

표지 면지

국방대학교

2017 국제공동연구프로젝트

International Joint Research Project 2017

Published by The Research Institute for National Security Affairs

Publication Date: November 2017

Address : 1040, Hwangsanbeol-ro, Yangchon-myeon, Nonsan-si, Chungcheongnam-do
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Book Design: Kyung-Sung Publishing Company

ISBN: 978-89-89226-08-6

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A Study on the Database Construction of Terrorism and Insurgency in Asian Region

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A Study on the Database Construction of Terrorism and Insurgency in Asian Region

〈Abstract〉

This paper focuses on exploring aspects about constructing and operating terrorism databases. To conduct the study, this paper attempts to employ two different perspectives. To explore logic, ideas, structure, methods, and uses of databases, this paper examines ISVG and START. At the same time, to understand needs and ways for enhancing database, this study focuses on Global Pathfinder. The study argues that three important categories for database include incidents, individuals, and groups. For an effective and useful database, information on the three categories should be stored and systematically classified and managed. For each type of data, associated theoretical propositions should be based.

In the case of ISVG, its core mission is to build the most comprehensive unclassified database on group-based violence worldwide. The ISVG is the premier organization conducting open-source collection and exploitation on violent non-state actors. Utilizing a unique machine-assisted, human-centric collection methodology, ISVG researchers aggregate, code, and enter data about terrorist, extremist, and transnational criminal activities into a highly structured relational database. This data is detail rich, focusing on the minutiae of violent acts, support activities, and illicit transactions. The ISVG database has approximately 1,500 variables about incidents, individuals, and groups. Such variables were carefully selected through the staff meetings and simulations. They were further sophisticated and upgraded in the course of the database development.

The START program was launched by University of Maryland supported by DHS (Department of Homeland Security). The program was designed to construct and support a comprehensive terrorism database that facilitates theory development, empirical research on terrorism and terrorists for effective counter-terrorism activities. It focuses on the origins, dynamics, behavioral patterns, psychological impacts, and various other

social scientific and behavioral scientific understandings of terrorism, terrorist groups, and terrorist individuals. From 2006, the START project entered the qualitatively take-off stage due to the consistent financial support of DHS. Since 2011, START launched another data collection and analysis project. Its new project is called IUSSD(Integrated U.S. Security Database). The project goals were related to: (1) integrating existing data on U.S. terrorism and extremism, (2) enhancing these data, (3) supplementing these resources with newly collected data on countermeasures, and (4) conducting analyses using these newly integrated data. Separately, START also launched the PIRUS(Profiles of Individual Radicalization in the United States) project since 2013. The PIRUS project was a three-year program which began in the summer 2013 and continued until the summer 2016. This project is to profile individual terrorists and extremists.

The ICPVTR Global Pathfinder Database has gone through two evolutions thus far and is presently in the process of undergoing its third evolution. After the initial beta testing period, the Pathfinder will be set for its launch in approximately the first quarter of 2018. Broadly through the course of the three waves of evolution, the ICPVTR database is moving from a data management system to that of data management plus i.e. this would entail going beyond mere data aggregation, management and retrieval to include varied gradients of software that would include elements of automation. At the start, the functions of GP I embraced the necessity of the time, which was data management as the Centre had started out and building its mettle. To improve the databases' information retrieval, the interface of Global Pathfinder II is divided into 3 types - searching data, manipulating and handling data; and analyzing data. These capabilities were built to improve the ability to search data. The database while focused on the transnational threat. In its third generation the ICPVTR database will henceforth be known as *Pathfinder*. The name change is in recognition that the terrorism is transnational and global. This third evolution of the database with its new platform will enable the creation of a more adept repository of information, enhance the analytic capacity of the database, augment the general user interface and initiate automation to facilitate the creation and management of data.

Finally, a new database of terrorism and insurgency can become the hub of research, policy development, and education & training. The database encourages quality analysis

and systematic research. It can serve many analysts and researchers to study on terrorism and insurgency. For doing so, it contributes to the knowledge development on the field of terrorism and insurgency. Based on the empirical based reports and analysis, a workable policy can be developed. It positively affects the field of counter-terrorism and counter-insurgency. Finally, the accumulated knowledge through the database construction and research & policy development can be utilized to educate and train the future generation of academics, analysts, researchers, and practitioners on the field of terrorism and insurgency.

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I. Introduction

Recently, terrorist attacks have been frequently occurred and casualties have risen worldwide. A recent media source, citing the analysis of Israeli INSS(The Institute for National Security Studies), reported that 5,650 people were killed by the suicide bombing attacks alone worldwide in 2016. It meant that 15 people died every day. This figure was the 31 percent increase from that of the year 2015.¹⁾ According to the 2015 Global Terrorism Index,²⁾ in the 2014 alone the 32,685 deaths were recorded due to terrorist attacks. The terrorist attacks were occurred in ninety three different countries worldwide.

This year, the year 2017, alone, a series of major terrorist attacks continued, not surprisingly. In March, London observed a terrorist vehicle crash attack in famous tourist spots.³⁾ In April, a terrorist bombing attack was occurred in St. Petersburg, the second largest Russian city. Approximately 10 people died and 50 people got injured.⁴⁾ In the same month, an armed assault was occurred in Paris. The French authority concluded it as a lone-wolf terrorist attack.⁵⁾ In July, the Pakistan Taleban launched a suicide bombing attack killing 26 and injuring 58.⁶⁾ Cases of Incidents are never short even in this year alone despite the fact that only the first half of the year passed thus far.

Seemingly positive news was heard. According to a report, IS(The Islamic State) is on the verge of a critical defeat. It lost a third of its territory. It was completely removed from Mosul, the largest strong hold of IS. Raqqa, the capital city of IS, is soon to fall to the US led international coalition forces.⁷⁾

1) Avi Issacharoff, "2016 was deadliest year ever for suicide bombings worldwide," *The Times of Israel*, January 6, 2017.

2) Institute for Economics & Peace, "Global Terrorism Index," IEP Report 36 (November 2015).

3) Jill Lawless, Paisley Dodds, and Danica Kirka, "U.K. Parliament attack: five dead and 40 injured in sick and depraved terrorist incident at Westminster," *Associated Press*, March 22, 2017.

4) Roland Oliphant, Danny Boyle, and Matthew Bodner, "St Petersburg metro explosion: Russian investigators believe suicide bomber caused blast that killed 14 as suspect named," *The Telegraph*, April 4, 2017.

5) Angelique Chrisafis and David Smith, "French police officer killed in shooting on Champs Elysees," *The Guardian*, April 21, 2017.

6) Aria Bendix, "Taliban car bombing kills 26 in Pakistan," *The Atlantic*, July 24, 2017.

However, there are warnings that the fall of IS in Iraq-Syria will spread the terrorist threats to other regions of the world. European countries will be directly hit due to the massive inbound movements of IS returnees and refugees. Europe will be the terrorist breeding grounds and the major battle fields. Also, IS will be expanded into the Asian region, especially in the Philippines and Indonesia.⁸⁾ If this comes true, the Asian region would be a major theatre of the global war against terrorism. The evidences of the IS regional infiltration are abundant. The terrorist attacks in the region are on the rise.⁹⁾

South Korea may not be an exception from global terrorist threats. Beside its longtime enemy North Korea, global Islamic extremist terrorism threat is real. There have been several incidents in which Koreans were killed, abducted, and/or bombed in foreign soils by Islamic terrorists.¹⁰⁾ Although there has been no recorded incident of terrorist attack thus far, the number of Muslim immigrants persistently increased within South Korea. There had been some cases of Islamic extremism related activities and supporters for Islamic extremism among such Muslim immigrants. There were also cases that overseas participations in IS and supporters for Islamic extremism among the native South Koreans. In 2015, three Koreans attempted to join in IS and approximately ten Koreans openly claimed their supports for IS.¹¹⁾ In coming years, such global terrorist threats to South Korea is anticipated to be further elevated because IS flooded Southeast Asia would be a stronghold for the regional expansion of Islamic extremist terrorism.

