of heavy sanctions went awry. Kim Jong-un had to divert workers and materials for the project of the Wonsan-Kalma coastal tourist zone to constructing Pyongyang General Hospital (ShinDong-A 24 May 2019). Also, despite last year's repeated notifications demanding South Korea's disintegration of its tourist facilities in Mount Geumgang, North Korea has not done anything and remained quiet about them this year. Tourism has been one of the hardest hit industries due to the corona virus and the consequences of it are disastrous to North Korea today, which has been already severely damaged by the harsh international sanctions especially from 2017.

As a response to the ongoing difficulties, the North Korean government, on the one hand, explicitly laid the blame on COVID-19 for economic suffering and emphasized the necessity of strict anti-epidemic measures. The Political Bureau meeting in July, according to Rodong Sinmun, stated that safeguarding people's life and safety are more important and more urgent than the completion of economic projects. For example, on July 10, the ruling party daily said, "It is our party's demand that we should consider blocking the infiltration of the pandemic infection disease more important than any achievements in economic construction" (NK News 13 July 2020).

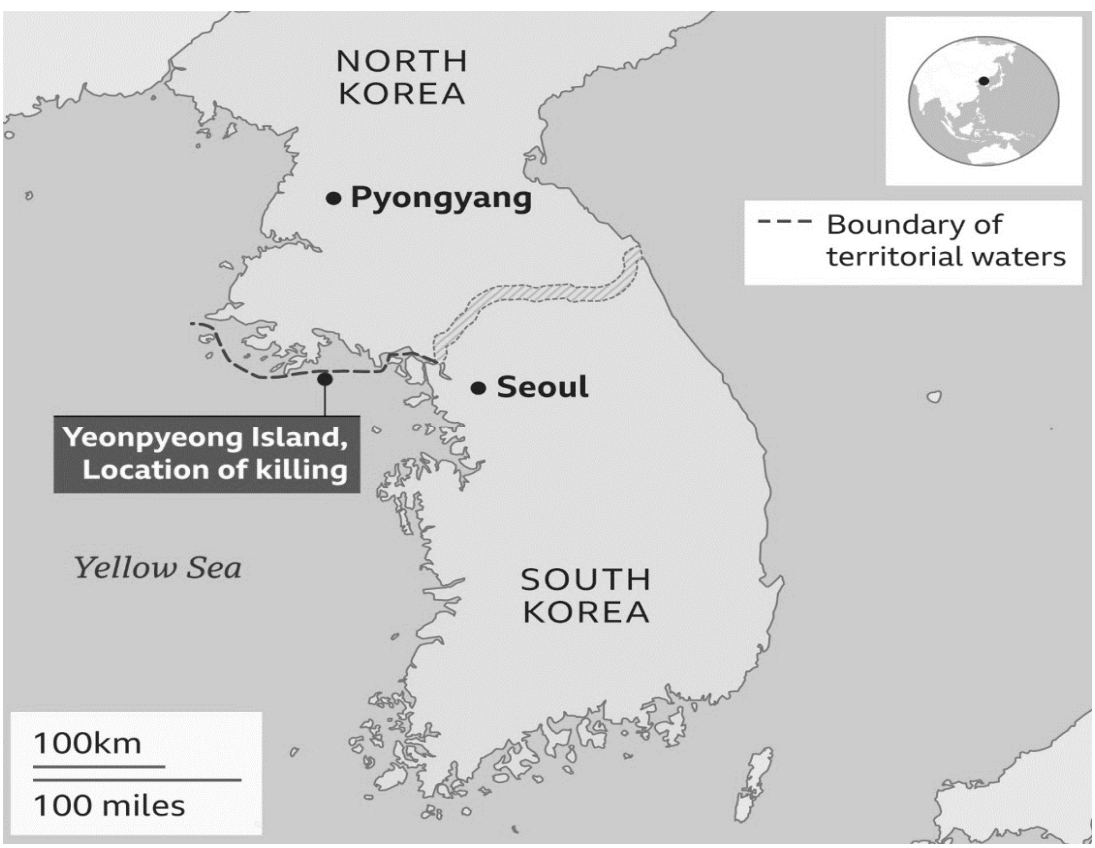
On the other hand, North Korea, in order to prevent the corona virus from getting inside the territory, stepped up its efforts in guarding the border. Conventionally, the primary role of North Korean border guards is to prevent people from defecting to China. However, this time, more emphasis was given to strengthening border security to block people from getting into North Korea, which means smugglers for economic gains were also great concerns and subject to heavy punishments. North Korea from the early stages of the COVID-19 pandemic installed extra wire fencing, increased the number of border guards, dispatched a lot of disease control officials to border areas (NK News 6 August 2020).

On July 25, as aforementioned, amid escalating prevention measures against the corona virus, Pyongyang issued a "maximum emergency system." In early August, however, one smuggler was caught in Onseong, a North Koran border city in North Hamgyeong

Province, after he had crossed the border from China to North Korea. Knowing the fact, Kim Jong-un was allegedly enraged and imposed extremely harsh punishments for those who were responsible for border security. According to Dong-A Ilbo, seven officers in charge of border security near Onseong were executed and seven high-ranking officials, even including the head of the Public Security Bureau in Pyongyang, were sentenced to life in prison (Dong-A Ilbo 3 September 2020).

It was against this backdrop that, on September 22, a South Korean fisheries official who may have attempted to defect to North Korea was shot dead by North Korean border guards who then set his body on fire to prevent transmission of COVID-19 (New York Times 24 September 2020). The following Figure 2 shows the location of killing, which was near Yeonpyeong Island in the Yellow Sea.

Figure 2. The location of killing



Source: BBC 25 September 2000.

The maximum emergency system from late July demanded far more intensified border lockdown than before, which included Kim Jong-un's order to shoot on site anyone crossing the border into North Korean territory (NK News 10 September 2020). Those in charge of border security, especially after they witnessed the harsh punishments against those who failed to prevent a smuggler from crossing the border into North Korea about one month ago, are rigidly abiding by the emergency system for fear of heavy punishments which can cost their lives. This was a human rights issue, and North Korea was fully responsible for the death of the South Korean man. However, if South Korean people had precisely grasped the urgent situation of North Korea, the tragedy might have been avoided. Understanding what is going on in North Korea today is not just important for researchers and policy makers but also for ordinary people.

VI. Policy observations and recommendations towards a South Korea-EU cooperation for in providing COVID-19 assistance to North Korea

Despite heavy sanctions imposed by the United Nations from 2017, North Korea managed to record positive economic growth in 2019 largely on account of tourists from China. The economic rebound, albeit to a limited extent, was not just beneficial to the economy of North Korea but also to the stability of the Korean peninsula. However, COVID-19 has grievously exacerbated North Korea's economic conditions and, thus, destabilized the peninsula. North Korea has suffered a lot economically by blocking foreign tourists and restraining trade from late January. Initially, those drastic measures were considered as temporary ones, but things have not improved until now. In the process, North Korea, a small-sized country with scarce resources, found it impossible to sustain its economy as it planned.

Pyongyang, especially since late spring when an international consensus expected that the pandemic would not end shortly, has indicated that it faces an urgent situation because of the virus. The explosion of a joint liaison office of North and South Korea in the border city of Kaesong – which was opened in 2018 as agreed by the two leaders in the April 2018 Inter-Korean summit talk – can be interpreted as a signal, or a shock tactic, for the North to receive tangible aid from the South. Nominally, Pyongyang argued

that Seoul's inability to prevent North Korean defectors from flying anti-Kim Jong-un leaflets into the territory of North Korea was attributable to the blowing up of the building. However, as BBC pointed out, that was just an excuse (BBC 16 June 2020).

On September 25, 2020, Kim Jon-un issued a personal apology for the killing of the South Korean official by North Korean border guards in the Yellow Sea. Kim called the killing of a South Korean a "disgraceful affair" and said that he felt "very sorry" for disappointing President Moon Jae-in and "South Korean brethren" especially in the midst of ongoing dire situations because of the COVID-19 pandemic (BBC 25 September 2020). North Korea has expressed regret from time to time but mostly in the form of brief comments or messages by heads of office in charge. Very rarely Kim Il-sung and Kim Jong-il expressed regret to South Koreans, albeit verbally. The North Korean supreme leader's expression of "very sorry" in a written statement was unprecedented. This rarity can largely be ascribable to North Korea's intention to garner help from South Korea amid the corona virus-led quagmire.

Compared with its signals to South Korea, which were intermittent and event-based, North Korea has constantly and persistently asked the international community to relieve sanctions, especially the UN sanctions in 2017. After the Hanoi Summit between U.S. President Donald J. Trump and North Korean leader Kim Jong Un produced no agreement, North Korea, on the one hand, relied more on China and, on the other hand, delivered its requests for the relief of sanctions more openly, appealing to the international community with an emphasis on its economic pain.

COVID-19 triggered more urgent action from Pyongyang. For example, in a statement before the 73rd World Health Assembly held in Geneva in May, North Korea, in a bid to fight the corona virus, urged member states to take "proactive steps" by immediately "withdrawing existing unilateral economic, financial and trade restrictions and anti-humanitarian sanctions." North Korea argued that "all kinds of discrimination and politicization in providing assistance" need to be brought to an end for global solidary and mutual cooperation as part of the immediate response to the pandemic (NK News 20 May 2020).

South Korea deems it strategically important to maintain the stability of the Korean

peninsula. Achieving peace on the peninsula is the ultimate goal of the South. However, it is not possible without the successful nuclear negotiation between the United States and North Korea and, thus, the South Korean government is striving to work as a mediator, if needed, between the two countries. In the present situation, the ongoing pandemic and its consequences for North Korean economy can impede the way to peace and security of the peninsula. Seoul is helping Pyongyang by providing medicines and anti-epidemic supplies and doing crisis management by preventing unexpected incidents from developing into head-on collisions. In addition, South Korea is stepping up international cooperation for North Korea, which is in need of help because of the corona virus. Cooperation with the EU is critical at this juncture.

A South Korean proposal to the EU to propose engaging North Korea in the context of this pandemic could be seen in a sympathetic light by European decision-makers as well as the Member State governments. It represents a generous attempt by South Korea, despite the difficult context of current dialogue with North Korea after the closure of the Kaesong Special Region to maintain efforts in regular engagement. This ties well with the general approach to international relations of the EU and its regular efforts to maintain engagement with its geostrategic neighborhood and advance through different means towards areas of peaceful cooperation.

South Korean decision makers will nevertheless have to take into account some important questions when framing their approach to both the EU and North Korea, bearing in mind that some conditions, especially the disposition of the North Korean government towards such a proposal, may not necessarily be easy to compute. Uncertainty is a parameter that has been verified many times when engaging with North Korea, not only by South Korea itself but by the other powers engaged in the Six Party Talks. The September 22 killing of the South Korean fisheries official by North Korean troops claiming to be under orders to stop any potentially COVID-19-infected person from entering the North Korean territory raises serious questions for Europeans as to North Korea's behavior and disposition towards the outside in the context of the pandemic.

A judicious angle of approach by South Korea's decision makers when advancing this

proposal to their EU counterparts will be the emphasis on neighborhood stability and engagement. As we have seen, this constitutes a core element of EU external policy, one with which the EU executive, legislative and also the Member State governments are quite familiar. The emphasis laid by South Korean representatives, that this new area of policy engagement could be both a novel and perhaps more successful angle with which to engage with North Korea, differing from previous models of economic, cultural and sporting cooperation, could score some important political points with the EU decision-makers. Although this may require some more investment in time, it might be a particularly popular point to emphasize with the members of the European Parliament who can provide some political support to the initiative. It will also be helpful to acquire to this initiative the top officials of the EU executive. Engagement and discussion of this issue will be needed between South Korean representatives and the president of the European Commision, Ms- von der Leyen, bearing in mind that her previous tenure as Federal Defense Minister in Germany has given her a strong understanding of security issues including their non-traditional areas and expressions.

As discussed in Part III, the High Representative, Mr Borrell, has also begun formulating the elements of a COVID-19 agenda within the CFSP, and it can be of interest for the EU's global outreach to explore expanding this agenda even much further beyond the EU neighborhood in Asia. As we have seen, the absence of the EU from the Six Party Talks represents a significant absence of European engagement in the area and on issues which are of regional as well as global strategic importance. If the EU were eventually to join the Six Party Format in order to play a role similar as to what it did and achieve in the negotiations for the JCPOA with Iran, having engaged with North Korea alongside South Korea on this humanitarian outreach could provide a favorable response, not just from Pyongyang and Seoul but also from the other powers.

It must not be underestimated that for all its attractions, this policy initiative represents engagement in an area often considered remote by Europeans. While there is good foundation thanks to the existing cooperation instruments with South Korea that will be entering their second decade, South Korean policy-makers must be aware that their European counterparts may, in this context, devote greater attention and energy to engagement with regions more immediately in the European neighborhood. At the time

of writing, it must be stressed in particular that the possibility of an acute political crisis in Belarus, which will certainly have some spillover effects with the EU's other two important eastern neighbors, Ukraine and Russia, will warrant not just careful monitoring by the EU leadership, but also some creative political initiatives. The broadening Armenia-Azerbaijan conflict is also capturing much attention in the sphere of Europe's immediate neighborhood. In a different dimension, the EU is also expected to be quite sensitive to the impact of the disastrous explosion in the port of Beirut, which has not only crushing physical and human effects but will also trigger a political crisis in a country that is pivotal to stability in the Near East and Eastern Mediterranean, already dangerously rocked by the effects of the civil war in Syria. It cannot be understated how much the COVID-19 pandemic has had and continues to have a grievous effect on either of these two countries in distress, and EU assistance there will be regarded as strategically important for Europe itself. South Korean representatives when discussing the possibilities to engage with North Korea with their EU counterparts will have to be prepared to make a strong case that, even if it is not regarded in priority by the Europeans, should still be regarded as worthwhile. The task will be all the more complicated by the fact that the newest virulence of the disease is severely affecting EU member states, with both Spain and France passing the million-case mark at the time of writing. The institutional functioning of the EU is also severely impeded by the infection, and sometimes hospitalization, of senior member state ministers who have a say in deciding such policy. This is where the question of results, and how much prior preparatory work has been conducted with North Korea, will be a weighty argument.

Indeed North Korea's past behavior, including in relation to the pandemic, has demonstrated a very guarded approach that is acutely mindful of sovereignty, control and prestige. The September 22 killing represents an even more troubling sign of the direction that DPRK policy to contain the pandemic has taken. Calibrating an efficient South Korea-EU proposal of both engagement with and assistance provision to North Korea will not be easy. Yet conditionality, as we have seen, has been an important element of EU external cooperation schemes, and how much can be demanded in this respect from North Korea will be in no small degree out of the hands of either the

EU or South Korea. Will it be possible to obtain guarantees that DPRK troops are no longer under the orders that resulted in the September 22 shooting? Especially in the context of the pandemic, it has been seen by the Europeans as well as by other powers how important a degree of transparency and accurate communication of data was helpful to assessing needs and to framing policy. If assurances can be given to the Europeans that North Korea will be willing to offer such conditions and manage to operate this way, this would give some important political capital in convincing the EU's decision makers to engage.