Thus, now is the time to consider a systematic preparation and implementation of counter-terrorism practice. Perhaps, the construction of systematic database is the first step toward such a campaign. This was the case for the United States. Right after the

7) Susannah George, "There will be a decision point: ISIS 2 Middle East strongholds could be retaken within the next 6 months," *Business Insider*, February 8, 2017.

8) Belkis Wille, "The fall of Mosul may not be the end of ISIS but the beginning of ISIS 2.0," *The Huffington Post*, July 19, 2017.

9) Minwoo Yun, "A study of the recent trends of Islamic extremism in Indonesia," *Korean Security Science Review*, 50: 173-206, 2017.

10) Minwoo Yun, "Threat from and policing against Global Salafi Terrorism in the Republic of Korea: a story from the Eastern front," In Shlomo G. Shoman and Joshua D. Freilich (eds.), *Policing and preventing terrorism around the globe* (Ontario, Canada: 2013), pp. 99-100.

11) Minwoo Yun, "The understanding of the recent terrorism trends and suggestions for the Korean counterterrorism system," *The Studies of New Security Challenges*, 188: 3-32, 2016.

9.11 attack, the United States launched national projects to build workable and cost-effective terrorism database. ISVG(Institute for the Study of Violent Groups)¹²⁾ and START(National Consortium for the Study of Terrorism and Responses to Terrorism)¹³⁾ are such examples. For the last 10 to 15 years, the US cases of terrorism database well proved its valued utilization for policy development, intelligence, criminal investigation, and research. Upon facing to the rise of regional terrorist threats, South Korea needs to consider a similar attempt. The current article proposes the significance, theoretical ground, and how-to of database construction by introducing the US cases and a Singaporean case. Practically, terrorist attacks are often blurred with insurgency conflicts. It seems more practical and useful to consider both terrorism and regional conflicts all together for the database construction. A proposition of database construction in the current article, thus, includes regional conflicts as well as terrorism in the Asian Region.

The database is designed for the risk assessment of terrorism and regional conflicts. Unlike conventional military threats such as nuclear missile developments by the North Korean state, in case of terrorism and insurgency, there is rarely critical intelligence which forewarns an upcoming attack or indicates a critical policy option or countermeasure against a source of threat. Often, intelligence tips are insignificant or trivial. Sources and agents of threats are unsubstantial and apparently harmless. A complete picture of threatening nature can be only grasped through logical and theory-based systematic integration of various apparently insignificant factors and causal analysis of them. This practice is popularly called “connecting dots”. For such efforts, a systematic database construction, including various critical factors and variables regarding terrorism and insurgency related incidents, individuals, and organizations, is prerequisite and inevitable. A well-constructed database allows a behavioral-scientific intelligence analysis, policy development, and an effective problem solving.¹⁴⁾

12) ISVG(The Institute for the Study of Violent Groups) brochure.

13) START(National Consortium for the Study of Terrorism and Responses to Terrorism) website, www.start.umd.edu.

14) Minwoo Yun, “Challenges of non-conventional security threat and quest for a new paradigm in national security activities,” *Journal of Korean Public Policy and Security Studies*, Vol. 11, No. 2: 21-48, 2014.

For conducting the study, this paper attempts to employ two different perspectives. To explore logic, ideas, structure, methods, and uses of databases, this paper examines ISVG and START. At the same time, to understand needs and ways for enhancing database, this study focuses on Global Pathfinder. For ISVG and START Manuals, written documents, websites, and reports of the cases are collected and reviewed. Also, experts and former research staffs of two cases were contacted and qualitatively interviewed to understand the daily practices of the database construction and operation. Besides, this author was a former research staff for ISVG. He had worked for the database construction project for two years. As his employment duty, he executed and oversaw data collections, database construction, and analysis using the constructed database. His hands-on experience, similar to participant observation, is also used for the current article. For Global Pathfinder, qualitative analyses will be hired by a manager of ICPVTR, RSIS who has used the database and joined enhancing process.

II. Theoretical grounds

Three important categories for database include incidents, individuals, and groups. For an effective and useful database, information on the three categories should be stored and systematically classified and managed. For each type of data, associated theoretical propositions should be based. This chapter provides theoretical basis for each category in the database constructed.

1. Incidents

Information on incidents of attacks and other related activities is the backbone of database. It could provide information on seasonal trends, spatial distributive patterns, and target preference or vulnerabilities. Also, it could provide causal information on strategic or tactical steps leading toward a final act of violence. Dynamics of different types of attack could be profiled as well. Thus, Information on incidents should be included in the database.

Rational choice theory, script theory, and situational crime prevention theory could

be used as theoretical basis for different factors of incident information. These factors become sub-categories under the category of incidents in the database. The theories have been empirically supported by many studies.¹⁵⁾ Rational choice theory proposes that a terrorist or insurgent incident is the outcome of rational cost-effective calculation. Thus, an attacker tends to select a relatively easy target with relatively low cost or sacrifice. Thus, information on available resources and weapons for attackers and target vulnerability should be included. Also, information on season, weather, time, and place should be included according to the logic of cost-benefit calculation.¹⁶⁾ Script theory tells that an attacker could be affected by his or her past accumulated habits, patterns, expertise, and cognitions. This means that one's characteristics and modes of violent attacks could be hardly changed and thus predictable. Thus, a systematic profile of attack modes and characteristics could predict a similar future attack.¹⁷⁾ Information on such modes and characteristics of attacks should be included in database as sub-categories of incidents. Finally, situational crime prevention theory indicates much useful information on terrorist or insurgent attacks. The theory identified key factors of target vulnerabilities, weapon selections, tools, and facilitating factors.¹⁸⁾ These factors could be usefully inserted into the database as a sub-category of incidents.

15) Laura Dugan, Gary Lafree, and Alex R. Piquero, "Testing a rational choice model of airline hijackings," *Criminology*, Vol. 43, No. 4: 1031-1066, 2005; Martha Crenshaw, "The logic of terrorism: terrorist behavior as a product of strategic choice," In Walter Laquer (ed.), *Origins of Terrorism: Psychologies, Theologies, States of Mind* (Washington DC: 1998), pp. 7-24; Minwoo Yun and Mitchel Roth, "Terrorist hostage taking and kidnapping: using script theory to predict the fate of a hostage," *Studies in Conflict and Terrorism*, Vol. 31, No. 8: 736-748, 2008; Ronald V. Clarke and Graeme R. Newman, *Outsmarting the terrorists* (Westport, Ct: 2006).

16) Lisa M. McCartan, Andrea Masselli, Michael Rey, and Danielle Rusnak, "the logic of terrorist target choice: an examination of Chechen rebel bombings from 1997-2003," *Studies in Conflict and Terrorism*, Vol. 31, No. 1: 60-79, 2008.

17) Yun, 2008, p. 736-748.

18) Clarke and Newman, 2006, p. 87-136.

2. Individuals

Information on individuals is another essential category for an effective database construction. It allows profiles on dangerous individuals, potential attackers, and important figures such as leaders, ideologues, and strategists. Such information could be very useful to predict a terrorist or insurgent's future behavior and to sort out key figures that counter-terrorism or counter-insurgency efforts could be concentrated on. Also, it allows a researcher or an analyst to trace a life-cycle of a terrorist or insurgent individual. For doing so, one may understand why a terrorist or insurgent individual became such a vicious individual. Thus, a counter-terrorism or counter-insurgency authority may possibly develop an interventional measure to prevent a potentially dangerous figure to fully develop into a terrorist or insurgent individual.

Although the theory was not originally designed to predict terrorist individuals, life-course theory of criminology well explains a terrorist's personal development along one's life-course. According to the theory, various psychological characteristics, strains for life events, and social associations with one's surroundings collectively impact on one's radicalization and terrorist acts or participation in a terrorist or insurgency group. Thus this pathway toward terrorist acts or participations could be causally understood and thus prevented by an effective intervention to treat psychological or social causal factors leading toward radicalization and terrorist acts or participations. Indeed, many personal histories of known terrorists tend to validate such theoretical propositions. Individuals committing a terrorist act or joining into a terrorist group showed conspicuous psychological characteristics, strains or stresses of life events, the weakened social bonding to conventional social institutions such as family, school, church, or community, and the strengthened social learning of terrorist beliefs, acquaintances, connections, skills, and role-models.¹⁹⁾

Hamm and Spaaj²⁰⁾ analyzed the 98 American terrorists from 1940 to 2013. Based on

19) Francis T. Cullen and Robert Agnew, *Criminological theory: past to present* (3rd ed.). (Los Angeles: 2006), pp. 495-528.

20) Mark Hamm and Ramon Spaaj, "Lone wolf terrorism in America: using knowledge of radicalization pathways to forge prevention strategies," The report published by the U.S. Department of Justice, Document No. 248691, 2015.

their findings, they proposed five steps of causal process leading toward an actual terrorist act. Those five steps include personal or political grievances, sympathizing extremist groups or ideology, contacts with or assistance from terrorist facilitators, warning of impending attacks or announcement of the reason of attacks, experience of facilitating events, and execution of an actual attack. The findings showed that a terrorist is affected by various personal, psychological, and social factors. He or she does not become a terrorist executing an actual attack all at once. Rather, he or she evolves or transforms through a series of different levels of steps as results of multiple different causal factors.

In sum, the causal chain-process could be proposed based on the theoretical explanations and empirical evidences. There are four different sub-categories of individual profiles. They are used as sub-categories for the database construction on individuals. The first sub-category is individual psychological characteristics or personality. Such information includes psychopathic tendencies, sadistic tendencies, grandiosity, mental disorder, attention deficit personality disorder, delusion, impulsivity, cognitive disorder, low self-control, or substance abuse. When one has such a psychological characteristics, he or she is more likely to become a terrorist because such a psychological tendency is more vulnerable to violence.²¹⁾

The second sub-category is strain or stress factors. Such information includes low self-confidence, anger, depression, or anxiety. A person may experience such stress-related factors from one's life-event such as loss of one's expectation or aspiration or presence of negative events such as discrimination, disease, death of one's significant others, or accident.²²⁾ When one has such a strain factor, he or she is more likely to become a terrorist because his or her strain leads him or her to an alternative way to resolve his or her strain. Such an alternative way is a terrorist act or participation.

The third sub-category is social bonding factors. Such information includes the extent

21) Ginny Sprang, "The psychological impact of isolated acts of terrorism," In Andrew Silke (ed.), *Terrorists, Victims, and Society: Psychological Perspectives on Terrorism and its Consequences* (Hoboken, NJ: 2003), pp. 133-159.

22) Cullen and Agnew, 2006, p. 201-209.

of physical and emotional bonding to family, school, work place, church, or community both quantitatively and qualitatively. Such conventional institutions function as a preventer to protect one from committing a deviant act such as terrorism. When one experiences a loosened attachment to, commitment to, involvement in, or belief in such a conventional social institution, he or she is more likely to act delinquently that is a terrorist act or participation.²³⁾

The last sub-category is social learning factors. Such information includes the extent of practical and ideological association with terrorist individuals, role-models, and terrorist groups. Also, one's frequency and extent of contacts to extremist books, materials, propaganda, online contents, and activities are the signs of his or her extent of social learning toward extremism or radicalism. Such a social learning has two dimensions. One is the social learning of ideology, belief, or identification. This is closely associated with the extent of propaganda. The other is the social learning of skills mostly related to one's capability to commit an actual violence. This type of social learning includes learning on weapon skills, strategic or tactical know-how, and combat experience. The greater one's social learning process becomes, the more dangerous he or she does.²⁴⁾

3. Groups

Groups are also an important factor to construct terrorism and insurgency database. Terrorist attacks and insurgencies are mostly collective behavior. When groups become formed and pursuit for their political power, they have their own lives, interests, and behavioral logics separated from those of their constituents. Thus, the information on groups should be included in the database.

Miller, Kathleen, and Simone, Jr. proposed profiles of terrorist groups. They criticized the previously existing MIPT(The Memorial Institute for the Prevention of Terrorism) database, which the START database was built upon, on the ground that the MIPT data

23) Ibid, p. 219-227.

24) Ibid, p. 134-146.

collection suffered from the absence of clarity regarding criteria for including a group in the collection. The START worked to remedy the issue for its database construction. Any group which had conducted at least one attack since 1970 when such an attack met the inclusion criteria as a terrorist attack is considered as a terrorist group and thus qualified to enter into the database.²⁵⁾

The category of groups includes several sub-categories. They are drawn from important variables of terrorist groups which are indicated by several empirical studies and terrorism experts' writings on terrorist groups. The first sub-category is organizational demographics. It includes basic information of the name, AKA(also known as), the year first established, ideology, goal, the area of operations, the major changes or events, and others. The second sub-category is about its constituents including both leaders and members. It includes the approximate number of constituents and information on key figures such as leader, ranking officials, staffs, military commanders, ideologues, intelligence operators, lieutenants, and other important personnel. The third sub-category is organizational structure. For instance, it needs to include information on the organizational characteristics, hierarchical or networked, the division of labor, departments, sub-branches, and affiliated groups and organizations. The fourth sub-category is its associations, affiliations, or connections. It includes both friendly and hostile associations. The associations can be ideological bonding and supports, strategic and tactical alliances, power-based influential ties, financial support chains, weapons and logistics providers, and opportunistic connections. The connected other figures, groups, and states, whether militaristic or peaceful, should be listed. The fifth sub-category is histories of events which the groups committed or are involved. Such events include both militaristic or terrorist campaigns and other non-violent activities such as fund-raising, threats, public announcement, cease fires, and criminal operations.²⁶⁾

25) Erin E. Miller, Kathleen Smarick, and Joseph Simone, Jr., "Profiles of perpetrators of terrorism in the United States(PPT-US): data collection and descriptive analysis," Interim report to Human Factors/Behavioral Sciences Division, Science and Technology Directorate, U.S. Department of Homeland Security. College Park MD: START, September 2011, pp. 2.

26) ISVG, ISVG Relational Database Codebook (Huntsville, TX: 2005).

III. ISVG and START cases

1. ISVG

The ISVG project were launched in 2003 and continuously developed by the college of Criminal Justice at Sam Houston State University. Later, the project moved to the University of New Haven in the late 2000s and continued until today. The ISVG was a federally funded terrorism database building project. It was initially funded by DOJ(Department of Justice) and later by DOD(Department of Defense). It was listed as the final five for the 2006 Mitretek Systems Innovations of Homeland Security Award by Harvard University. Since 2003, the ISVG database had collected information on approximately 223,000 incidents, 43,000 terrorist individuals, and 3,000 terrorist groups.²⁷⁾

The ISVG's core mission is to build the most comprehensive unclassified database on group-based violence worldwide. The ISVG is the premier organization conducting open-source collection and exploitation on violent non-state actors. Utilizing a unique machine-assisted, human-centric collection methodology, ISVG researchers aggregate, code, and enter data about terrorist, extremist, and transnational criminal activities into a highly structured relational database. This data is detail rich, focusing on the minutiae of violent acts, support activities, and illicit transactions.²⁸⁾

The ISVG project was based on the concept of OSINT(Open Source Intelligence) and relational database.²⁹⁾ OSINT uses unclassified and publicly accessible open information to build database on terror incidents, terrorist individuals, and terrorist groups worldwide. OSINT uses internet sources, media reports, FBIS(Foreign Broadcasting Information Service), articles, reports, books, court documents, and terrorist documents.³⁰⁾ OSINT is a logical response to the era of information explosion. As the quantity of information exponentially expanded, the effective digestion of information

27) Yun, 2014, p. 31.