It is not impossible that the EU may also raise the question of how, and where, to fit China in respect to this policy of engagement. If South Korea has already engaged and obtained some elements of where China would stand in relation to providing COVID-19 assistance to North Korea, this may be an important argument to provide to EU counterparts that this initiative has been well thought through. As the power in which the outbreak was first reported, China obviously has a key role to play, the more so because of the breadth of its land border with North Korea, the state of cross border exchanges, including the previously reported extent of the pandemic in the neighboring Chinese and Russian provinces and districts.

How to frame this policy also in relation to the United States will have not escaped the South Korean and EU decision makers. As South Korea's essential security partner over decades and with its presence in the country, the US has its own channels of discussion with South Korea and it is likely its stance will also be of importance to North Korea. Similarly to China, some exploratory discussion of the policy initiative with US counterparts can be a convincing point to make to EU decision-makers by South Korean representatives. It is also possible for South Korea to suggest possible points of engagement between South Korea and the US on this cooperation, in searching for the possibilities that might benefit a maximum of the stakeholder powers engaged in the peninsula. The current political calendar that includes the US general elections this November and the expected transition of administrations may also impact the pace at which consultations with the US government can be conducted on this issue.

Naturally, the stance of the United Nations, and of relevant agencies such as the World

Health Organization and World Food Program in particular will also play a role in shaping the EU stance towards a cooperation proposal framed by South Korea toward North Korea. The recent recommendation by the UN rapporteur on North Korea does constitute a very important nudge in favor of a conciliatory stance towards North Korea all the more remarkable that the September 22 shooting does not seem to have had any incidence on this judgment. It is nevertheless important to note that the UN sanctions with the EU had supported were taken for specific reasons relevant to international security, including the issue of nuclear and ballistic missile proliferation that are no small concern. While humanitarian and sanitary concerns may weigh greatly on decisions regarding international cooperation to assist a COVID-19-striken country, these issues have not disappeared and remain to be addressed. Whether North Korea would be willing to offer a goodwill gesture of its own on proliferation questions in exchange for the lifting of such sanctions, the more so if this gesture hasn't been specifically asked for by the UN rapporteur, is not certain, though it would go a length to convince EU decision-makers to act generously.

VII. Conclusion

The traditional notion of security, as Buzan argues (1991), needs to be extended to encompass various non-traditional dimensions such as political, economic, societal, environmental security. His argument attracts increasing attention today because of, most of all, the ongoing COVID-19 pandemic. Non-traditional security, nevertheless, is not separate from traditional security as it can place the traditional dimension of security under threat. A series of recent provocations by North Korea against South Korean civilians and properties were the cases in point.

The development of the EU's Common Foreign Policy has led it historically towards a strong focus on non-traditional areas of security policy. European integration has been driven by a search for collective security and a concern for neighboring regional stability. Since the processes of integration as well as the development of a Common Foreign and Security policy for almost three decades have been incremental, Member State governments have retained a strong degree of control over the EU's policy-making

in external affairs. This ensures a crucial role for governments sitting in the European Council and the Council of Foreign Ministers. These express a traditional concern, despite the wish for an integrated and coordinated external policy often translated into block action in multilateral organizations and negotiations, to preserve elements of sovereign decision-making for the Member States. The EU has also experimented with a wide range of association agreements and partnerships with the European neighborhood, as well as with further regions and countries, which have security implications via their focus on non-traditional areas. These create working cultures of cooperation in the trade, economic, cultural, scientific and educational spheres. South Korea is notably linked to the EU by the most extensive range of three association agreements covering the areas of trade and crisis management. A "critical dialogue" also exists between the EU and North Korea. While the EU has not yet been greatly involved in the security questions of the Korean peninsula, these existing frameworks could make further engagement possible in a region where the European experience of searching for regional stabilization via cooperation in non-traditional areas could provide useful input.

While growingly aware of the international impact and threat of health crises and pandemic outbreaks, and conscious of the importance of non-traditional areas in ensuring collective security, the EU's CFSP had only touched health questions in a limited manner by the time of the COVID-19 outbreak. The pandemic has hit the European continent especially severely, placing great strain on the biggest member states. A surprising observation of these events has been an early lack of cooperation and solidarity among the Member States during the first wave of lockdowns. Since then the EU has had to work in order to increase solidarity touching mainly on the economic and financial response to the pandemic's consequences. In its external dimension, EU policy has begun to develop assistance programs, presented as an action by "Team Europe", especially aimed at the EU's traditional close partners in the field of trade and development assistance in Africa, and towards smaller, poorer states in the Caribbean and Pacific. The EU has also sought collective action within the World Health Organization and in vaccine production and distribution programs. In many ways this does not represent innovation in regards to previous external policy instruments and

methods of cooperation. However, the focus of European attentions on sanitary cooperation and assistance with Asian countries remains limited to the smallest and vulnerable countries, even if the success of larger Asian countries with tracing and containment policies has been observed. There remains room for a broader engagement of the EU, alongside South Korea for instance, to cooperate in the increasingly important non-traditional security field of managing global and regional sanitary crises.

Understanding the linkage between the non-traditional dimension of security and the actual security threats is critical to settle the problem South Korea is confronted with. North Korea relied on China to assuage economic difficulties international sanctions had brought. North Korea, partly in compensation for its discontinuance of its nuclear and missile tests, could conduct trade with China, albeit limitedly. More importantly, Xi Jinping, during the summit talks with Kim Jong-un in June 2019, promised to send at least 5 million tourists a year to North Korea. Encouraged by the assurance by the Chinese leadership, North Korea allocated a large portion of its limited budget to the construction projects of building tourist zones outside Pyongyang. At this juncture, the COVID-19 pandemic hit North Korea. This exacerbated North Korea's economic suffering to a great extent. The explosion of a joint liaison office of North and South Korea in June is interpreted to be a signal that the North is in great need of help from the South. More shockingly, in September, North Korean border guards killed a South Korean fisheries official and set his body on fire to prevent infection of the corona virus. The savage act resulted from the maximum emergency system issued by Kim Jong-un in late July. Without proper medical facilities and medicines, North Korea undertook extreme measures to prevent transmission of the virus, including the order to shoot on site anyone crossing the border into North Korea.

The North Korean nuclear problem is not just an issue confined to the Korean peninsula and the East Asia. Amid escalating tensions between the United States and China, failing to resolve the North Korean problem can be a trigger for military clash between the two superpowers. It is a pending issue at a global level, which requires international cooperation for settlement. Besides, sanctions-stricken North Korea would not just wait until it reaches an agreement on the nuclear and missiles problems with the United States because of the COVID-19 pandemic and its dire consequences for the economy.

That can bring instability to the peninsula. The EU and South Korea can help North Korea today for peace on the peninsula and also for the world.

The U.S.-led international community, as a countervailing measure against North Korea's nuclear and missile developments, imposed sanctions against it from the mid-2000s. Among them, a series of sanctions in 2017 were particularly ruinous to North Korea, driving its leadership to enter into negotiations with the United States. However, contrary to North Korea's initial expectations, the two summit talks between U.S. President Donald Trump and North Korean leader Kim Jong-un, firstly in Singapore and secondly in Vietnam, were not successful in lifting or loosening of any sanction. It is controversial whether the sanctions against North Korea have been effective in halting it from developing nuclear and missile technologies further because, for instance, it can, at least partly, improve its nuclear and missile capabilities without publicly undertaking tests of them. Nonetheless, without doubt, the international sanctions have been severely detrimental to the socialist country's economic development.

Based upon a modernization theory, liberal democracies, such as the United States and South Korea, assume that capitalist economic development leads to democracy in the long run. North Korea is now experiencing an early stage of capitalist economic development with Donju playing a leading role in the dramatic change in the economy. Accordingly, the ongoing change in the North Korean economy can bring about the transformation of its political economy in favor of ordinary people with the reform "of" – instead of merely "within" – the existing system. The current sanctions by the United Nations, the United States, Japan, South Korea, and so forth are impeding North Korea's economic development. However, is the path toward a transitional economy from socialism to capitalism what liberal democracies have asked of North Korea for decades?

A South Korean proposal to the EU towards engaging North Korea in the context of this pandemic could be seen in a sympathetic light by European decision-makers, if helpful to ensure the regional security and stability. Yet an important parameter lies in the uncertainty and unpredictability of North Korea's behavior and receptiveness to assistance, given ongoing tensions due to the unresolved conflictual state, the

unresolved question of North Korea's nuclear weapons program and the EU's lack of participation in the peninsula's principal negotiation processes. Framing the proposed assistance to North Korea in terms of regional and neighborhood stability could be a winning argument for South Korea to put to its EU interlocutors. It will also have to overcome the remoteness of the region from a European perspective, the pressing demands that the pandemic and local conflicts raise in Eastern Europe and the Eastern Mediterranean competing with Korea for EU attention. While the assistance can consist of material aid or relieving the previously EU-backed UN sanctions against North Korea, the question remains of what guarantees North Korea can provide in return for an EU-South Korea initiative. How to associate it with the roles that China, Japan, Russia and the United States already play in the region must also be considered. This uncertainty therefore needs to be factored in by South Korea before hoping to implement a joint policy with the EU to assist North Korea.

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III

A Pendulum Movement Between the Strategic Patience and the Maximum Pressure and Engagement

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〈 요 약 〉

한국과 미국의 대북 정책은 미국 정부의 대북 '인식'과 한국 정부의 대북 '정책'이 만들어가는 조합의 결과였다. 다소 극단적으로 미국의 대북 '인식'이 전략적 가이드 라인이었다고 주장하기도 하지만, 한국 정부의 대북 '정책' 역시 매우 중요한 역할을 해 왔다는 점을 부인하기는 어렵다. 예를 들면 오바마 행정부의 대북 정책으로 불리는 '전략적 인내'는 한국 보수 정부의 '흡수통일'전략과 미국 민주당 행정부의 '동맹 우선'전략의 묘한 조합이 만들어낸 결과였다. 그리고 이것은 트럼프 행정부가 주도하여 만들어 낸 '최대 압박과 관여'가 한국 정부의 교체기와 맞물려 변형을 거듭하는 과정에서도 일관되게 나타나는 현상이었음을 잊어서는 안 된다.

한편 현재 미국의 대북 정책은 그 정책의 범위를 볼 때, 전략적 인내를 축으로 때로는 최대 압박으로 때로는 관여로 스윙하고 있음을 알 수 있다. 트럼프 행정부의 대북 정책이 겉으로는 '최대 압박과 관여'라는 이름으로 진행되고 있지만 그 본질에는 전략적 인내에서 큰 변화를 보이고 있지 않다는 뜻이다. 때로는 전략적 인내보다 훨씬 높은 수위의 위협 레토릭을 동원하기도 하고, 때로는 정상회담을 통해 매우 높은 수위의 대북 관여를 추진하고 있지만 장기적이고 전략적으로는 여전히 '전략적 인내'의 틀을 벗어나고 있지 않다는 점을 확인하게 된다.

본 연구는 이처럼 미국 대북 정책의 결정 요인을 살펴보고 '전략적 인내'와 '최대 압박과 관여'의 본질에 주목하였다. 그리하여 미국의 대북 정책과 대북 인식의 대전제(cause)를 분석하였고, 그들의 레토릭과 구분되는 실제 정책의 변화 패턴을 추론하였다.

이같은 연구 수행의 결과 미국의 대북 정책은 오바마 행정부의 '전략적 인내'에서 트럼프 행정부의 '최대관여와 압박'으로 전환하였지만, 그 본질에는 변함이 없다는 것이 분명해졌다. 북한의 전략 능력(capacity) 즉 핵 능력과 투발능력에 대한 인식의 차이가 북한에 대한 미국의 대응에 차이를 가져왔던 것이지, 북한 정권에 대한 인식의 변화나 접근 방법의 근본 변화가 있었던 것은 아니라는 결론이다.

트럼프 행정부가 전략적 인내를 실패로 규정한 것은 미국의 대북 인식, 방법 모든 것에서 변화를 동반하겠다는 의지의 표명으로 볼 수 있다. 그러나 실제 트럼프 행정부의 '최대 압박과 관여'가 '전략적 인내'와 뚜렷이 구분되는 어떤 특징을 지니고 있는가에 대해서는 분명한 답을 내리기 어려웠다는 것이다. 트럼프 행정부의 대북 정책에 대해서는 그것이 현재 진행형이라는 점에서 분석이 부재하고 하노이 회담의 결렬에 대한 단편적인 평론 수준의 연구만 나오고 있는 실정이다. 그러나 볼턴 회고록과 우드워드 신간 분노에 담긴 여러 뒷얘기들을 종합해보면 역시 미국은 제재 레짐에 근본적으로 의지하면서 북한에 대한 압박을 통해 문제 해결을 추진한다는 근본 방침에서 변화는 없었던 것을

알 수 있다.

다자적 제재 레짐을 통한 압박과 시간 싸움 그리고 어떤 계기를 통한 공작 정치(covert action), 이것이 오바마 행정부의 전략적 인내를 인수분해한 결과였다면, 트럼프 행정부의 대북 정책 조합 역시 다자적 제재 레짐을 근본으로 한 시간 싸움이라는 공약수를 갖고 있었다. 다만 상황 관리와 관련해서 최고위급의 친서와 정상회담이라는 것이 돋보여 트럼프 행정부의 대북 정책이 뭔가 다른 것인양 보이게 했다는 것이다.

요컨대 본 연구의 결론은 미국의 대북 정책이 진화(evolution)하기보다는 진동(pendulum)하고 있다는 것이다. 한편으로 그것은 한미동맹과 미중관계의 변동이라는 외적 요인에 기인한 현상이었다. 그러나 정책 진동의 더 중요한 원인은 미국의 국내적 요인 즉 미국 내 비확산론자들(군비통제그룹)과 지역전문가들(아시아 전문가그룹) 사이의 정책진동에 있었다. 양대 그룹이 정책 합의를 통해 새로운 진전된 정책을 제시하지 못한 채 서로 진동한 결과 대북 정책은 어느 진영이 주도하느냐에 따라 스윙만 거듭하지 어떤 진화된 형태를 띠지 못했다는 것이다. 부시 대통령 시절은 비확산그룹이 강경진영이고 아시아 전문가 그룹들이 협상파였다면, 현재는 그 역관계가 뒤집혀 비확산그룹은 협상파로 아시아 전문가 그룹들은 강경파로 입장을 바꿔 팽팽한 대립을 보이고 있다. 이들이 대립을 거듭하는 한 미국의 대북 정책이 진화하고 합의된 결론(bipartisanship)을 내기는 어렵다. 이들 양 진영 간의 어정쩡한 타협이나 중간적 합의책인 다자적 대북 제재 레짐이 무슨 황금률인양 정책의 중심에 서 있는 이유도 그것이다. 최근에는 그마저도 미중관계의 갈등으로 다자레짐이 흔들리며 정책 효과가 불분명해지자, 한미동맹요인을 통한 대북 제재 유지라는 옵션을 강조하는 방향으로 흐르는 듯하다. 사실상 미국 내의 정책 갈등을 한미관계로 푸는 즉 갈등을 전이시켜 북한을 관리하고자 하는 것이다.