28) ISVG brochure.

29) ISVG Codebook.

30) Edward J. Appel, Internet searches for vetting, investigations, and open-source intelligence (Boca Raton: FL, 2011), pp. 131-153.

became more important than the identification and collection of information. The quality of open source information also became much improved. Thus, an effective utilization of such open source information has been important more than ever. The ISVG researchers use RSS, media aggregation, and electronic content filtering to identify reports of interest for the entry into the relational database. The ISVG makes use of the highest-quality open source resources from both the private and public sector, which are integrated with special data collections acquired from law enforcement, government, and other sources such as Royal Thai Police Insurgency Data and Turkish Foreign Ministry PKK dataset.³¹⁾ The ISVG database currently has more than 9,000 unique sources focusing on the activities and associations of violent non-state actor networks. All data is fully sourced. All sources are retained, cited, and abstracted. Source categories include court documents, print media, electronic media, government reports, NGO reports, third party datasets, broadcast transcripts, foreign datasets, and private sector intelligence products.³²⁾

The concept of relational database is to link separated information within database with each other. Incidents, individuals, and groups are interconnected with one another. For example, a certain individual may commit a terrorist attack directed by a terrorist group. These three factors are interrelated in the database. The same person may commit another incident in cooperation with another terrorist group. In that case, two different incidents or terrorist groups could be connected through the same terrorist individual. In the same manner, all three factors are linked within the database. Also, incidents, individuals, and groups are linked with other incidents, individuals, and groups. An incident could connect to another incident through the database. In the same way, an individual could connect to another individual and a group to another group. By the use of relational database concept, a comprehensive and workable database could be built.³³⁾

The data collection of ISVG was conducted by approximately thirty more data collectors

31) ISVG brochure.

32) Ibid.

33) The author's participant observation.

and analysts. The research staffs were able to cover twenty more different languages including English, Arabic, Russian, Spanish, Turkish, and Korean. Their rich cultural and contextual expertise in studying underground networks and criminal transactions makes ISVG uniquely prepared to meet the challenges presented by modern terrorism and extremism data collection.³⁴⁾ Staffs were assigned into each region of the world such as the Middle East, Africa, Europe, The former Soviet Union and Eurasia, South Asia, Asia-Pacific, and America. They work eight hours a day and five days a week. They use two desk top monitors. One is used for internet search and the other is for data entry into the pre-designed data recording and storing program. Research staffs were provided with a week-long training session before they are assigned. During the work, two research staffs were supervised and aided by the leading researcher responsible for each divided region. To be able to assure validity and reliability, an instant team meeting was held to solve the difficult issues whenever a problem or a doubt was raised.³⁵⁾

The ISVG database has approximately 1,500 variables about incidents, individuals, and groups. Such variables were carefully selected through the staff meetings and simulations. They were further sophisticated and upgraded in the course of the database development. In case of incidents, there were 21 different types of terrorist attacks and related incidents. They include arson, assassination, armed assault, biological terrorism, bombing, ceasefire, chemical terrorism, civil court proceeding, criminal court proceeding, communication, cyber terrorism, financing, hijacking, hostage taking/kidnapping, hostage release, military operation, nuclear terrorism, police operation, nuclear terrorism, police operation, robbery, trafficking, and vandalism/sabotage. For each incident, information on sub-variable such as the date of incident, time, location, the extent of damage, type of weapon used, attacker, and target was recorded and stored. For instance, in case of bombing, approximately 27 sub-variables could be recorded and stored. They include the date of incident occurred, the region of the incident occurred, the country of the incident occurred, the province of the incident occurred, the city

34) ISVG brochure.

35) The author's participant observation.

of the incident occurred, a perpetrating group and individuals, the characteristics of target, a type of bomb, and components of bomb, whether suicide bombing or not. For every incident, incident ID number and reported ID number are given. The former is the number of an incident and the latter is the number of report on such an incident. For example, if CNN reports a bombing attack in London, both incident ID and report ID could be assigned. When New York Times reports the same incident, then the same incident ID but the different and separate report ID could be given.³⁶⁾

In case of individuals, sub-categories include names, AKA, photograph, nationality, the country of passport registration, the current and previous addresses, terror or criminal incidents involved, groups or organizations associated with, the current status (death, alive, imprisoned, or at-large), education, family, accomplices, acquaintances, country visited, criminal records, characteristics, and other general information. Such information is identified, retrieved, and stored in the database. Individuals are connected to other individuals in the database, when the names of other individuals are stored as family, accomplices, or acquaintances, are listed in the same incident, or are identified as the member of the same terrorist group in the database. When such names are linked, the network of individuals could be constructed out of the database.³⁷⁾

For groups, subcategories include name, other names, group structure, finance, related terror incidents, area of operation, associated individuals, sub-groups, ideology, primary targets, ties with other groups and individuals. Out of the articles, reports, and documents, such information is identified, retrieved, and stored in the database. Groups could be connected to other groups through incidents, individuals, and groups within the database. A series of group ties could be successively identified and thus the whole network of groups and sub-groups could be constructed.³⁸⁾

The ISVG daily activities have two fold. One is data collection and the other is analysis. For collection, the ISVG database utilizes SQL Server 2005 with a .NET GUI frontend for data coding and entry. Currently the ISVG is developing and testing a data query

36) ISVG Codebook: The author's participant observation: An examination of the ISVG data.

37) Ibid.

38) Ibid.

and export for file specifications from a variety of formats for use in leading and analytical tools including platforms, social network analytics, geospatial, and statistical analysis and data mining. In addition to the structured dimensions, the ISVG engages in special collection focusing on deep-research and contextual analysis. For analysis, the structure and collection methodology of the ISVG database supports multiple analytical dimensions. Each compliments the others, creating a dataset that is among the most comprehensive unclassified datasets available. Utilizing individual, incident, and group level data, with a focus on tactical and operational details, the ISVG database provides a unique structure for analyzing data along these multiple dimensions. With over 1,500 variables in the incident taxonomy and utilizing a theory-based social network typology in conjunction with 350 additional variables in the individual and group taxonomies, information can be discovered using the ISVG database in ways that are impossible with other datasets.³⁹⁾

A concrete and detailed procedure of database construction could be illustrated as follows. This illustration is just a brief description of a daily performance of any given research staff. A staff sits before his or her assigned computer with two monitors. The left monitor is for internet search showing a typical Google search engine for example.⁴⁰⁾ The right one is for the data entry program shown in the Figure 1.

39) ISVG brochure.