결국 북한의 능력 변수에 대한 평가의 변화 그리고 다자레짐의 효용성에 대한 미국의 책임감 그리고 비확산레짐의 현실성 등을 고려한 새로운 프레임이 나오기 전에는 어떤 변화도 가능하지 않을 듯하다. 트럼프 2기나 바이든 1기나 두 경우 모두 또 다른 정책 진동만 있을 따름이지 상황 타개책이나 근본적 해법이 추진되지는 않을 것이라는 예측이 나오는 이유이기도 하다. 이 경우 한미동맹 변수의 역할을 어떻게 이끌어 갈 것인가 하는 점은 한국 정부의 선택에 달린 것인 만큼, 그 중요성은 매우 높아질 것이라는 것이 본 연구의 결론이다.

A Pendulum Movement Between the Strategic Patience and the Maximum Pressure and Engagement

1. Introduction[1)]

The US and South Korea's foreign policy towards North Korea was the outcome of a combination of the US government's perception on North Korea, and the SK government's policy towards NK. Although some experts radically assert that the US perception on NK was the main strategic factor in that combination, the SK policy towards NK has also played a significant role. For example, Strategic Patience, which was the policy towards NK under the Obama administration, was the outcome of an odd combination of the conservative SK government's annexation policy for reunification and the US administration's liberal strategy prioritizing alliance. One should also not forget that aspects consistently appeared in the Trump administration's strategy of Maximum Pressure and Engagement, a strategy that went through constant changes during the period of change in the SK administrations.

On the other hand, in terms of the scope of policy, the current US policy towards NK seems to be based on Strategic Patience, often swinging between pressure and engagement. This means that, although the Trump administration's policy towards NK is seemingly pursuing Maximum Pressure and Engagement, the very nature of the policy is not showing markedly different changes from Strategic Patience. Sometimes it mobilizes much more threatening rhetoric than Strategic Patience, and sometimes it

1) The study is based on the author's three articles: The "Gate of Denuclearization" vs. "Diplomacy By Other Means"- A New Prospect for Negotiation Between the US and North Korea, *Journal of Korean Social Trend and Perspective*, Vol. 107, (2019), "Costly Signals, Failed Deterrence and A New Alternative: Focusing on the Equivalence between NK's Nuclear Arsenal and USFK shielded by the THAAD" *Legislative Politics,* Vol.23, No.3, (2017), "Obama Doctrine and US Policy towards North Korea: Geopolitics, Nuclear Strategy, and Value Diplomacy, *Journal of Korean Politics,* Vol.25, No.1 (2016).

pursues a high level of engagement through negotiations with NK. Nevertheless, it still does not go beyond the framework of Strategic Patience in the long-term. This study aims to review the decision-making factors of the US foreign policy towards NK and focus on the nature of the Strategic Patience and Maximum Pressure and Engagement policies. By doing so, one can properly analyze the cause of the US perception on NK and its policy towards NK, thereby being able to infer the patterns of change, as distinguished from the rhetoric. Thus, the purpose of this study in the first phase is to distinguish the difference between the Strategic Patience and Maximum Pressure and Engagement. To do so, the author will start by examining and identifying the similarities including philosophy, methodology, and perception on the two strategic policies.

However, what is most important in this study is not just staying at the level of explicating the similarities and difference of these two policies, but, based on those, to look further for the answer to the question of why the US policy towards NK is swinging like a pendulum, instead of evolving.

As such, the study suggests four factors premised on the US policy towards NK, and by analyzing those, one could make it very clear what kind of features and implications are represented by those strategies.

2. Factors of the US policy towards NK

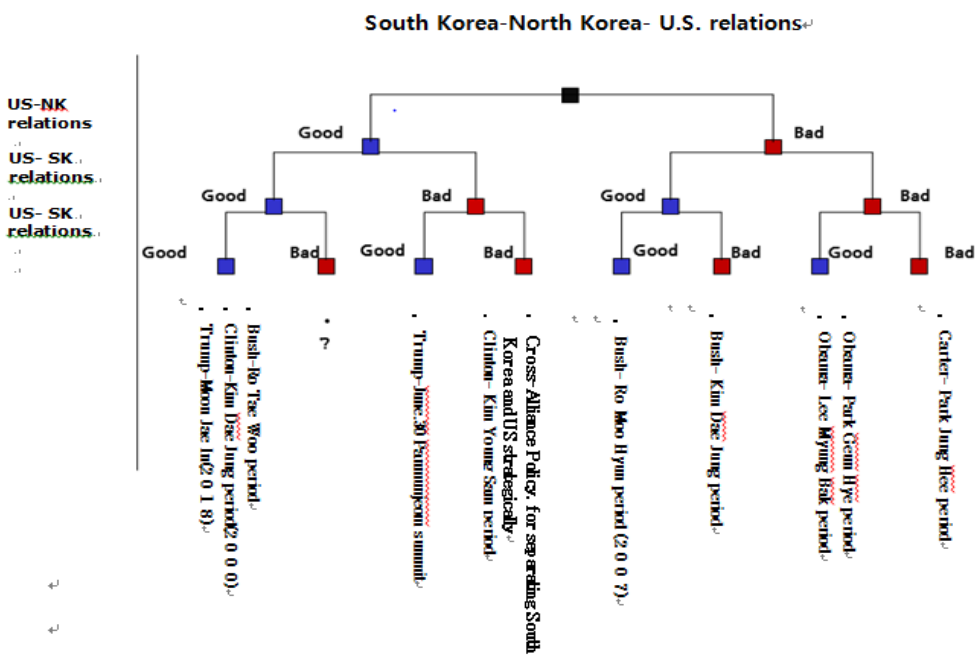
1) Alliance Factor and US-SK-NK Trilateral Relations

It is quite clear that recent US policy towards NK has been determined by the US perception on NK as a rogue state, and its philosophy of coercion and restraints. Nevertheless, policies towards NK in the previous US administration were sometimes engaging and irrespective of their perception on NK, sometimes negligent, and sometimes very hawkish. The cause of such policy swing, in many cases, lay in its ally and its policy towards NK. One of most representative cases was that SK policy towards NK was synchronized with that of the US, which was consequently implemented in the negligence strategy under the Lee Myung Bak and the Obama administrations. In contrast, the George Bush administration's hard-lined policy towards NK based on the

perception on NK as an ‘axis of evil,’ was irrespective of the position of the SK government. The policy towards NK during that period was influenced more by a very specific US foreign policy environment focusing on the War on Terror, rather than coordination with its allies. And still, such a pattern has been slightly shown in the course of policy synchronization between the Park Geun Hye and the Obama administrations as well as between the Moon Jae In and the Trump administrations. Inspired by this aspect, this study patternized the influences of the position of the SK government on the formation of the US policies towards NK.

US-SK relations started as an alliance for deterring NK. However, as it has often been shown, in particular during the Vietnam War in the Cold War era, US-SK relations sometimes functioned as a value alliance, becoming an anti-communist alliance and going beyond the function of deterrence against NK. Still, in the present, a sensitive controversy over the question of whether the US-Korea alliance is an alliance to deter NK or a global alliance often occurs. However, it is just due to the unique dilemma resulting from the relationship as allies, rather than from the nature of the US-Korea alliance. The dilemma of entrapment and abandonment occurs between the so-called allies. For example, during the period of the Syngman Rhee administration, the US was concerned by Rhee's pursuit for unification through ‘marching North,’ so the SK government had to send troops to Vietnam during the Vietnam War, focusing its concerns on abandonment in case of the possible withdrawal of the US camps from SK territory. After the Cold War, the situation became tumultuous once again. SK came to have concerns about involving itself in the US' global conflicts such as anti-terrorism and the Gulf War, while the US was concerned about abandonment in the Northeast Asian region. Cases where SK discussed more about its concerns with entrapment than abandonment occurred more, while the US came to have more concerns of abandonment rather than entrapment. This was because of the rise of a regional hegemon, China, and was also because of the increase of SK-led peace initiatives as inter-Korean division was less rigid. Nevertheless, SK's reactions to such changes were surely not consistent. There has been no change at all in prioritizing the US-Korea alliance in both conservative and liberal administrations, but they have had different reactions and emphases on the dilemma of alliances in dealing with the US-Korea alliance.

Viewing it from the traditional perspective, US-NK and US-SK relations is a competitive and counterbalancing one. However, after the end of the Cold War, the periods when US-NK and US-SK relations could simultaneously improve occurred. This was a consequence of the decoupling of US-Korea relations, as US-NK and the US-SK relations were separated by the so-called Kim Dae Jung initiative. As such, the causal relations between the US-NK and the US-SK was taken as either completely decoupled or related to inter-Korea relations.



On the other hand, the irony of self-defense on the Korean Peninsula means a situation of a specific security dilemma between inter-Korea relations and US-SK relations. For instance, if SK reinforces its self-defense by increasing arms for the transfer of OPCON, then it can stimulate NK's threat perception, thereby increasing distrust in inter-Korea relations. Consequently, when the security dilemma works in inter-Korea relations, each government will enter a mutual arms race, and as NK's asymmetrical military force is reinforced, the SK government will come to depend even more on US-SK relations with more of the form of extended deterrence. As such, it could cause an ironic situation

of a dilemma where SK's self-defense leads to strengthened dependence on the US-Korea alliance. As a result, if US-SK relations, in particular the security alliance, is strengthened while inter-Korean relations are hostile or have no improvements, NK's threat perception could be stimulated, and another arms race could begin. Such an aspect complies with prior experiences that reinforcement of US-SK relations without improvements of US-NK relations cannot improve the inter-Korean relations, as well as the fact that it is hard to find a recent case when reinforcement of the US-Korea alliance without improvements of inter-Korea relations developed the US-NK relations.

It is clear that the inter-Korean cooperation, new US-NK relations, US-Korea alliance, and the structural combination among these trilateral relations, could have influenced the US policy towards NK.

2) Non-proliferation Policy: Increase of Uncertainty

In a different vein, it is common sense that the reason for the US' interest in NK is because of NK's nuclear weapons. Otherwise, the US views NK as manageable enough by neglecting the NK problems themselves.

The problem is NK's nuclear capability. When re-evaluating the NK's intention and capability factors, it is becoming more evident that as NK has nuclear capability, we cannot just consistently continue with a neglect policy. Consequently, the controversy over the question of how to pursue the denuclearization of NK is unfolding. Various arguments over the end state of NK's denuclearization is also due to such a reason.

If former US National Security Advisor John Bolton's hard-lined position is based on Complete, Verifiable, and Irreversible Dismantling (CVID), the Trump administration's recent position is represented in Final, Fully Verified, Denuclearization (FFVD). The biggest difference between the two positions is probably the discrepancy of the "irreversibility." For example, controversy exists over the applicability of the methodology for the so-called Ukrainian model and the program related to the transfer of its former and present scientists working for the lab, which is one of such irreversibility problems.

However, the majority opinion of FFVD is critical, suggesting that the policy direction is not quite clear and revising the policy clearly toward non-proliferation should be better. The argument suggests that while the goal of non-proliferation of NK nuclear weapons could be focused on preventing horizontal proliferation, we could resolve the issue by freezing the NK nuclear program for the prevention of vertical proliferation. In any case, as such discussion is illustrating that the non-proliferation side is exerting an important influence on the problems related to the NK nuclear program, it is important to clearly identify such an aspect, and this will be the second assignment.

In fact, the problems of the first and the second goals appear in the issues of policy synchronization and conflicts between the two parties of a pro-alliance(group of Asian experts) and non-proliferation policy group in the US policy towards NK. The reason that one cannot divide these groups simply into the hard-liners and soft-liners is because there have been cases where the policy towards NK under the Bush administration was led by the hard-lined non-proliferation policy group, but under the Obama administration, the pro-alliance gained more power yet still lead a hard-lined approach synchronized with the SK government's hard-lined position. Under the Trump administration, it seems that the discussion between the groups of Asian experts and non-proliferation policy group is ongoing once again. Nevertheless, the policy orientation is not being unified toward one direction and is going through controversies. One notable trait is that, unlike the period of the Bush administration, a minority of the American experts on NK and East Asia tended to evolve into hard-liners as a result of the hostile perception and "rivalry" caused by previous policies on NK. In contrast, some of the experts, based on the pragmatic perspectives that the US failed at stopping NK from arming itself with a nuclear program, are suggesting negotiation with NK, which means a different dynamic from the situation of 2002 is now being formed. In contrast, some of the experts, based on the pragmatic perspectives that the US failed at stopping NK from arming itself with a nuclear program, are suggesting negotiation with NK, which means a different dynamic from the situation of 2002 is now being formed.

3) Perception on NK and Contingency Plan

The perception on American Exceptionalism is also being reflected in the US policy towards NK, as it appears that the primacy of American values, the position and perception on the US, based on "liberal peace", are holding more weight than geo-strategies in the US policy towards NK. In fact, US foreign policy has been established by the three factors of values, alliance, and geo-politics (geo-political strategies). However, the moment the US loses balance among these three factors, it will reveal the limitations of its policies, which coincides with the speculation of many experts.

Recognizing the experiences under the Bush administration, that foreign policy uni-dimensionally based on values-so-called, "liberal peace," has isolated the US from the world, we are now witnessing the process of pushing American interest into another imbalance through coercive diplomacy, forcing the US position onto other countries as the Trump administration's "Make America Great Again" (MAGA) policy is doing.

In particular, concerning NK, the US has consistently not been able to abandon the perception on its possible collapse for the last thirty years. If the time of the Geneva Agreement in 1994, when the US established its policy towards NK based on the NK's possible collapse, was the beginning of such perception, the revision of the policy towards NK at the time of Kim Jung Il's strike in 2008 was the extension of such perception. It can be assumed that the extension of the Strategic Patience of the Obama administration in 2011-2012 was connected to the perception on possible collapse after Kim Jung Il's death. The observation that discussions on connecting non-proliferation of NK with the Korea unification policy were partially ongoing, suggests it is a possible outcome of such a consideration.

It is notable that the core reason the President Trump pursues a different policy towards NK from that of President Obama lies in the feasibility of denuclearization of NK.

4) Information Failure

Finally, the failure of US information will also be a very important basis for judgment. The information about NK's nuclear capability that the US has and its current intelligence capability are also very crucial factors for the determination of the US policy towards NK. As a matter of fact, US information on NK, although it is grounded in autonomous information analysis, such as TECHINT, other than SK's HUMINT and cooperative analysis with Japan, is now being questioned on how much scientific and exact information the US has on NK. This is because of how their previous bias worked in judging the information and signaling, which brought about markedly different changes to the US policy. According to Bolton's memoir, in particular, it is easy to see how Japanese and the American biases on NK have brought about mutual escalation, thereby causing a information failure, and thus exerting important influences on the issues.

3. Strategic Patience

1) Literature Review

Strategic Patience, as is well-known, was the US policy towards NK. It was an outcome of a complete review of the sixteen years of the Bush and the Clinton administrations' policy towards NK, then drawing lessons from them. One pillar of the Strategic Patience policy was whether to set up a Red Line.[2] The argument arose that setting up a Red Line over NK's specific behavior could push NK into a corner to decide whether to concede or go to war, thereby making the parties entrapped in NK's choice and becoming a considerable obstacle in diplomatic solutions. Because under the Clinton administration, and even during the period of the Bush administration, the US still had to enter into negotiations with NK right after NK's testing of nuclear weapons. Eventually, the learning effect for the US from the NK's strategy of brinkmanship was

2) During the Clinton administration, the Red Line was a limit line set for the standard for a change in policy to containment if engagement failed. Early on, both the US and SK did not apply the concept of time to the Red Line, but instead judged according to the behavior of NK

'No Red Line,' in other words, a neglect policy.[3] As speculations for the collapse of the NK regime after Kim Jung Il had stroke in 2008 arose, Strategic Patience, which combined multilateral economic sanctions with "coercion in the long-term" appeared. This "coercion in the long term" card was an outcome of the combination of the perception that time is on the US side along with the method of multilateral sanctions, which was one strategy of the Obama administration's foreign policy that was coalesced with the neglect policy under the Bush administration. From such a perspective, Strategic Patience was not just 'a foreign policy' towards NK but a comprehensive doctrine against NK, combining the diplomatic philosophy of the Obama administration with the American perception on the NK regime and the historical evaluation by the US of the problems related to NK and its nuclear programs.

2) Value Diplomacy and the Obama Doctrine

President Obama assigned authority concerning diplomacy entirely to his Secretary of State, Hilary Clinton, during the first term of his administration, to fully focus on domestic policies (Clinton 2014, 15). The former Secretary of State, Hilary Clinton was able to determine major foreign policies essentially singlehandedly during the first Obama administration, as she secured two vital conditions, complete authority for appointment of State Department officials and the exclusive right to meet with the President, during her entire term(Clinton 2014, 19). Such an aspect explains two facts: one is that the policy of Rebalancing was a legacy of Hilary's team, not of President Obama, and another is that President Obama came to address his own doctrine only in 2014.[4]

It was at the beginning of President Obama's second term, after the financial crisis,

3) Koo Kap-woo evaluated such a policy as "hawkish neglect" or disengagement, as it made the environment for negotiation impossible. Koo Kap-woo, "Critical theory of international relations and the peace process of the Korean Peninsula: setting alternative subjects for study," Unification Policy Studies, 11(1),2002. Korea Institute for National Unification.

4) The Asia Policy, the area that former Secretary of State Clinton poured the most effort for foreign policy into, shows that her foreign policies could be viewed as her true legacy. This is why one could argue that the actual beginning of Rebalancing was much earlier than it is known to be-November, 2001. (Liwei, 2013).

that the controversy between Primacy and Retrenchment strategies started. It was related to the two major challenges the Obama administration was facing. The first challenge was to propose the Exit strategy to readjust the military force, which was excessively projected to the areas such as Middle East and Afghanistan under the Bush administration. It was at the beginning of President Obama's second term, after the financial crisis, that the controversy between Primacy and Retrenchment strategies started. It was related to the two major challenges the Obama administration was facing. The first challenge was to propose the Exit strategy to readjust the military force, which was excessively projected to the areas such as Middle East and Afghanistan under the Bush administration. The second challenge was the recovery of the structural governance, which showed its limitations when the financial crisis diffused globally. The first challenge was drifting away in the 'structural friction,' and so did the second when faced by the serious obstacle of the 'simultaneous collapse of the nation state system.'

In such an unprecedented situation, a group of realist scholars in international relations raised an intense controversy among the policy makers (McDonald and Parent 2011, 7-44; Craig 2013, 181-183; Friedman et al. 2013, 183-191) that the US neither has the capability to maintain its hegemony, nor the reasons to do so, and thus it has to pursue retrenchment of its military force globally.[5)]

Supporters for retrenchment started from the argument, based on the judgment and interpretation that as the process of deterrence in the era of nuclear weapons is stable enough, that the US should not over-interpret the threat against it (Craig 2013, 181-183). They argued that the strategy of primacy does not have that much benefit for the United States and is also ineffective to prevent an arms race among the third parties or revisionist states acting on non-security motivation such as privilege. Consequently, the strategy of primacy is only likely to raise the possibility of being led to excessive military action or involvement in the conflicts of its allies, who sometimes become reckless drivers. The critics also note the dangers that it can cause a threat to democracy by

5) For the controversy of US foreign policy strategy of the present and the position of 'restraint-offshore balancing', see Lee Hye-jung's "Restraint vs. Hegemony." (2015b, p.180-188)

the overly heated security logic and the increased costs in non-security areas such as opportunity costs of budget extension.

However, major policy experts in the US respond that the logic of the retrenchment supporters is misled by extremism, going beyond the traditional controversy between the primacy and restraint (Brooks et al. 2013b, 193-199). The core of the criticism is that, by underestimating the framework of deep engagement which makes flexible strategic swings between primacy and restraint possible, these retrenchment advocates are virtually maintaining an extreme strategy, implicating irreversible dissolution of major alliances.

As a matter of fact, the US grand strategy for diplomacy is to pursue three goals, (i) to decrease the threats to its security environment, (ii) promotion of liberal economic order, and (iii) securing the resilience of the regimes cooperative with the US, as well as its security commitment, and to display the will of the American leadership for commitment to realizing those three goals. Rushing to the radical retrenchment strategy, fleeting from the controversy over how to realize these goals based on the constructing framework of Primacy and Restraint, could destroy the fundamental meaning and framework of the grand strategy, as it could simply emphasize the added costs while overlooking the political and functional legitimacy benefits the US has been enjoying (Brooks et al. 2012, 11-12: Brooks et al. 2013a). Another part of the criticism is that excessive dichotomy, bias of cost-benefit analysis, and reductionist interpretation directed toward military action, could only generate groundless skepticism of the strategy of active engagement and primacy. (Brooks et al. 2013b, 193-199).

The Obama administration's foreign policy that was established while going through such controversial procedure was a compromising one, having features of both multilateral retrenchment, which tried to go beyond the legacy of the Bush administration, and counterbalancing as an attempt to constructively succeed such a legacy (Min Byung-won 2014, 4-5). The latter factor, in particular, had an interest in combining so-called covert action and public revolt, as happened in the Arab Spring.

In other words, the characteristics of the Obama administration's foreign policy, which compromised between the two sides of the controversy yet was still trying to secure

the strategy of American primacy, is clearly highlighted, particularly concerning the strategy of Rebalancing in Asia, as will be explored later.

It was around 2014, when such a controversy had nearly ended, that President Obama made his own diplomacy orientation very clear, as diverting from the diplomacy under Hilary Clinton, who was closer to the traditional Primacy strategy and Value Diplomacy. President Obama announced the so-called Obama Doctrine in his speech at West Point on May 28th, 2014. The main idea of the speech was an emphasis on the diplomatic measures of Restraint and Alliance, other than traditional military force, to preserve American primacy. Since the inauguration, President Obama and Secretary Clinton held the position that there was no need to suggest a complete form of foreign policy principles as a doctrine (Clinton 2014, 32). In particular, Secretary Clinton once emphasized that establishing unified principles for diplomacy other than her Smart Power could not be an efficient alternative for managing such a complicated world (Washington Post 2014/08/11). However, as the criticism from both inside and outside the US that the Obama administration made the world a very dangerous place became conspicuous, the administration turned to justifying its principles of diplomacy.

President Obama's speech at West Point in 2014, emphasizing the means of diplomacy through Restraint and Alliance, was the outcome of that context. He mentioned that the US would use unilateral military force if US citizens fell in direct danger, making his will and commitment to a strategy of primacy very clear, yet he simultaneously addressed the principles of collective action, mobilizing allies and partners through international law and multilateral military action. The Obama Doctrine eventually made it very clear that it is a philosophy of diplomacy that asks who will be benefited by military action, with whom to ally, and what are alternatives after military intervention, while criticizing the Bush administration's unilateral foreign policy ("Might, Doing Right & Collective Approach"). Such a perspective is highlighted in the expression DDSS ("Don't Do Stupid Shit"), which clearly shows its pragmatic nature.[6)]

6) Some politicians and news media used "stuff" as the word "shit" is slang. On the other hand, the Obama doctrine has hybridity which makes it hard to recognize as a general foreign policy doctrine of the US president. Labels calling the Obama Doctrine 'leading from behind', pragmatic liberalism, or having an orientation to multilateralism also emphasize various aspects of hybridity

3) The Return of Geo-Politics and Rebalancing in Asia

In the case of its Asia policy, the legacy of Secretary Clinton was more influential than President Obama's ideas. From the beginning of her term, Secretary Clinton made it very clear that the most urgent assignment for US diplomacy was the rise of China, and she has revealed that the reason she chose Japan as the first country for her overseas trip was from such a perspective (Clinton 2014, 41).

Rebalancing in Asia was officialized in 2011 (Clinton 2014, 45). In fact, the prototype of the policy was designed by Kurt Campbell, the deputy director of the State Department from the early period of Clinton's term (Clinton 2014, 43). The early version of the Rebalancing was the discourse of Asia Pacific Architecture, in which they utilized three factors in parallel: counterbalancing through partnership with China, strengthening relations with traditional allies, and construction of multilateral architecture following the increased strategic status of Southeast Asia.[7)]

It was after this period that the terms Pivot and Rebalancing were adopted, and their contents have been showing changing patterns of emphasis among the previously mentioned three components depending on factors such as relations with China and the prospects of the US-Japan alliance. In the early period, the discourse on Rebalancing had controversy within the State Department as it had to avoid excessively stimulating China. In the course of the controversy, Deputy Secretary of State Steinberg, who emphasized more flexible and soft-lined polices than those promoted by Clinton or Campbell, resigned in the middle of his term in 2011.[8)] The new President, Xi Jinping also pursued A2AD(Anti-Access, Anti-Denial), a new strategy almost close to hawkish

leadership.(Aziz and Haglund 2014, 211-226).

7) The former secretary Clinton expressed the will for 'back to Asia' by using the word "the architecture for the Asia-Pacific region" in her speech in Hawaii already in October of 2010 (Clinton, 2010).

8) Steinberg is known to have had dissention with Kurt Campbell over the policy (interview with Revere, 2014). He was appointed as Deputy Secretary under Obama's 2008 camp, and published Strategic Reassurance and Resolve after his resignation, offering a term slightly different from Rebalancing (Stenberg, 2014, p.45-47). In the book, Steinberg suggested that, as discourse of Rebalancing could be misunderstood as a discourse of 'containing China', to avoid unnecessary tension with China, it needed to enumerate possible causes of tension in US-China relations and find options where both countries could cooperate together, repeatedly emphasizing his soft-lined position conceived in mutual security assurance.

rise of the Chinese military and New International Relations which is typical theory of diplomacy of empire seeking dual policy of cooperation and competition through the division of sphere of influence with US.

In such a situation, President Obama was harshly criticized for his lukewarm reaction to the crisis in the Ukraine caused by Russia, and to the incidents by ISIS. Then, in the procedure of re-confirming the will for Rebalancing in Asia and the Obama doctrine, he began to strengthen relations with the US allies, in particular, Japan. By taking the risk of having tension with China, which defines South and East China Sea as its core national interest, the administration began to put an emphasis on the strategy of preserving primacy and deep engagement concerning its East Asia policies.

However, the re-emergence of Re-pivot to Europe, seeking the US reaction to the incidents in the Ukraine and Putin's expansive foreign policy (Deni 2014; Goure 2015) made the cause of the Obama doctrine more complicated. Faced by the criticism that the policy of Restraint could not prevent Russia's expansionism in Europe, the Obama administration's Rebalancing policy was highly likely to have difficulty in finding consistency with the US global grand strategy. European countries even expressed their concerns on the US Rebalancing, and began to fortify their self-defense and simultaneously established their own Rebalancing based on three axes including economics, trade, and investment cooperation with China (Michel and Przystup 2014, 20-21). The European countries' judgment that Rebalancing would only weaken engagement, leading to a US failure in guaranteeing the security of Europe, and would also fail in countering China, reinforced the pressure, making them engrossed in seeking self-defense strategies.

In other words, the strategy of Rebalancing faced challenges within the region, such as China's resistance, as well as the complex challenges from US allies in the Middle East and Europe globally.

In the situation that the reception of the Rebalancing was not ripe enough, the US policy towards NK could not help but stay at the level of an inactive response of non-proliferation, avoiding being engaged in conflicts. One of the issues in the controversy of Primacy and Retrenchment is that, in the course of withdrawal of military

force, proliferation of nuclear weapons within the region could arise again, thereby forming another threat and increasing the possibility of the US being involved (Brooks et al. 2013b, 195). From such a perspective, if the Obama administration accepted NK as a nuclear state, it would be a physical failure of the strategy of primacy, and also a logical failure of retrenchment. Both are unacceptable alternatives. To coerce NK through Primacy, there is a significance chance of SK being involved in conflicts-entrapment, but to resolve such a dilemma through negotiation, it is not easy to strike a deal while synchronizing it under the Rebalancing strategy with complex trade in the US-Korea alliance.

The reason the Obama administration maintained Strategic Patience, taking neither active negotiation nor active pressure, swinging like pendulum in the middle, was because the strategy did not have a clear relationship with Rebalancing.

In other words, because the US policy towards NK was sometimes used as a means to emphasize Rebalancing and sometimes the core of the Rebalancing was not quite clear, it was hard to coin a consistent policy towards NK, leading to an inactive position swinging like a pendulum.