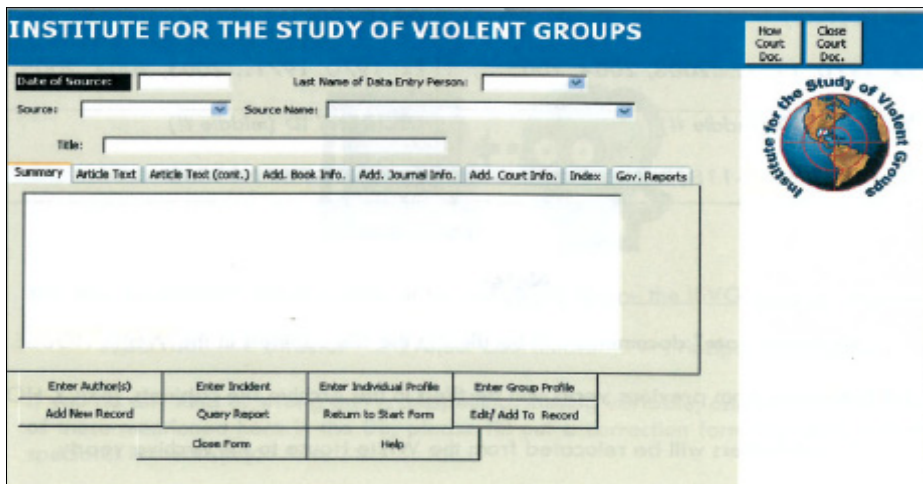
40) The author's participant observation.

[Figure 1] The main page of the ISVG database⁴¹⁾



When a staff decides to enter data, he or she inputs his or her given ID and password. After his or her verification, he or she clicks on the banner of “ENTER DATA”. This action leads him or her into the next page shown in the Figure 2.⁴²⁾

[Figure 2] The page of “ENTER DATA”⁴³⁾



41) ISVG Codebook.

42) The author’s participant observation.

43) ISVG Codebook.

When the page of “ENTER DATA” appears on the right-side monitor, a staff enters appropriate data into the blank boxes of the page shown in Figure 2. Usually, he or she googles and find a proper terrorist incident seen on the monitor of the left side. A typical incident report found in online looks like any media report or an article written in texts sometimes with pictures and maps. A research staff first reads a complete report and selects necessary information for the entry. From the start, “date of incident”, “the name of person who enter data”, “the source of data such as web address”, “the source name of data such as the name of media reported”, “title of report or article”, and “short contextual summary of the incident” are serially entered by the staff. Also, the full article or report should be copied from the left-side monitor and pasted into the blank box of the right-side monitor after clicking on the banner of “Article Text”. After the completion of data entry on the page shown in the Figure 2, a staff can move onto the next page for the further data entry by clicking on the banner of “Enter Incident”, “Enter Individual Profile”, or “Enter Group Profile” successively.⁴⁴⁾ Such banners can be found on the page shown in the Figure 2.

After clicking on the banner of “Enter Incident”, the data entry page for incident appears. It is seen in the Figure 3. The Figure 3 illustrates the case of bombing incident as an example. Each incident such as hostage taking/kidnapping, armed assaults, and assassination has a different data entry page.⁴⁵⁾

44) The author’s participant observation.

45) Ibid.

[Figure 3] The page of "Bombing Incident" data entry⁴⁶⁾

The staff enters information on the incident entry page shown in the Figure 3 in case of bombing incident. He or she identifies appropriate information in each blank from the report or article seen on the left-side monitor. The information that is input includes the date of incident, type of bombing, casualties, components of bomb, characteristics of bomb, country of origin, manufacturer, delivery method, target information, perpetrators involved, damage assessment, and geographical information of bombing. In case of hostage taking/kidnapping, the information for the data entry could include date of incident, geographical location of incident, number of hostages, target information, demand, whether demand is met, hostages' death or alive, hostage release, length of incident, method of hostage snatching, weapon type, information of perpetrators, information of perpetrating groups, and response methods of incident resolution. If the staff cannot find appropriate information, he or she leaves the relevant space as blank. Later this incomplete data entry could be further fulfilled by another research staff who identifies appropriate information from another source of article or report because the same incident ID number always connects different sources for the data entry of the same terrorist incident. Through the repetition of this process,

⁴⁶⁾ ISVG Codebook.

a particular terrorist incident could obtain relatively complete information in the database. Also, by the same routine process, the incorrect, inaccurate, or insufficient information on a certain incident could be corrected, articulated, or completed. Thus validity and reliability of the database are continually improved.⁴⁷⁾

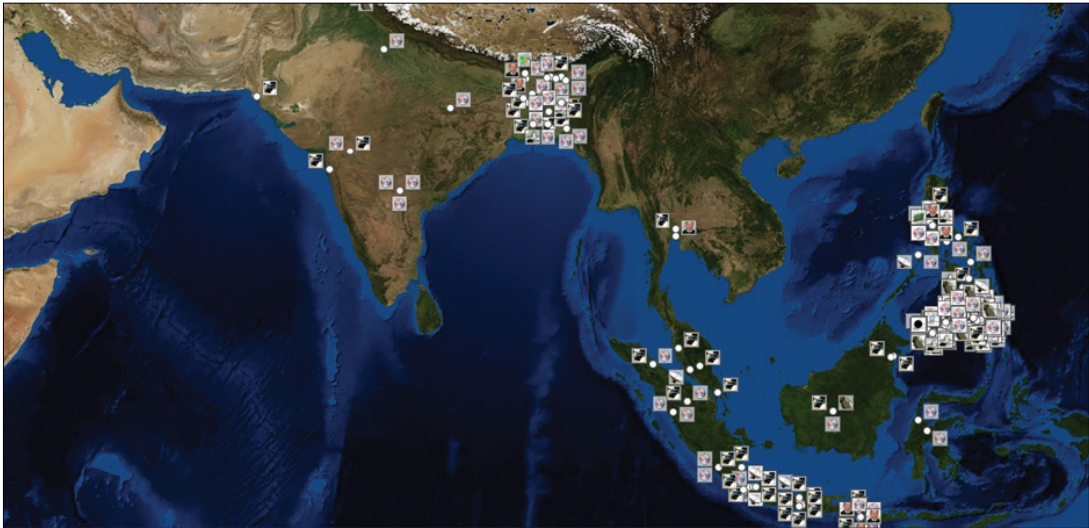
The ISVG database provides rich promises for counter-terrorism activities. First, it could offer ready-made background information on terrorist incidents, individuals, and groups. Thus this could be effectively used for the initial information gathering of criminal investigation or intelligence. Next, the database could be used for descriptive profiles on incidents, individuals, and groups. By use of the database, the ISVG research team published an encyclopedia of hundreds of terrorist groups and sub-groups worldwide. Last, more importantly, the ISVG database could be used for many types of sophisticated causal or descriptive analysis including geospatial visualization, link associations, temporal outlines, statistical dashboards, social network analysis, conventional statistical analysis, and data mining. For example, Yun and Roth adopted logistic regression to examine the causality between various predicting factors and the fate of hostages by the use of the ISVG hostage taking/kidnapping data.⁴⁸⁾ Delaney, Fast, Campbell, Weinstein, and Jensen also examined a causal analysis on the prediction of hostage taking and kidnapping by the use of RPT (relational Probability Tree) method for the ISVG data.⁴⁹⁾ Also, the structured data is complemented by a qualitative web-accessible knowledgebase providing insight and context to analytical findings. The following figures show some of such examples. The Figure 4 shows an illustration of geospatial analysis on terrorist incidents. The Figure 5 shows an illustration of network analysis on terrorist individuals.

47) The author's participant observation.

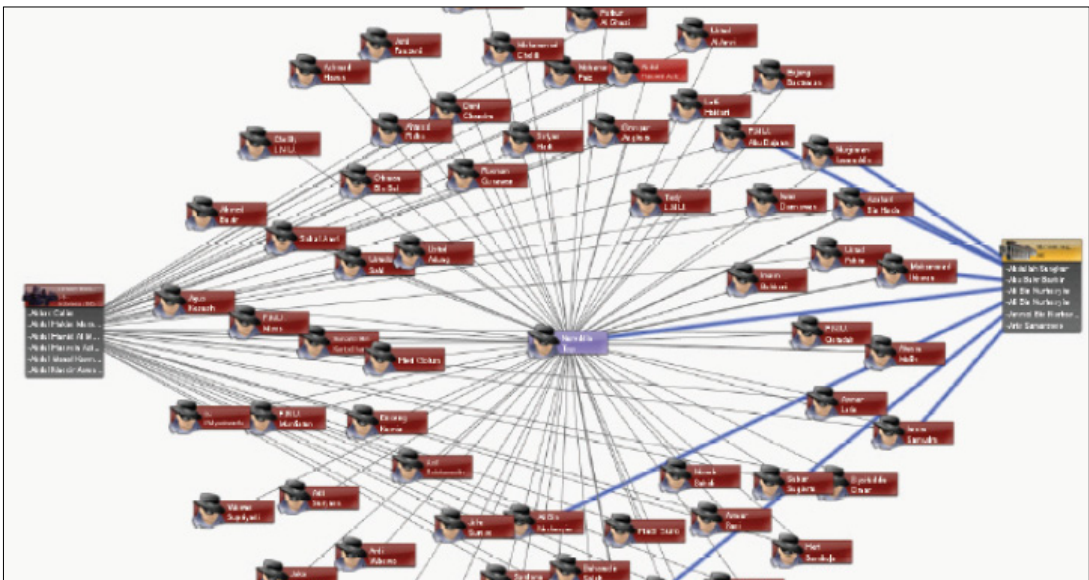
48) Yun and Roth, 2008, p. 736-748.

49) B. Delaney, A. Fast, W. Campbell, C. Weinstein, and D. Jensen, "The application of statistical relational learning to a database of criminal and terrorist activity," This article was sponsored by the Department of Defense under Air Force Contract FA8721-05-C-0002.

[Figure 4] An illustration of geospatial analysis on terrorist incidents⁵⁰⁾



[Figure 5] An illustration of network analysis on terrorist individuals⁵¹⁾



50) ISVG brochure.

51) Ibid.

The ISVG database program has been very successful for the last fifteen years. It proves its great potentiality for various counter-terrorism activities including criminal investigation, intelligence analysis, research, and policy development. The ISVG has worked with a variety of organizations in the Department of Defense, Department of Justice, and Department of Homeland Security as well as leading research organizations, universities, and laboratories in the United States. It will continue to prosper as the hub of counter-terrorism by providing high quality data and analysis reports.⁵²⁾

2. START

The START program was launched by University of Maryland supported by DHS(Department of Homeland Security). The program was designed to construct and support a comprehensive terrorism database that facilitates theory development, empirical research on terrorism and terrorists for effective counter-terrorism activities. It focuses on the origins, dynamics, behavioral patterns, psychological impacts, and various other social scientific and behavioral scientific understandings of terrorism, terrorist groups, and terrorist individuals. The program began in 2005. Gary Lafree, a professor of Department of Criminology and Criminal Justice at University of Maryland, led the program. START has been very successful so far.⁵³⁾ The authority of the program and its database has been well acknowledged. In 2009, DHS recognized the contribution of START program to the national security.⁵⁴⁾

GTD(Global Terrorism Database) is the database constructed by START and served for terrorism researchers and analysts. Like ISVG database, GTD is also based on the concept of OSINT. GTD includes information on terrorist incidents, individual profiles, and group profiles. GTD partially opens its data through its publicly accessible website.⁵⁵⁾ GTD includes terrorist incidents around the world that occurred since 1970 (up to today). Its update of terrorist incidents still continues. Approximately 70,000 or more terrorist

52) Ibid.

53) Yun, 2014, p. 34.

54) START website www.start.umd.edu/start/

55) Ibid.

incidents are stored in the database. Besides, START collected terrorism data of certain topics or areas separated from GTD and consistently produced research results and analysis reports. Such examples of the data on a certain topic or analysis reports included “profiles of perpetrators of terrorism in the United States”⁵⁶⁾ and “data collection and descriptive analysis on profiles of perpetrators of terrorism in the United States”.⁵⁷⁾

For the initial construction of GTD, the Pinkerton Global Intelligence Services(PGIS) was used as the foundational database. Pinkerton was a private security company which collected data on terrorism and international crime as a part of its operations as well as personal protection services around the world. The company constructed the database on international terrorist incidents and criminal activities for its own intelligence use. The Pinkerton database was reputed as the greatest store of information on terrorism and international crime at that time. It included 67,179 incidents in the database.⁵⁸⁾

The Pinkerton data was collected by the experts fully trained for the data collection. Sources of data used could be classified into three types. They are open sources, official governmental reports, and other qualitative and empirical information. Open sources include Reuter, FBIS(Foreign Broadcast Information Service), major media reports such as New York Times, The British Financial Times, The Christian Science Monitor, The Washington Post, The Washington Times, and The Wall Street Journals. Official government reports include U.S. State Department reports and Foreign Government reports. Other information was obtained from various intelligence channels such as the Pinkerton officials and employees operating worldwide, clients of the Pinkerton personal protection service, official or private intelligence operators, and foreign anti-governmental groups. The Pinkerton data identified and recorded terrorist incidents occurring from 1970 up to 1997.⁵⁹⁾

56) START, “Profiles of perpetrators of terrorism-United States(PPT-US),” Last Updated January 30, 2012.

57) Miller, Smarick, and Simone, Jr., 2011.

58) Yun, 2014, p. 34; Interview with a former START research staff.

59) Yun, 2014, p. 34-35.

The START project used the Pinkerton data as the platform. The START center firstly set the standard of the data collection procedure and tested the data collection and entry practices according to that standard. After the confirmation of the pilot test, the center recruited dozens of research staffs mostly college students, trained the staffs for the data collection and entry procedure, and began the construction of the database. The data collected from other database and trained research staffs' data collection practices through open sources was added up to the existing PGIS. For doing so, the existing PGIS, the platform of the START project, was compared, examined, and expanded. Such initial efforts became the basis of today's GTD.⁶⁰⁾

From 2006, the START project entered the qualitatively take-off stage due to the consistent financial support of DHS. This time period was the second GTD stage. The professor LaFree at University of Maryland as the highest leading researcher formed the data collection teams and the START consortium composed of teams conducting academic and practical research utilizing the collected data. In order to build up the more concrete and complete database, the START center operated the GTD2(Global Terrorism Database 2) Criteria Committee made up of top experts on terrorism. The GTD2 Criteria Committee set the criteria for data collection and monitored the quality of data. The committee members included professors who were reputed as the top-notch terrorism experts across the United States such as Gary LaFree, Laura Dugan, Gary Ackerman, Victor Asal, Martha Crenshaw, Michelle Keeney, and Alex P. Schmidt. Their expertise included diverse fields including humanities, political science, environmentology, and criminology. The committee examined the PGIS data and newly set the guidelines for the construction of the GTD2 in order to maintain the features of original PGIS and build the more resourceful, valid, and comprehensive database. As a result, the committee selected over 120 variables that represented the characteristics of terrorist incidents for the data entry and arranged sections for the contextual record of descriptive contents.⁶¹⁾

The committee members played a leading role in the data collection procedure. They

60) Ibid, 35.