Then, how will the US policies on NK's nuclear testing and nuclear weapons change? Here we would have to tackle a few controversial points of the US concern about the situation of countries in the middle ground having nuclear weapons for the next twenty-five years, and the US responses. Such considerations are included in the review of the US nuclear strategy for 2025-2050.

4) Nuclear Post Review of the Post-Obama Administration

An argument that a new response and strategy for nuclear deployment has to be secured in advance, considering the fact that one of the main issues of security environment after 2020 will be the second age of nuclear weapons, has been arising from some experts in the US The argument is based on the speculation that, during the period of 2020-2035, there is a possibility that the number of nuclear states will increase at least from 9 to 11, or to 18 at a maximum. Thus, the vision of a world without nuclear weapons

that President Obama had declared, already became an impossible reality (Murdock et al. 2015, 2).[9]

Therefore, this argument leads to the conclusion that the new nuclear strategy of the US should focus on raising the general deterrence capability by organically combining Strategic Deterrence Force, which uses forward deployment posture, and re-deployment of strategic nuclear weapons and Extended Deterrence Force for the US allies. Such an argument is based on the logic that the Primacy of conventional weapons should be organically combined with nuclear force, which is different from the argument of supporters of retrenchment, emphasizing primacy based on nuclear force for the retrenchment of the conventional military force.

On the other hand, the argument supporting the vision of the world without nuclear weapons is also continuing (Blechman and Rumbaugh 2015). However, it is also different from the retrenchment discourse, as the argument is grounded on the primacy of conventional military force.

While retrenchment discourse emphasizes that supremacy of nuclear weapons guarantees the retrenchment of the conventional military forces, it argues that primacy of conventional military force can sufficiently offset the nuclear option, and by simultaneously keeping the rules of "No First Use" (NFU), it is possible to prevent nuclear proliferation and construct a non-proliferation regime. However, such an argument is nullified when faced with the counterargument that the primacy of a conventional military force is the motivation for nuclear proliferation, or in front of the physical evidence of the emergence of new nuclear states such as NK.

President Obama's speech in Prague emphasizing the world without nuclear weapons did not consistently take root with the US nuclear strategy, and the Nuclear Posture Review of 2010 shows that President Obama failed at making his vision of the world without nuclear weapons into concrete policy by staying at the compromising stance.

As a matter of fact, the controversy over the US nuclear strategy is composed of two

9) Eleven countries include counties such as NK and eighteen is speculative number including those such as SK, Japan, and Saudi Arabia.

problems. One of them is how to raise the threshold itself for the possession of nuclear weapons and their utilization. The second is whether to remove the potential adversary's intention for homeland exchange. When the possibility of homeland exchange rises, the US nuclear strategy is based more on the outright war prevention, not on limited exchange, thus, involving a weakness of having a penchant for self-restraint.

First of all, there is a controversy on the latter of whether it is NFU or ambiguity of the usage. There is an opinion emphasizing NFU from the perspective that second strike capability, with the capability of mutual destruction and primacy of conventional military force, can still defeat a potential adversary's will for aggression on the homeland. However, it is not easy to secure preventive measures if deterrence fails, rather, it is hard to avoid the paradox that such an emphasis on the primacy of conventional military force actually strengthens the motivation of the adversary's will to have a nuclear weapons Such concerns are exemplified in President Obama's 2010 NPR, which deleted the expression nuclear retaliation, essentially staying at a compromising level of nuclear ambiguity, rather than active NFU, as President Obama had previously condemned the NPR of 2002 with President Bush's position grounded on pre-emptive nuclear strikes.

Concerning the former, an argument is raised as to whether the primacy of conventional weapons actually promotes the possession of nuclear weapons by potential nuclear states, thus lowering the threshold of the nuclear proliferation. While the US attempts to control the level of military conflicts with conventional weapons and by securing the primacy in its conventional military force, the supporters of the 2nd nuclear age argue that such a method instead raises the temptation to have nuclear weapons among the non-nuclear states. In other words, it is a rather a vicious circle, making these states think about the option to go over the nuclear threshold. Nevertheless, as such an aspect is an ineluctable paradox of the 2nd nuclear age, they argue that the US does not need to weaken the primacy of its conventional military force. Then, what they eventually focus on is the US capability of controlling escalation.

The proponents of the 2nd nuclear age emphasize the “Measured Response” strategy that makes a more intricate ladder of escalation through the deployment of nuclear capabilities alongside conventional weapons, and then takes a proper response at each

step of the ladder. While maintaining the primacy based on conventional military force, one should strike the counterpart with a symmetric response with limited nuclear capabilities once the potential adversary trespasses the nuclear threshold. According to the logic of these protagonists, the level of the response, should be limited to a level such that the adversary does not enter homeland exchange, and taking additional steps of strategic deterrence for the prevention or the victory in homeland exchange should be reserved for the next level of the ladder. [10)]

Eventually, the new nuclear strategy should be the one which maintains the primacy of the conventional weapons, deploying forward nuclear capabilities, while also simultaneously strengthening nuclear responsive capabilities-although complete dominance of escalation is not possible, thereby controlling the escalation. Yet, it could also lead to another procedure for increasing the deterrence power against the new nuclear states, if following their argument. Such an argument was based on the premise that more levels on the ladder of escalation leading to homeland nuclear exchange from the regional conflicts is more beneficial for the United States.

The problem is that such a logic comes to demand more burden sharing and costs for the allies, following the power projection and deployment to the level of securing extended deterrence. It is also hard to avoid the concern that such forward deployment could stimulate the classical security dilemma rather than strengthening extended deterrence, as it has the fundamental limitations that it cannot prevent the proliferation of nuclear weapons to potential nuclear states seeking nuclear armament to subvert the inferiority of their conventional military force.

From the perspective of the ally, rather than sharing such costs or becoming a target of counterattack from a US strategic rival, it might be more attractive to secure its own deterrence force through self-armament with nuclear capabilities. Eventually, for

10) The nuclear triad they support most strongly from such a perspective is not ICBM or SLBM, but strategic heavy bomber such as B-2. There have been opinions emphasizing SLBM from the perspectives of effectiveness, but for those who emphasize strategy of controlling escalation, the heavy bomber is the most effective means of control. Strategic bombers make return from the last moment possible, thereby making negotiation with regional nuclear stages at each step of a ladder and raising the threshold for usage of nuclear weapons.

the US, how it will manage such allies, the deployment and Extended Deterrence, and maintain Strategic Deterrence, becomes the new assignment.[11)]

In this view, the Obama administration's policy towards NK's nuclear weapons stood at a very critical crossroads of nuclear proliferation within the region. For the time being, the Obama administration's Strategic Patience stayed at the level of a compromising policy, such as in the 2010 NPR, which is the middle ground between the "world without nuclear weapons" of his speech in Prague, and the pre-emptive strike and deployment of nuclear weapons, thus, Strategic Patience is a neglect policy premised on extended deterrence. However, it chose lifting sanctions and a strategy of negotiation to prevent Iran's nuclear armament and succeeded. Such a success was actually because the situation made the construction of a non-proliferation regime through negotiation more suitable for the Obama administration than the strategy of deploying nuclear weapons.

As NK successively tested its nuclear weapons around that time, criticism of the Obama administration's compromising policy towards NK arose. If following the logic that Missile Defense makes deterrence complete, rather than stimulating a security dilemma such as in the arguments of full spectrum deterrence or MD Renaissance, this type of small-scale proliferation could not be called a complete failure of the US nuclear policy.

However, if premised on MD's technical limitations, having a nuclearized NK as its permanent legacy would not be an unwanted option for the Obama administration. Such aspects were the reason that the Obama administration, at the crossroads of its nuclear policy, still maintained the traditional policies such as Strategic Patience about NK and blamed China for the sanctions not being able to successfully achieve any initiative by the end of his term.

11) Also, in the 2014 QDR, President Obama is emphasizing that the US should be able to effectively respond to the escalation leading to the nuclear war by the potential adversary to overcome the failure in the competition through conventional military weapons, QDR, November, 2014, p.35-36.

5) Multilateral Sanctions Regime of the Obama Administration

Strategic Patience, the US policy towards NK, actually had three elements: coercive diplomacy, punitive action, and conditioned engagement (Klingner, interview with Klinger, 2014). The strategy involved coercive diplomacy to form a multilateral deterrence regime to prevent NK from possessing nuclear weapons and proliferation, punitive action against nuclear testing and the launching of missiles, and engagement having conditions prioritizing denuclearization (Kim, 2015).[12] The nature of the policy was essentially to maintain a punitive deterrence regime by the multilateral system through US diplomacy assets.

Two centrifugal forces surrounding such a nature existed, one was the so-called "exploratory discussion" and the other was unilateral restraint. If the former is a position of conditioned engagement, trying to have denuclearization talks with NK, the latter is an argument that more powerful punitive action, including financial sanctions and demonstrations of strong physical power, supported by a strong enough will and the capability to satisfy the sufficiency condition. While the former was accompanied by a difficult of lack of trust toward the NK authorities, the latter was accompanied by the concern of the possible rise of tensions, which could be caused by the resistance of NKs.

As previously shown, to maintain the multilateral deterrence regime, which is the essential element of Strategic Patience, cooperation with allies and partners is unavoidable. From such a perspective, the criticism that Strategic Patience took Chinese influence, and even the element of China-NK relations, as the most important axis, thus causing the side-effect of extending the range of China's exclusive influence to NK, was valid. This is the reason why China could to use its NK foreign policy at the negotiation table against the US Rebalancing strategy.

Eventually, the success of Strategic Patience, is possible either when NK collapses on

12) In the hearing at National Congress of last October 26th, Deputy Assistant Secretary Sung Kim defined the US policy towards NK as a combination of deterrence, pressure, and (isolation) diplomacy. He denied expression "Strategic Patience", however, it could be viewed that the actual policy is still continuing without much difference from the one in the past.

its own, or when NK is put into the China's sphere of influence through the US- China condominium. The problem, however, is that the possibility of realizing the latter is not very high, either when China has limitations in its capability of managing NK, or when the US-China relationship itself is shaky. Such an aspect could be the fundamental reason why the US' NK policy lost its focus with the commotion of the Rebalancing strategy.

As previously examined, from the perspective of the Obama administration, dealing with NK is very different from Cuba or Iran, because the nature of the problem is very different (Lee Hye Jung 2015a, 7). Because there is not much possibility for an Arab Spring in NK, whereas Cuba has some such possibility, nor is NK maintaining the threshold of denuclearization as Iran does, as long as the NK regime is not fragmented by tension from the top and does not collapse by itself, or as long as it is not subjugated into the area of China's influence, the other option left for the Obama administration was to force NK's silence for the rest of the term. However, as NK committed another action threatening to overstep the nuclear threshold, it is hard to deny that the balance the administration could manage to keep in both Rebalancing and its nuclear strategy was shaken.

6) Summary

In short, the three layers determining the US policy towards NK were not being arrayed for a uniform direction but were conflicting with one another. This originated from the aspect that the Obama administration's Rebalancing and its nuclear strategy were staying at the compromising level.

The US policy towards NK, which was based on geo-politics, drifted away because it was hard to calculate the geo-political benefits in the course of wrestling with China over Rebalancing. One could have an impression that geo-political interests were completely excluded from consideration in dealing with the NK problem. For the case of the policy towards NK as an object of alliance politics and diplomacy, unlike the Bush administration policy based on unilateralism, there was a difference in the Obama administration in that it emphasized the partnership with its allies and alliance

diplomacy. However, there was neither a difference in perception on NK as a rogue state, nor a new variable such as demands from its ally, SK.

Especially in terms of the nuclear strategy, the vision of the “world without nuclear weapons” that the Obama administration suggested lacked a more refined format and could not prevent NK's fourth and fifth nuclear tests.

There was no disagreement that the biggest assignment for the Obama administration's diplomacy was the management of Putin's expansive foreign policy and defeating ISIS. However, the administration was faced by uneasy challenges, as it had to simultaneously manage multiple issues, including the NK problem, with NK's successive nuclear testing and launching of its rockets.

Two criticisms concerning such a situation are suggested. One is that such a consequence was a crisis the Obama administration caused itself by not being able to implement more powerful unilateral sanctions, and another is that it could not focus on non-proliferation through negotiation. The former is more pervasive among the SK public from an emotional perspective. The assumption that the implementation of unilateral sanctions could promote NK's nuclear testing even more by heightening the level of tension makes one pay attention to the other criticism related to the latter. In other words, why the logic used for US negotiations with Cuba, which did not work for the last fifty years, should change for NK.

The experiences up until now suggest that the strategy of restraint based on punitive actions and pre-emptive threats is not sufficient to stop NK, who is a major player in nuclear proliferation. The Obama administration's drifting policy towards NK demonstrates such an aspect well. Making punishment into a step-by-step process, envisioning the possibilities of placing and lifting sanctions, and the communication which makes the other party rationally understand the co-relations between these, are the basis of this. The politics of punishment, if not grounded on such a basis, is no different from self-satisfying, which is an evident fact one does not need to re-emphasize. If such a debacle develops into a situation of self-destructive punishment, the consequence is very clear- this is the lesson from NK's nuclear weapons.

4. Maximum Pressure and Engagement of the Trump Administration

1) Change of the US Perception on NK

To examine the US perception on NK, three concepts should be pondered. The first is Rational Irrationality which is the term used in a New York Times article to explain the policy behavior of the NK regime.

The US has perceived NK as an irrational rogue state, a perception that started from a view that the collapse of the NK was impending. The view of the New York Times article though, suggested concept of this Rational Irrationality which describes Kim Jung Un as a leader who clearly has a capability of understanding his self-interests, and even intentionally weaponizing the risk of provocation for use at the negotiation table, rather than a despotic mad man. Such a view is the beginning of the thought that the concept of Rational Irrationality should be the center of the perception on NK.

The next concept is Predictable Unpredictability. Although major news media ascribes NK's provocation to Kim Jung Un's unpredictable eccentricity, actually the thought that NK's provocation is unpredictable could just be a conception made by others. In many cases, NK often selects the option of “punishing SK” as a reaction when negotiation concerning critical issues fails. Such a punishment often has the characteristic of testing military technology. Because of such an aspect, it is hard to deny that NK's unpredictable punishment actually had predictable patterns. In certain situations, even counterparties in negotiation predicted these to a certain degree.

The Strategic Patience policy could not help but be premised on the irrationality of the NK regime and unpredictable behavior of the NK originating from such irrationality. However, as the premise that victory is guaranteed by time ended up as a failure during the last eight years of experiences, maintaining such a premise and perception as the basis of the policy towards NK is meaningless. From such a perspective, it seems the transition of the policy under the Trump administration began following the thoughts that it is necessary, and more beneficial, to strengthen the capability of prediction and start open discussions concerning such predictions.

The last is the concept of the resilience of dictatorship, which is often translated as

concepts of elasticity or capability of recovery. Political scientists that witnessed how authoritarian and dictatorship-based regimes showed more resilience than expected recently, reached the conclusion that sanctions on these states do not necessarily lead to regime collapse. NK also has the know-how to go through long periods of sanctions, and the end result of its authoritarian power politics is, unlike expectations, showing stability in the political power of the regime. It refreshes the old axiom that international politics and power politics do not necessarily need to be based on moral legitimacy, and that aspect could consistently work and be applied to the perception on NK. Reviewing whether the US policy towards NK has such flexibility will be an important analysis.

The three key terms -Rational Irrationality, Predictable Unpredictability, and resilience- are the concepts for viewing NK Exceptionalism, based on NK's irrationality and its tumultuous political scene, and from such a perspective, they could be an alternative framework for analyzing the US perception and philosophy in dealing with NK. This study will analyze the Trump administration's policy towards NK based on such a framework.

1) Features and Constitutional Framework of the Inter-Korean Declaration at Panmunjeom ("Panmunjeom Declaration for Peace")

The Panmunjeom Declaration for Peace of April 27th, 2018 has important differences in its order and content compared to the agenda that the Moon Jae In administration originally pursued at the summit.

The three agenda points the Moon administration suggested before the summit were 〈① Denuclearization of the Korean Peninsula / ② Alleviation of the military tension and elimination of the danger of war and ③ new and bold improvements in SK-NK relations〉. Compared to such agenda, the Panmunjeom Declaration for Peace consists of 3 conditions and 14 articles of 〈① opening up a watershed moment for the improvement and development of inter-Korean relations ② Alleviation of the military tension and elimination of the danger of war and ③ to build a permanent and stable Peace Regime on the Korean Peninsula〉.

Particularly notable in the Panmunjeom Declaration is its order. "Opening up a watershed moment for the progress and development of inter-Korean relations" is listed as the first article. From the beginning, the SK government planned to list "denuclearization of the Korean Peninsula" as the first article. However, the Panmunjeom declaration placed the issue of inter-Korean relations first. In a sense, it was a victory of a pragmatic approach to straightforwardly arrange what SK and NK could do promptly. Criticisms that such changes to the order neglected denuclearization do exist. However, the mainstream opinion is that inter-Korean relations are by nature based on the rule of Subjectivism, following the principle of self-determination of the Korean people, and other agreements must be the measures used to implement such a principle. As such, the Panmunjeom Declaration is tackling the measures that the SK and NK authorities can implement as the first and second articles. In the first article, items for breakthrough improvements of inter-Korean relations were stipulated, and measures for the alleviation of military tension and security guarantee for the first were arranged in parallel in the second article. Through such changes of order, it is viewed that the Panmunjeom Declaration is a strengthening force, as a declaration for the implementation of the articles based on the principle of self-determination for NK and SK: "the principle of national independence which specifies that the destiny of our nation is determined on their own accord."

One thing to notice concerning an aspect in the first article is a decision to establish a joint liaison office. Unlike normalization at the quasi-ambassador-level, establishing resident representative offices expressed a clear will to improve the inter-Korean relations through a unified governance organization. If they refresh their memories from the experiences in Gaesung Industrial Complex, which became the center of inter-Korean cooperation, the two Koreas would be able to coordinate on comprehensive issues, including politics and the economy, through this joint liaison office in Gaesung. The fact that it takes the form a unified body of a joint liaison office, not through two separate representatives, could be considered an outcome of the methodical will to institutionalize inter-Korean relations in a confederation form, thereby making it a very critical declaration.

Another important decision, alongside the decision on the first article for the

continuation of various exchanges between the North and South, was the agreement to modernize and set up connections of railways, and roads. It is not only important as an overture of reforming the outdated infrastructure of NK, but it is also critical as a possible instrument and space for an opportunity to connect SK with the sphere of the Northeast Asian economy. In other words, it is an overture of economic integration, making the region of Northeast Asia, with population of one hundred thousand, into a single market. Such a reason is also why one needs to pay attention to the news that President Moon Jae In passed the New Economic Map of the Korean Peninsula to NK.

What is of next importance in the Panmunjeon Declaration is the matter of its composition. It deals with the Peace Regime (Korean Peninsula Peace Regime) in the second and third articles. It could be seen to be based on a more complete conception of the Peace Regime by dividing the discourse on the Peace Regime into the factors of alleviating the military tension related to the conventional weapons at the second article, and another related to proliferation in the third article. If viewed from the perspective that denuclearization is a means for the Peace Regime, it is more convincing to tackle it under the agenda of a more permanent and solid Peace Regime, not just discussing it in an independent clause. While the existing logic that managed denuclearization separately from the Peace Regime was arbitrary and temperate, either logically or conceptually, the new composition is an outcome of higher quality discourse on the Peace Regime.

By taking denuclearization as a constitutive component of a permanent Peace Regime alongside the discourse on non-aggression, the Panmunjeom declaration made it possible to escape from the trap of "denuclearization first" discourse, which had been solidified in SK society since the Lee Myung Bak administration. At the same time, by making NK itself deny its own "peace treaty first" discourse that NK had been insisting on since 2015, it opened the door for the discourse of the "denuclearization-Peace Regime" in parallel.

In other words, article three is innovative from the perspective that both the South and NK parties tackled denuclearization by themselves. However, more attention needs

to be paid to the fact that they suggested the direction for denuclearization talks, which is the main subject of the US-NK summit.

2) US-NK Singapore Declaration and Synchronous and Step-by-Step Approach

The joint statement by the US and NK after their summit in Singapore consists of four comprehensive but concise parts: improvements of the US-NK relations, guarantee of the Peace Regime, denuclearization, and the commitment to recovering POW/MIA remains, including a project to disinter the remains and the immediate repatriation of those already identified.

Despite its brevity, what is most notable in this powerful declaration is that the leaders of the two countries referenced and "reaffirmed" the Panmunjeom Declaration of SK and NK. The fact that the joint declaration from the summit between the US and NK was referencing the joint declaration from the inter-Korean summit, and even the issue of denuclearization was based on the Panmunjeom declaration, is remarkable progress from the conventions of the past.

It is also notable that, unlike the expectation that CVID would be stipulated, "complete denuclearization," which is the level of expression agreed upon in the Panmunjeon declaration, was set as a goal. Some criticize that CVID was not used in the statement. President Trump interpreted the clause "unwavering commitment to the complete denuclearization" as virtual CVID in the press conference. As long as CVID emphasizes irreversibility, as the Ukrainian model implicates, that type of denuclearization is not applicable in the case of NK as previously pointed out. From that perspective, President Trump, unlike the previous administration of the US, has taken a very realistic approach concerning the matters of NK.

Before the summit, as President Trump used the word "process," he made it clear that the US would finally accept an "Entrance-Exit" based process or phased approach. Actually, President Trump made it clear that the summit would not end as a one-time meeting, and two or three follow-up meetings would be needed. Whether it would be held in Pyongyang or the US was not clear. However, he made it clear that he would

continue denuclearization through additional negotiation. Simultaneously he emphasized that this summit was just the "beginning of the process," which showed that he would take a phased approach, escaping from the existing unrealistic goal of a so-called "One Shot Deal."

By mentioning that method for the verification or irreversibility such as the Libya model were only possible as they develop a certain level of trust, he emphasized that a "phased approach" and complementarity were important.

The measures agreed on by both parties for confidence building, such as the Suspension for suspension of hostile actions is also one of the highlights of this joint declaration. They decided to suspend the US-SK joint military drills while the negotiation was continuing. Although the SK conservatives are showed vehement objection to it, the Blue House expressed its support that it is "a way to promote the talks."

Mike Pompeo, the Secretary of State, confirmed that they agreed to suspend US-SK joint military drills as a means to build confidence, mentioning that the drill would resume if the talks stop and NK stops denuclearization. NK's Rodong Newspaper also confirmed the suspension, and it was made clear that the upcoming joint US-SK military drill, the Ulchi Freedom Guardian exercise, would be suspended for confidence building.

In sum, the US-NK joint statement has characteristics of a discourse of denuclearization based on the phased and complementary negotiation process, in other words, the "phased approach" of Entrance and Exit.

3) The "Rivalry" and the Asian Experts Group

On the other hand, what is most important in the policy towards NK is escape from the "rivalry". Hostility is a feature well-shown among some of the people who managed policies on NK for a long time. As a way to cure the trauma caused by the insult from NK, such hostility took root in the perception on some of these people, and made their eyes shut in front of the alternatives for coexistence with NK. Not only SK experts on the NK foreign policy, but also some people who had their careers in the US Forces in Korea (USFK), and some groups of Asian experts who managed the policy towards

NK for the last two decades, fell into the same trap of 'all or nothing' in the policy debate. Such thinking of 'all of nothing,' in the long term, formed a rivalry and made objective policy co-ordination with NK impossible. It is well-known that one of the most representative example is John Bolton, the former National Security Advisor to President Trump.

4) Information Failure and Alternative Facts

Information failure and the problem of alternative facts are issues that have become public in the course of the Trump administration raising questions about major news media's way of choosing facts. The reason the author emphasizes this particular term "alternative facts," which now has become a more negative term in the US, is because the time has come for establishing an alternative policy based on more updated verification of the facts, rather than sticking to the existing fact verification procedure, which dominated the failure of the NK foreign policies for the last ten years. When paying attention to alternative facts, formation of alternative policies could be possible.

As is well-known, information is critical. Needless to say, in particular concerning the policies on NK, the importance of perception and judgment of information is comparably critical. For the last ten years, to comply with the Strategic Patience of the Obama administration, there has not been a good public discussion on the proper evaluation of information. Strategic Patience, as is well-known, was a strategy choosing neglect as a policy option to prevent public fear and secure a stronger position in negotiations. The problem was that, as this strategy stagnated in the long term, experts and decision makers fell into reductionism of neglect, thereby losing the capability to straightforwardly view the reality of the situation. As such, although there have been many actual warning signs and alarms, experts' cognitive capability is patternized and captured by the ideology-oriented approach, thus they could not receive the warning signs based on the fact analyses and came to rest with a static response of retrenchment and neglect. Eventually, what remained was not strategic neglect, but contempt and ignorance.

This means that now is exactly the time to evaluate the level of asymmetric force that

NK has achieved, and to do so, public discussion of the information is necessary. This is the reason the author intentionally uses an outdated term of "alternative facts" to ponder the problems of information evaluation.

5) Hanoi No Deal

As previously known, the leaders of the two countries showed clear difference in their perceptions which cannot be easily overcome. The author divides these broadly into three parts as follows. The first is about the different philosophies concerning the purpose of the punishment-what the NKs call the "method of calculation." The second is about facts. Controversies over possible hidden facilities called "Yongbyon plus alpha (+ α)" and the range of denuclearization, are a function of those facts. The last is about the difference of the method and approach for denuclearization.

As a matter of fact, there is a controversy over the fundamental goal of restraint, as to whether it means 'return to the original status, making the provocative state go back to the beginning by 'punishing' the counterpart's development of nuclear weapons (i.e. making it going back to non-nuclear state), or, whether it is about 'trying to maintain the status quo' by reminding them of the possible pain of the future to deter the state's additional development of the nuclear program.

The discourse of the former, which is seemingly common sense, reminds one of the philosophy of "punitive justice", such as charging reparations after a war. The Paris Peace Conference after World War I, led by the US, Great Britain and France, resulted in the Treaty of Versailles, which levied war reparations against Germany. Due to the excessive burden of the Treaty of Versailles, the Weimar Republic of Germany could not avoid bankruptcy, and consequently saw the rise of the Nazis, a group full of will for vengeance. In that case, punitive action was a new cause for World War, rather than a recovery to the original state.

If the next follow-up talk is held, the US side would have to answer the question concerning "the limitation of asymmetry" based on the premise that it has to achieve denuclearization through economic sanctions. At the same time, it has to offer measures

securing guarantee that NK can agree to, which is about the US unilateral interpretation and enforcement regarding U.N. sanctions. In contrast, the argument by the NK side is that economic sanctions are nothing more than a means for preserving the status quo, and thus, denuclearization should be achieved through the symmetric measures of security; that argument should be connected to the alternative explanation that such an action will not lead to "betrayal and deception," and explains why economic incentive is necessary at the present point. These are the fundamental questions for the next US-NK talk. Not being able to solve such problems is an important reason why the conversation could not continue and stopped, irrespective of a few US-NK contacts after the talk in Hanoi

The second is about "Yongbyon plus alpha (+ α)," in other words, about the issue concerning "facts," the actual facts. Right after the US-NK talk held in Hanoi, the NK foreign minister Yong Ho Lee condemned the US side for making the talk fail by demanding the NK to offer "one more thing."

In sum, the issue of the 'facts,' which became the controversy in Hanoi, started from the question of how to define the area NK will have to destroy in Yongbyon, but also started from the US throwing the option of "plus alpha (+ α)," to the NK side. There has been different interpretation about the 'facts' of the talks in Hanoi. Later, it was confirmed that the disagreement was not about additional facilities related to HEU, but was about inter-continental ballistic missiles.[13] Anyway, it became clear that the problem is how to continue to the next stages after having premised on the basic implementation plan and agreement to 'destroy facilities in Yongbyon.'

The third difference is about the approach and methods of denuclearization. What the US side demanded, the so-called "big deal," is in reality "Full baseline declaration and then action for action implementation." In other words, stipulating the "end state of denuclearization" and making it a "phased approach" of three or four steps to implement the agreement, which implicates that if a comprehensive deal is reached, they can accept simultaneous implementation and exchanges between the two parties. Such positions

13) John Bolton's recently published memoir confirmed that Biegun pursued improved agreement and Bolton himself overturned it.

of the US side was represented with the rather strange terminology of 'simultaneously and in parallel,' not positioned as step-by-step approach.[14)]

In fact, NK suggested the synchronous and step-by-step approach The reason that US Special Envoy to NK, Stephen Biegun's discourse look bit odd, is because it said that they can divide the demands of NK and can accept the "Simultaneously and in parallel" part, but cannot accept the step-by step approach. To the NK side, who had been thinking of a simultaneous process as being the same as step-by-step approach, the US side responded with compromising discourse. The US position was that they could use the word 'step' about each part of the process and the big picture only when they are agreed upon in a very concrete way at the entrance of negotiations. Only then can they finally accept measures such as 'Simultaneously and in parallel' as exchanges between the two parties. The biggest issue happening because of such a discourse is the US demands for NK's report of its nuclear testing and the verification. NK would probably connect this with ultimate denuclearization. However, the US has been demanding agreements concerning it, from the early stage of denuclearization. Such an approach of the US side is premised on the agreement of the end state of denuclearization, and the entire process to reach the end state in advance and the author's judgment is that it is more proper to call it a "phased approach" to distinguish it from step-by-step approach.