61) Ibid, 36.

became team leaders. Undergraduate or graduate students after a proper training became team members for the data collection. The students were collectively fluent in six different languages such as English, French, Spanish, Russian, Arabic, and Mandarin Chinese. Each team was made of 25 to 30 members including a team leader. The teams collected information by searching publicly available open sourced database. Examples of such open sourced database were Lexis-Nexis professional, Opensource.gov (formerly FBIS), and other openly accessible database including newspapers, media information, research articles, and governmental reports. Usually, data collectors are able to search approximately ten thousand terrorist incidents. The searched incidents were passed through the formal confirmation process in order to verify whether they could be counted as terrorist incidents based on the terrorism criteria and input in the database by comparing with at least two other independent and separate articles and intelligence sources. After the passage of the rigorous process, the team members submitted the collected terrorist incident information to their appropriate team leaders, who again double-checked the submitted information. In case that a mistake or problem was found in the collection process, such a case was submitted to the GTD2 Data Selection Committee, which eventually makes a final judgment of handling.⁶²⁾

GTD has approximately 120 different variables. The general variables include year, month, date, region, country, province, district, location explanation, latitude, and longitude of the incident occurred. With the respect of the attack information, variables include 9 different attack types such as assassination, hijacking, kidnapping, barricade incident, bombing/explosion, armed assault, unarmed assault, facility/infrastructure attack, and unknown. For the weapon information, variables are sorted out into 13 different types including biological, chemical, radiological, nuclear, firearms, explosives/bombs/dynamites, fake weapons, incendiary, melee, vehicle, sabotage equipment, other, and unknown. The target information is classified into twenty two different objects including business, government general, police, military, abortion related, airport & aircraft, government diplomatic, education institution, food or water supply, journalists & media, maritime including ports and maritime facilities, NGO, private citizens & property, religious figures/institutions, telecommunication, terrorists/

62) Ibid, 36-37.

non-state militias, tourists, transportation other than aviation, utilities, violent political parties, other, and unknown. Besides, information on attackers, number of casualties, outcome of damage, and additional matters is entered and stored as variables.⁶³⁾

By 2011, GTD had stored information on approximately 104,000 and more terrorist incidents that occurred in 198 different countries worldwide from 1970 up to 2011. The recorded data included over 47,000 bombing incidents, over 14,000 assassinations, and over 5,300 hostage taking/kidnapping incidents. Currently, GTD is reputed as the most comprehensive and well-made terrorism database among various terrorism databases operated around the world. Approximately over 3,500,000 newspaper articles and over 25,000 media reports cited the GTD sources. Dozens of government reports and academic research articles used GTD as their sources. GTD is still continuing its practices of the comprehensive terrorism database construction through constant review and update under the supervision of the twelve leading terrorism experts.⁶⁴⁾

Since 2011, START launched another data collection and analysis project. Its new project is called IUSSD(Integrated U.S. Security Database). The project goals were related to: (1) integrating existing data on U.S. terrorism and extremism, (2) enhancing these data, (3) supplementing these resources with newly collected data on countermeasures, and (4) conducting analyses using these newly integrated data. The original IUSSD proposal indicated that these research team for this project would review, validate, and update data on terrorist groups that had previously been collected by the Memorial Institute for the Prevention of Terrorism(MIPT) for its Terrorism Knowledge Base(TKB). The initial review of these data, however, revealed that a more reliable and efficient approach would be for the research team to systematically assemble a new collection of data on organizations that have attacked the United States. As such, the research team, in consultation with program managers in the Human Factors/Behavioral Sciences Division of the Science and Technology Directorate of the U.S. Department of Homeland Security,

63) START, "Global terrorism database codebook: inclusion criteria and variables," START Center, University of Maryland, 2016.

64) Eunyoung Kim and Sunyoung Park, "Introducing best model of global terrorism database: the case of START Center in the U.S.," Korean security Science Review, 35: 9-36; Interview with a former START research staff.

amended the research strategy. However, the outcome of the modified work plan reflects the same deliverable promised in the proposal: an updated and validated quantitative dataset on terrorist groups that have targeted the United States homeland, structured to integrate with related datasets on terrorist events and extremist criminal activity. This deliverable is now known as profiles of perpetrators of terrorism in the United States(PPT-US).⁶⁵⁾

The object of the PPT-US project is to create and manage a comprehensive dataset of groups and movements that have used terrorist tactics within the United States, at some point between 1970 and 2007, to achieve political, religious, social or economic goals. These data will be integrated into the Terrorist and Extremist Violence in the United States(TEVUS) database in the near future as part of the larger Integrating U.S. Security Databases(IUSSD) project. START obtained data on terrorist groups and other groups involved in extremist movements in March 2008 for the TKB, a project managed by MIPT. However, after vetting MIPT's profiles, concerns about the reliability and validity of these data soon mounted as many of the profiles proved to lack verifiable sources. Attempts to reconcile MIPT's group-level data with START's GTD also unearthed several gaps and inconsistencies: for instance, compared with the GTD, the TKB contained 80 fewer extremist groups that have attacked in the United States including Puerto Rico since 1970. In addition, there were no clear inclusion criteria for which actors appeared within the MIPT database. As such, START made the decision to launch a new data collection effort, focused only on groups that had been active in the United States.⁶⁶⁾

Separately, START also launched the PIRUS(Profiles of Individual Radicalization in the United States) project since 2013. The PIRUS project was a three-year program which began in the summer 2013 and continued until the summer 2016. This project is to profile individual terrorists and extremists. It collected quantitative data on approximately 1,500 terrorists and extremists within the U.S. and also qualitative intensive interview data on over 100 terrorists and extremist individuals. Information

65) START, 2012.

66) Miller, Smarick, and Simone, Jr., 2011, p. 2-4.

collected included personal characteristics, mental health, personal background, individual ideology, and factors related to radicalization. The PIRUS database was constructed from the collected quantitative and qualitative data. It was designed to understand the risk factors of individual radicalization and contribute to the terrorism prevention policy.⁶⁷⁾

The PIRUS project was expanded to the PIRUS-FF(Profiles of Individual Radicalization in the United States-Foreign Fighters) project. The PIRUS-FF was a database collected by the START. The project was to build the database on the radicalized individuals who became the combatants for the foreign terrorist or militant groups such as IS. It utilized open sources and collected information on 242 radicalized foreign fighters who had been publicly identified in open sources as having left, attempted to leave, or expressed an interest in leaving the United States for the purpose of supporting the activities or interests of a foreign non-state armed group or foreign regime, and were motivated by religion, ethnicity, or other ideology from 1980 up to 2015. The database was constructed and included over 100 variables on all phases – pre-travel, travel, and return – of the foreign fighter life cycle. Because many foreign fighters have made multiple trips to a conflict zone, the PIRUS-FF data are coded only for their first known trip. Later versions of the database will include information on individuals' multiple travel attempts, when applicable.⁶⁸⁾

START's mission is to advance science-based knowledge about the human causes and consequences of terrorism and serve as a leading resource for researchers, homeland security policymakers, and practitioners. START can be utilized into three dimensions. They are 1) education & training, data & analysis, and policy & practice. For education & training, START is an investment in the human capital of the homeland security enterprise. It brings cutting-edge research into undergraduate, graduate, and professional classrooms, and incorporates students of all levels into a real-world, policy-relevant research agenda. For data & analysis, START contributes to the national

67) START, "Overview: profiles of individual radicalization in the United States(PIRUS)," START Center, University of Maryland, November 2015, pp. 1-4.

68) START, "Overview: profiles of individual radicalization in the United States-foreign fighters(PIRUS-FF)," START Center, University of Maryland, November 2015, pp. 1.

security enterprise through creation and dissemination of objective data and tools. These factual baselines provide a scientific foundation for knowledge building and formulating sound counterterrorism policy and practice.⁶⁹⁾ For instance, Institute for Economics & Peace reported 2015 global terrorism index by utilizing GTD.⁷⁰⁾ Miller and Distler studied mass casualty explosive attacks in Iraq and Afghanistan.⁷¹⁾ Yun and Kim utilized START bombing data to examine the causal patterns of terrorist bombings in Afghanistan through negative binomial analysis.⁷²⁾ Kim and Yun analyzed social and psychological factors affecting on the Islamic extremist radicalization process for Egyptian youths through multiple regression.⁷³⁾ For policy & practice, START leverages multidisciplinary expertise and practitioner input to be use of in the real-world of terrorism and national security, because real-world problems rarely fit any on academic discipline and cannot be addressed without insight from the field.⁷⁴⁾

In the future, START will continue to provide researchers, homeland security policy-makers, and practitioners with the highest quality, data-driven research findings on the human causes and consequences of terrorism in an effort to ensure that homeland security policies and operations reflect these understandings about human behaviors. START was funded by an initial 12 million US dollars grant from DHS to complete projects in the research areas of terrorist group information and recruitment, terrorist group persistence and dynamics, and societal responses to terrorist threats and attacks. After the jump-start, START was very successfully thus far. START was awarded a 3-year renewal grant from DHS in 2008 to sponsor new and continuing research projects related to the core research areas of radicalization, terrorist operations and interventions, and community resilience relative to the terrorist threat. In 2009, START was recognized

69) START website www.start.umd.edu/start/

70) Institute for Economics & Peace, 2015.