Viewed from such a perspective, in contrast, NK's step-by-step approach is completely distinguished from Biegun's approach. NK's step-by-step is an approach of so-called non-proliferation. NK raised a fundamental question of, in the situation where mutual confidence is lacking, how could they anticipate the entire end state and reach the agreement in a concrete way. In the relations when both parties are mutually hostile, they argue that they should follow the equation of CBM (Confidence-Building Measure) of non-proliferation, so that they can agree on the next goal and measures of the next

14) Dr. Paik Nak-Chung analyzed that phased approach and 'step-by-step' at 'The 142th Sekyo Forum, in April, 2019. The former is related to the method of describing each phase after implementation of all agreements, the latter is to decide the next step according to the result of implementation at each stage and they have a difference in having no premise on the end state. The author referenced to his thought in distinguishing the difference and distinguished the former as the US' approach while the latter is NK's position.

stage based on symmetry of the level of confidence building. Symmetry of the level of confidence building is a result of small deals, then taking the goal of the next stage based on it and planning the next stage is the NK logic.

"Full baseline declaration and then action for action implementation," which means a concrete agreement on the end state and entire process, is the US phased approach, but it is actually hard to view as a general discourse in the negotiation of non-proliferation. Because it is not realistic, from the perspectives of general logic of non-proliferation, that one should agree on the goal of the next stage based on the level of confidence building. It will be very difficult to take even the first step in the security negotiation between the hostile states when based on such. The problem lies in the issue that the confidence building measures and common security is still valid for the asymmetrical relations between the major power and weak state, like US-NK relations.

If what NK wants is essentially just staying at the first stage, it is hard to avoid the fundamental question of whether it is proper to start the negotiation.[15] In the end, the question of what the general discourse in the negotiation of destroying nuclear weapons in a situation dominated by coercive games and controversies over the question, still continues.

March-April Discourses of NK during March-April

☐ **March 3rd, Press statement by Kim Yo Jong (to SK)**
- "How come can all its words and acts be so perfectly foolish in detail."

☐ **March 5th, Kim jung Un's letter (to SK)**
- "His unwavering trust and friendship towards President Moon,"

15) An article in Chosun Shinbo(Sep 12, 2019) reported, "Biegun's discussion on '+ α' virtually aiming at freezing all the nuclear products (table B of 1) was 'whether it is freezing or elimination, we never accepted demands for disarmament" and made NK's rejection very clear. However, whether it is going against the US' unilateralism or rejection of '+ α' itself is unclear. At least at the current point in time, what is clear is that what NK wants is for the US to pay the price of disassembly for the facilities in Yongbyon, and starting first phase discussion from that point

□ **March 22nd, Kim Yeo-jung (to the US)**
- "Importiality and balance guarantees… if you ask my personal thought.. either physically or morally equilibrium should be maintained and justice should be guaranteed..

□ **March 30th, statement by negotiation representative (to the US)**
- "Listening to Pompeo's crazy words this time, we once again gave up our will for dialogue with firm conviction"

□ **April 19th, Statement by press secretary**
- "We have never sent any letter.." asking and intensive analysis on the US leaders' intention"

6) The Trilateral Talk at Panmunjeom of June 30th, 2019 and Top-Down Diplomacy

6-1) Limitations of Coercion Games and Techno-Politics

Concerning the fundamental problem of no-deal in Hanoi, nuclear-physicist Lawrence points outs the limitation of the traditional coercion theory of the US side. From his perspective the US' coercion theory itself is a means to coerce involuntary behavior by the counterpart by the US(Lee Jung-chul, 2017, pp.55-59), it is inevitably a combination of NK's implementation first and responsive measures as compensation.[16] Lawrence, who analyzed the Agreed Framework in Geneva, points out that such theory is really hard to make work because of the limitation of the variable of time. The assumption that NK, who gives up nuclear weapons, will receive security guarantee in the future is not reasonable from this perspective. Because for NK, there is nothing guarenteed to secure any physical safety valve to overcome the difference of time between the denuclearization, and the compensation of the security guarantee(Lawrence, 2018, p.2). From the US perspectives as well, it is a more rational assumption that there is no reason for the US to guarantee security and economic assistance in the future to NK, who gives up their nuclear weapons first beforehand(Lawrence, 2019, pp.5-6).

In this view, Lawrence pays attention to the approach presented in Moon Jae In administration's suggestion of investment in NK's infrastructure, and on his New

16) Reference to an article analyzing the failure of negotiation with NK and limitation of Strategic Patience based on the US coercion theory. (Lee Jung-chul, 2017, p.55-59).

Economic Map of the Korean Peninsula. It is not being suggested as rewards, but as something functioning as a technical network connecting NK with international society. He called his own approach from such a perspective Techno-Diplomacy compared to Techno-Politics. Techno-Diplomacy borrows Latour's methodology-an original version of the so-called Actor-Network Theory(ANT), and pays attention to the effects of networks. In other words, how the so-called "investment for technology of nuclear water reactor" could lead NK to have a network with global society, and how it could build confidence (Latour, 1993; Latour, 2005, pp.64-70).[17]

According to Lawrence, at the time of the Agreed Framework, programs equipped with high technology and infrastructure, such as a light water reactor, is proper for commitment as an incentive. Because of the point that such a program involves complicated technology and a global network, it could be a proper way to secure transparency and stability, which could draw the counterpart to international society. The reason why the Bush and the Obama administrations' policy towards NK-since the Agreed Framework has been broken- was because it was only based on the rhetoric without physical assistance, and the rosy commitment for the future could not guarantee NK's denuclearization. In fact, the commitment for the future itself must be "costly signals," pledging considerable costs.[18] Only when paying the costs occurs right at the time of sending signals, could it give trust to the other party. As long as the US' commitment for NK has always been lacking physical substance, only with words, it cannot give trust to NK as it is a signal without costs. Lawrence's Techno-Diplomacy, consequently, argues that reliable costs and signals should be given and an incentive structure should take roots ahead of NK's denuclearization. It is an alternative criticism about the so-called "Action first, Denuclearization first" discourse. Surely the party of the costs is important. Only when the party who is sending the signal take steps to pay the costs, could such a signal give trust to the counterpart and it would accept the signal. It is also necessary to manage the domestic audience cost, which would be charged in the future regarding such 'sending a signal' clearly delivering confirmation

17) Based on the concept of "Politics as Other Means" of Latour, Lawrence uses concepts of Diplomacy as Other Means and Normalization as Other Means. (Lawrence, 2019a).

18) About costly signal system, view Fearon(1997), Lee Jung-chul(2017).

to the counterpart. Techno-Diplomacy prefers increasing the burden of the present "sunk costs".[19)]

The most remarkable feature that Lawrence's Techno-Diplomacy emphasizes is the frame of negotiation. He rejects judicial views, only focusing on the end state, who violates the documented agreements and how to verify the implementation of those agreements. Instead he pays attention to the matter of how to irreversibly construct physical measures which would be realized at each stage, then constructs the next stages based on it-an opened approach- and time to pledge them. As such, he pays attention to the physical space and time of the future when the ramification of already realized physical measures at the current stage, and the technological network, will be open and known.

From the perspectives that sticking only to the interpretation of the documented agreement and its verification is the biggest obstacle in arms control, the judicial approach, focusing on the documented agreement, is not only counterproductive, but is also far from maintaining the already achieved physical changes, according to his criticism. Such an approach will pay attention only to whether the other party keeps the agreement or not. Thus, he suggests that one should be more generous on the measures, and open to offering more multivariate alternatives, in case of the possible collapse of the framework and the will for agreement. Consequently, Techno-Diplomacy prefers hedging against the case of the collapse of the denuclearization regime, rather than focusing on preparing measures in case of betrayal and deception. Techno-Diplomacy interprets maintaining nuclear capability as an insurance-hedging- in the case of the collapse of the denuclearization regime, and from such a perspective, it is not a measure debilitating denuclearization or violating denuclearization, rather it is an action promoting denuclearization (Lawrence, 2019, p.28). That is the reason that CVID suggesting the removal of all the possible capabilities, technical capability and the transfer of its scientists, is a measure against denuclearization.

In Lawrence's Techno-Diplomacy, construction of the infrastructure in the New

19) Concerning the audience cost and sunk cost, view next articles. Kim Ji-yong (2014, p.201-202), Lee Jin-myung (2016, pp.6-8).

Economic Map of the Korean Peninsula itself is taken as a technical and integrated management regime, going beyond the national border, not just a compensation regime for denuclearization, as the Map is more of a network connecting NK to the world. Lawrence believes that President Moon's suggestion of this brought about NK's willingness to destroy the facility in Yongbyon((Lawrence, 2019, p.38). Although the US' traditional non-proliferation strategy, as in the proverb "Do not feed the donkey before it works, otherwise he will not move from the moment he was given food," is blocking the novel approach of the SK government, meaningful effects are still ongoing.

Lawrence's Techno-Diplomacy gives many implications over the three controversial issues of the Hanoi summit previously mentioned. First of all, while the US' Philosophy of Sanctions based on punishment is captured in the traditional game of coercion-commitment, NK's so-called "method of calculation," demands the US' signal for compensation be a "costly signal," premised on the payment of current costs for confidence building. So-called Techno-Diplomacy approach tries to be an alternative and open time framework, concerning the controversy of the punishment from the perspective that it tries to overcome the gap of the closed time frame and unidimensional discourse, having incentives and sanctions at each end of the line.

Second, for the case of "Yongbyon+ α," NK argued that the US should admit the importance and meaning of destroying of the facilities in Yongbyon, and based on confidence building from the such recognition, improvement toward "+ α" is possible. President Moon Jae In also supported NK's position, mentioning that, "the destruction of Yongbyon itself is an irreversible entrance of denuclearization of NK," sending strong signal toward international society (Moon Jae In, 2019). The approach of Lawrence implies what the easiest way for '"Yongbyon+ α" will be, from the aspect that he puts more weight on the technological and physical achievement at the current stage, than on the end state.

Finally concerning the methodology, Techno-Diplomacy takes roots in the Arms Control and step-by-step approach. It emphasizes the benefits of the comprehensive design that the integrated management regime would bring, and of the open step, which does not completely block hedging by technology. a Such aspects could be connected to

the typical self-confidence and trust needed for the step-by-step discourse. Rejecting the judicial framework only based on preventing deception and distrust, Techno-Diplomacy expresses its confidence for creating opportunities and possibilities for the development of technology. If adopted, it will open the possibility of technological denuclearization at the next stage at the early stage of denuclearization, thereby offering a new space for new opportunities, according to the argument

6-2) The Role of SK and Procedural Approach

Viewing the last US-SK bilateral talk of April 11th based on the issues exposed in the Hanoi summit, one can find that the leaders of the two parties made a very strong endeavor to overcome the heated issues in the Hanoi talk. There are few people who remember that the contents discussed in US-SK summit became the basis for the realization of the June 30th summit. Pondering upon this summit held in April, one could find the clues for how the June 30th summit was possible. In particular, when President Moon Jae In persuaded President Trump to pay a visit to SK once again, on the phone call on the 7th of May, it was very important groundwork for holding the summit of June 30th. Some diplomats or politicians condemned his call as “embarrassing diplomatic practice.” However, it is evident that the phone call was the determinant background making the June summit possible. Following the phone call, both countries announced on May 16th the plan for President Trump's visit to SK in June, and the confirmation of the visit followed. Finally, movements surrounding the US-SK-NK trilateral summit showed radical change.

Let's go back to the US-SK summit held in April. In the morning of April 11th, before dawn on the 12th Korean time, the two leaders of the US and SK sent the following signals. The most important first signal both leaders sent was that holding the third US-NK summit is necessary and even holding a US-SK-NK trilateral summit could be considered. The time for holding US-SK summit meeting was early morning on the 12th of April, which was ten hours earlier than Chairman Kim Jung Un's speech. In his speech at Supreme People's Assembly, Chairman Kim mentioned that they could have one more summit meeting by the end of that year, leaving open the possibility for more talks(Kim

Jung Un, 2019). It was an abstained response by Kim Jung Un, who would have seen the leaders of the US and SK mentioning a third US-NK summit.

What is of next importance was that President Trump confined the "end state" of denuclearization to dismantlement of nuclear weapon, mentioning that he thought the big deal was about the disassembly. Considering the fact that Bolton suggested destruction of all the inter-ballistic missiles and biological weapons as the ultimate goal of denuclearization in the Hanoi summit held in February, that President Trump confined the goal of denuclearization to only nuclear weapons was also sending a positive signal for talks to NK.

〈table 3〉 Chrnology: From Hanoi talk to June 30th

Accouncement of the US and SK's position		Announcement of NK's position	
		March 15th	Choe Son-hui implilcated moratorium-rethinking US talks/ Attention to Dongchang-ri facilities
March 29the	White House(Allison Hooker) delivered a letter to NK		
April 11th	US- SK summit		
		April 12th	Speech after postponement of Supreme People's Assemboy
		May 4th	NK fired "unidentified projectile"
May 7th	Phone call between President Moon and President Trump		
May 9th	Kang Hyo-sang's criticism on the phone call in press briefing		
May 16th	Announcement of June US-SK summit schedule		
		June 4th	Foreign ministry statement implicating dialouge
		June 10th	Chairman Kim's letter to Preident Trump
June 11th	President Trump revealed he received a letter from Kim		
June 14th	President Moon;s calling for working group level talks to NK		
June 20th	Unification Ministry(SK) to send 50,000 tons of rice aid to NK		

		June 23rd	Chairman revealed a letter from President Trump
June 24th	US confirmed scheduling visit to SK on the 29th		
June 26th	President Moon called for NK's acceptance of Youngbyon proposal		
June 29th	President Trump Twitter(AM)	June 29th	Choe Son-hui's statement as a response (1 hour later)
June 30th trilateral meeting			

The third important endeavor was that President Trump himself mentioned the phrase step-by-step approach directly.[20] Biegun, the US Deputy Secretary of State, made it very clear in the press conference on the 7th of March that there was no one in the administration who agrees on the incremental approach. Nevertheless, President Trump himself directly mentioned incremental approach in April, which was a very critical improvement. Although the US did not abandon the discourse of the 'big deal', it was meaningful enough that the US President used the term step-by-step approach that NK has been suggesting. It meant that at least now there was a space offered for the arbitration.

On the other hand, President Trump repeatedly emphasized that he agreed on humanitarian aid and sending food by the SK government (Trump, 2019).[21] Since then, US-SK governments reaffirmed their willingness to send food to NK on a phone call (Hankyoreh, 2019.5.9), even after NK launched an "unidentified air carrier" on the Peninsula.[22][23] In fact, at the press conference right after the Hanoi summit, President

20) "I'd have to see what the deal is. There are various smaller deals that maybe could happen. Things could happen. You can work out, step-by-step, pieces. But, at this moment, we're talking about the big deal. The big deal is we have to get rid of the nuclear weapons."(Trump, 2019)

21) "Well, we are discussing certain humanitarian things right now, and I'm okay with that, to be honest. I think you have to be okay with that. And SK is doing certain things to help out with food and various other things for NK." (Trump, 2019)

22) "Both leaders exchanged their opinions on FAO/WFP Joint Rapid Food Security Assessment new report on the NK, and President Trump mentioned it would be very timely and positive measure for SK to send food to NK from humanitarian aid perspectives and supported it." Sarah Huckabee Sanders, the White House press secretary said that if SK continues the plan, we will not intervene in it," and she also mentioned, however, that the US position on NK is to continue Maximum Pressure, and their focus was on the denuclearization. (Hanhyoreh, May 9th, 2019).

Trump emphasized that he "just didn't think additional sanctions at this time were necessary," as there were already enough powerful sanctions. He also mentioned that his attitude changed after having better relations with Kim Jung Un and learning NK had its own point of view.

It was a very important moment, showing that there had been changes in his thoughts about sanctions, although not many people paid attention at the time.[24] A month after that, he admitted that humanitarian aid was a new step for the departure from the existing discourse of punishment which had been weaponizing the humanitarian aid. It is difficult to assert that it is a complete change of thoughts of punishment but it was sufficient as a signal for negotiation.

After the summit, as June was approaching, the SK government sent two messages to NK and the US separately. The first was President Moon's speech in Stockholm discussing three points for confidence building for NK.[25] While his June 14th speech in Stockholm suggested methods for confidence building and conversation, the June 26th joint written interview with six global news agencies was a message to the US In this interview, President Moon, emphasizing the importance of the destruction of the facilities in Yongbyon, was to remind the US of that the reason of the Hanoi failure was the underestimation on the importance of the destruction in Yongbyon. It was also a message for NK that SK would assist the NK so that an upcoming US-NK talk would be meaningful enough for NK as well.

The June 30th meeting was historic event through the twitter message of President

23) Concerning NK's missile launches at Guseong region on the 9th, in his interview with Politico, President Trump told that "They're short-range and I don't consider that a breach of trust at all. And, you know, at some point I may. But at this point no." He followed, "they are short-range… calling them very standard stuff."

24) It is known that in the talk in Hanoi, President Trump even suggested they could utilize the article 'snap back' which is a conditional measure lifting sanction although the suggestion was not realized due to opposition by Mike Pompeo.

25) President Moon Jae In suggested three types of trust in his address in his address at Riksdag of Sweden.: the trust between the peoples on both sides("Small but concrete steps toward peace ,peace in everyday life"), the trust in dialogue.("Those who distrust in dialogue slow down the progress in peace".), the trust of the international society.(The international society will immediately respond if NK puts forth sincere efforts.)

Trump, and NK's response to the message as a result. However, it was entirely the SK government's endeavor which offered the stage of President Trump's visit to SK after Hanoi, and it was a consequence of a strategic behavior to create US-SK-NK trilateral meeting. Although inter-Korean relations are still frozen, the efforts of the SK government behind the scenes is still functioning as a driving force for peace. Aren't such efforts the most creative approach closest to the opened equation of confidence building that Techno-Diplomacy emphasizes? (Lawrence, 2019, p.38).

6-3) NK's Rage and US-SK Joint Military Exercises

Chairman Kim is still not hiding his uncomfortable feelings against the SK government. In his SPA speech he harshly criticized the SK government, saying that it should not act like a mediator or facilitator but be a responsible party itself, then he again launched inter-ballistic missiles as a warning for inter-Korean relations.[26]

NK's discontents could be summarized in two parts, the most important one is the US-SK joint military exercises. The two countries had another name "Alliance" for joint drills in March, instead of "Key Resolve". In August as well, the SK government continued another US-SK joint drill and NK is vehemently protesting them. In fact, the US and the SK authorities conducted a drill for WMD removal in July, and the SK 214-class submarine also participated in US-SK joint naval drill "Silent Shark" near Guam (Hankuk Ilbo, 2019.7.18).[27] Also the successive appearances of F35's on the Korean Peninsula

26) Last year we held three rounds of historic inter-Korean summit meetings and talks and adopted inter-Korean declarations to bring about a dramatic turn in the relationship. They were events of great significance which turned around the grave situation that was teetering on the brink of war every moment and which heralded the start of a new journey to national reunification… They should not waver in their attitude as they see the tide nor pose as a meddlesome "mediator" and "facilitator" as they busy themselves with foreign trips, but be a responsible party that defends the interests of the nation speaking what they have to say squarely with the mind of their own as members of the nation…. if the hawkish forces in the SK military, who persist in veiled hostility as they resume the military exercises, which were agreed before to be discontinued, jointly with the United States by changing their names, continue to be allowed to make reckless moves… (Kim Jung Un, at the First Session of the 14th Supreme People's Assembly of the NK on April 12, 2019)

27) The 23rd Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) defense division under the 2nd infantry division of the US and SK's Maengho (Fierce Tiger) troop had joint military exercise. (Jungang Ilbo, July, 19th, 2019).

as part of the US-SK joint air force exericises-instead of Max Thunder- seemed to have aggravated NK. The appearance of F35's is actually a result of the successive arrival after its purchases (the South purchased 40 of them under the Park Geun Hye administration). Nevertheless, it is not easy to ignore that NK is arguing that the current administration purchased an additional 20 of them.

The second discontent is that SK is pursuing US-NK dialogue first, rather than inter-Korean dialogue. In last autumn, when the US-NK talk was broken, the SK government mediated US-NK talk through inter-Korean summit. By the end of August 2018, Mike Pompeo's visit to NK was canceled and US-NK relations had frozen, but the two leaders of South and NK had a meeting and finally had a military agreement on September 19th. Also, President Moon Jae In, at the end of September in New York, persuaded the American President to have additional US-NK talks again. Such background made NK offering a present of destroying facilities in Yongbyon to SK, and President Moon's meeting with President Trump, possible.

In contrast, in the case of 2019, the SK government could not gain any momentum to lead inter-Korean relations right after the talk in Hanoi. It was in such a state that SK and the US held a summit on April 11th. At the time, the talk was a result of the traditional sequence of "US-SK talks first, inter-Korean talks afterward," not the September 2018 sequence of "inter-Korean talks first, US-NK talks afterward." It was natural that NK expressed its discontent. From the NKs' perspective, SK was heading back to the typical pro-American administration (Kwon Jong Gun, 2019b).

Nevertheless, there is no sign that NK is breaking the agreement or pursuing fundamental changes. There is a possibility that NK's silence might last in the long-term, however, the NK is also making clear its will to keep the existing agreement. NK's actual behavior threatening the South is still not threatening various military agreements per se.

In a recent speech on June 27th Kwon Jong Gun, the head of the NK foreign ministry's North America Department, slammed Seoul's attempt at the resumption of denuclearization talks, saying "It is really preposterous to hear the balderdash of SK authorities who do not have either any qualification to discuss, or the position to poke their noses into, the matters between the NK and the US." and adding that the SK

authority was falsely advertising as if there were various behind the scenes talks, but there was nothing like that. However, Kwon's critical statement on June 27th was just a part of the typical negative exchanges when the South's revealed critical information but it was not expressed as opposition to the US-SK-NK trilateral meeting.[28] In August, criticism by Kwon and the NK Ministry of Foreign Affairs continued (Kwon Jong Gun,2019b), declaring that it would not have contact with SK, let alone dialogue, unless Seoul gives even a "plausible excuse" for its ongoing military exercises with the United States- the gist of his remarks is criticism against SK participation in the joint military exercises (Statement from Ministry of Foreign Affairs, NK government, 2019).

In fact, the SK military authority itself has launched inter-ballistic missiles for testing a number of times, and it is a fact that it is unofficially continuing measures to aggravate NK, including successive purchases of F-35's, which is a symbol of a decapitation strike. The news report that President Trump expressed his frustration to SK, is related to such movements by the SK military authority, as NK expresses strong discontent with SK's military exercise by launching its missiles, and asking for the excuses of the SKs.[29]

At present, it is difficult for both NK and SK to ignore the technical needs from the military concerning security. For both the NK and SK authorities, who know that the solution of Suspension for suspension is bit radical, exercises to achieve deterrence without nuclear weapons, are a part of hedging. As previously argued by Lawrence, if viewed from the perspective that it is a complementary measure for denuclearization rather than destroying denuclearization itself, it is not necessary to just be pessimistic. Surely just ignoring NK's outpouring of daily criticism and waiting for NK to enter into

28) Kwon Jong Gun, Director-general of the department of US affairs of NK's foreign ministry's statement, in fact, had strong criticism for the argument that President Moon Jae In suggested China have a NK-China Summit first, then have SK-summit a day before the statement. Rather, it would be irrational if NK were not unhappy with such suggestion by SK. "SK and China are fully discussing on a regular basis on measures for complete denuclearization of the Korean Peninsula and settlement of permanent peace. The Chinese government is fully understanding the thoughts of our government, and having a close cooperation with us. In this vein, the SK government has suggested that it would be nice if President Xi could visit NK first before SK-China summit. This is to create a new turning point at the stagnated situation after the talk in Hanoi."

29) "President Trump viewed SK's role as restraining Pyongyang, and SK is not fulfilling its duty to do so." CNN analyzed that President Trump seems to ascribe complaints about NK's missile launching to SK. (CNN, 2019b).

dialogue are not responsible actions. However, like the approach in the explanation by Techno-Diplomacy, if viewed from the perspective that it is just one way of mutual hedging (Lawrence, 2019, p.28), and if we take steps to manage the situation, there would always be a solution. There is no reason to laugh and cry each minute, responding sensitively to such verbal tension as long as a full-scale arms race of conventional weapons does not start. The solution always lies in physical confidence building. It is time to prepare for a better future, not fearing failure.

7) The Special Concept: "Prioritizing Peace to Denuclearization"

The three key policies the US and SK have been sharing are the Peace Regime, the US-Korea alliance, and denuclearization. These three core policies have been recently faced by pessimism, calling them the "impossible trinity'." Koo Kap-Woo called this the "trilemma" of the Peace Regime, the US-Korea alliance, and denuclearization.[30)]

In fact, denuclearization is a means for the Peace Regime. The Peace Regime is, conceptually, a goal for the highest stage of denuclearization. How denuclearization, which is a means for the Peace Regime, came to mean peace itself, was a contribution of the Lee Myung Bak administration. The policy called "Denuclearization-Opennes-3000" was essentially a discourse putting denuclearization at the superior level, which as a result, distorted conservatives' discourse that there is no peace as long as denuclearization comes first. The goal itself has disappeared, but one indicator for the goal, denuclearization, came to became a policy priority. Falling into discourse engrossed only in denuclearization, due to an inversion of the means and the ends, led to insanity, such as the idea that peace would come if citizens of Seoul suffer only for three days from NK long range artilleries.

President Trump often emphasizes that "we'd be at war with NK if I wasn't elected." He came up with a new approach concerning denuclearization to overcome the trilemma.

30) Koo Kap-Woo "Origin and Development of the Pyeongchang Provisional Peace Regime: Security Dilemma on the Korean Peninsula and SK's Trilemma", Korea and World Politics, Vol.34, No.2(2018).

The method to remove the dissonance among the three policies of the Peace Regime, the US-Korea alliance, and denuclearization is to rearrange the order of priority among these three. When taking one step back from the odd policy prioritizing denuclearization first and reflecting on the importance of the Peace Regime, we would be able to gain both peace and denuclearization. While inter-Korean relations and US-SK relations support each other, eventually even US-SK relations would be upgraded. The moment one realizes that securing the Pyongyang Joint Declaration of September 2018 and the resumption of inter-Korean cooperation to reach the Peace Regime could be the solution for overcoming the trilemma, the driving force for inter-Korean talks becomes clearer.

Actually, the author's suggestion is fundamental. It is an idea that, as the trilemma itself is no more than a constitutional component captured in the process of securitization, we could instead escape such a bridle. The solution could be offered when we go back to the generality, rather than only being captivated by denuclearization. When referencing the particularity of denuclearization to denuclearization and arms control to manage it or non-proliferation it could be a subsidiary concept of the Peace Regime. Our policy goal is divided into values and geo-politics, and ends and means are arranged on each of those two pillars.

If viewing the two concepts of alliance and peace divided into values and benefits, denuclearization, to which we had been wedded for the last thirty years, is just a means for the bigger value of the Peace Regime. We could consider the discourse of one Japanese nuclear expert; denuclearization of NK from the viewpoint of arms control could be thought of as a value.[31] Denuclearization becomes a realizable ends by doing so. At that point, specific parts of Charles Kupchan's unilateral concession are also a means to achieve K-peace.[32]

31) Akiyama Nobumana, "Possibility of Japan-SK cooperation in the process of denuclearization of NK," Center for Japanese Studies, Korea National Diplomatic Academy.

32) Koo Kap-woo, "Critical theory of international relations and the peace process of the Korean Peninsula: setting alternative subjects for study," Unification Policy Studies, 11(1),2002. Korea Institute for National Unification

5. Conclusion

The reason that the Trump administration defined Strategic Patience as a failure could be viewed as its intention to bring about changes to the US perception on NK and its overall methods. However, it became a hard question to answer as to what distinct features does the Maximum Pressure and Engagement of the Trump administration actually have, compared to Strategic Patience. Concerning the Trump administration's policy towards NK, analyses are lacking, as the policy is ongoing, and only phenomenal studies about the failure of Hanoi are being released.

Although there have been many studies on the actual policies of the two most recent US administrations, there is no study exactly analyzing the relationship of Strategic Patience and Maximum Pressure and Engagement from the perspectives of perception, philosophy, and methods.

In reviewing the foreign policies towards NK and identifying novel policies on NK, the author judged such a work to be a priority and conducted an independent study examining the relationship between the two policies. Only when articulating the relations between the two, it is possible to clarify why the US policy towards NK is swinging like a pendulum, rather than evolving.

Through the study, the author confirmed that the US policy towards NK was swinging rather than evolving. This was because of the policy swing between the Asian experts and the non-proliferation policy group inside the US. The US-China relationship under the global uncertainty, and transformation of US-Korea alliance are other factors of policy swing.

However, as the global regime is changing, we now have the assignment to decide what policies should be suggested for a new future. Although it is not sure what policies the next president would adopt, if the US policy towards NK swings once again, it will likely lead to failure. Thus, the factor of the US-Korea alliance becomes even more critical in such a situation.

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