71) Erin Miller and Michael Distler, Mass casualty explosives attacks in Iraq and Afghanistan, START, (College Park, MD, 2017).

72) Minwoo Yun and Eunyong Kim, "Causal factors on casualty of terrorists' bombing attack in Afghanistan," Korean Police Studies Review, Vol. 12, No. 4: 279-310.

73) Eunyong Kim and Minwoo Yun, "Social-psychological profiling and Egyptian youth's radicalization towards Islamic extremist terrorism," Journal of National Intelligence Studies, Vol. 8, No. 2: 149-194.

74) START website www.start.umd.edu/start/.

by DHS for outstanding contributions to the security of the United States for its long-term support of GTD, an open-source database including information on more than 113,000 domestic and international terrorist events around the world since 1970. START now becomes not only research hub of terrorism but also the high-standard educational and policy development center for counter-terrorism. It will continue to serve the core of terrorism research, open-source bases intelligence, education service to cultivate future terrorism related academics and practitioners, and policy development.⁷⁵⁾

IV. Global Pathfinder case

The International Centre for Political Violence and Terrorism Research (ICPVTR) began as a terrorism research programme in July 2002, within the then Institute for Defence and Security Studies (IDSS), now known as the S. Rajaratnam School of International Studies (RSIS) at Nanyang Technological University, Singapore. The programme subsequently developed into a fully-fledged specialist Centre on 20 February 2004.

ICPVTR conducts research; training and outreach programmes aimed at reducing the threat of politically motivated violence and mitigating its effects on the international system. For more than a decade, the Centre continues to integrate academic theory with practical knowledge through its work. This unique synergy is essential for a holistic and comprehensive understanding of threats from politically motivated groups. The Centre's global pathfinder database best manifests the combined synergy of academic theory with practical knowledge on one unique platform. The database resonates with the core objectives put forth by the Centre.

75) Ibid.

The core objectives of the Centre are namely to:

- (1) Conduct sustained research and analyses of terrorist, guerrilla, militia, and extremist political groups and their support bases. In the process the Centre thereby identifies the strengths and weaknesses of international, state and societal responses in managing the threat of political violence.
- (2) Provide high-quality instruction and training for officials and future leaders engaged in combating terrorism and other forms of political violence.
- (3) Advise governments and inform societies affected by political violence on how best to manage the current and evolving threat.

Central to the core functions listed above, is the Centre's database. The database is a one-stop repository of information on international and domestic terrorism. More specifically, the database includes profiles on terrorist groups, key terrorist personalities, terrorist and counter-terrorist incidents as well as a collection of both primary and secondary documents on terrorism. The database was created as a knowledge repository to assist policy-makers, practitioners, private businesses, as well as academic and research institutes working on the issue of terrorism. Through the aggregation of data and accompanying analyses, the database seeks to enable scholars, practitioners and policy-makers to stay ahead of the curve and respond to the threat of political violence and terrorism.

1. Why a Database?

In today's evolving terrorism threat landscape coupled with the deluge of information on terrorism and extremism, managing information and data is the heartbeat of a research institution. As a specialist Centre on terrorism and extremism, databases are broadly used as both a data repository system where information can be "*revisited and retrieved*"⁷⁶; and a toolkit for a strategic response where information can be *analysed*

76) Neil G. Bowie and Alex P. Schmid, "Databases on Terrorism", in Alex P. Schmid (Eds) *The Routledge Handbook of Terrorism Research*, (New York: Routledge, 2011), p.294

and policy-projections made through a nuanced understanding of the growing terrorist and extremist threat.

Counter Terrorism databases are at the heart of most counter terrorism research Centres. They form the cornerstone upon which patterns can be identified and trends gleaned across time especially within the confines of longitudinal studies. Broadly, databases store information in standardized uniform units that can be revisited and retrieved in various ways.⁷⁷⁾ At the heart, the ICPVTR database is a knowledge repository that aims to provide a one-stop repository of information that would enable users to “*revisit and retrieve*”⁷⁸⁾ information in order to facilitate constructive assessments. That was the principal reason behind foray into the creation of the database. The database provides for a structured manner in which information gathered can be analyzed in a systematized format enabling analysts to gain exclusive insight as well as project trends.

The diversity of the curated data that goes into the ICPVTR data repository complements the Centre’s aim of policy relevant research that is supported by an emphasis on field research. Ultimately a database is only as good as the information it has and the manner in which it can be accessed to support assessments. Users will have access to profiles on terrorist groups, key terrorist personalities, significant terrorist attacks and entities that finance terrorist activities. ICPVTR’s collection of original documents including those that were recovered from the Al-Qaeda training camps in Afghanistan. Included in the repository are select papers and commentaries on terrorist trends, counter terrorism legislation, conventions as well as selected landmark cases on terrorist prosecution.

(1) Toolkit for a Strategic Response

The database can most aptly perhaps be seen as a strategic response to the threat of terrorism. “Strategy is indeed a pseudoscience of the attempt to plan and predict in mitigating the threat. The movement from the collection of data, the production of

77) Ibid, p.294

78) Ibid, p.294

information, translating information to knowledge, application of knowledge to create wisdom in understanding and finally to projection predictive insight is an uphill battle.”⁷⁹⁾

Today, it is this very uphill battle that countries face as they grapple to identify elements that would work best for them and enable them to be more attuned to the environment that they are operating within, databases help as part of a tool kit in the arsenal that security analysts can use in order to have a better understanding not only of the geo-political landscape but also a nuanced understanding of the terrorist and extremist groups. “The hallmark of an effective strategy today is one that places due emphasis on collaborative efforts, precision strikes and a coordinated responses to build resilience within the community.” The success of collaborative efforts is hinged on the diligence placed on accurate and timely assessments that security analysts are able to provide. A database is an important element in this process.

(2) Embracing Complexity

Writ large, “terrorism databases are only as good as the concepts they are built on.”⁸⁰⁾ The importance ascribed to its core purpose, calibrated detail and the ability to manage the growing dataset in light of a threat landscape that is simultaneously growing and evolving amplifies the necessity and embodies the complexity of managing a database of this scale. The literary corpus on terrorism is simply complicated. It is simple only to that there is a resounding agreement of the need for continued research by scholars and security analysts as they grapple to mitigate the impending threat and make sense of emerging realities. The attempts made to understand the terrorist mindset, deconstruct the ideological narratives, and identify learning curves in tradecraft and tactics form but just the tip of the iceberg as academia and the security community

79) Jolene Jerard, ‘Daesh and the Alchemy of Strategy: Southeast Asia Threat and Responses by the Region and ASEAN’ Gunaratna, Rohan et al. (Eds.) (2016, October): Countering Daesh Extremism: European and Asian Responses. (KAS Panorama: Insights into Asian and European Affairs, 02/2016). URL: <http://www.kas.de/politikdialog-asien/en/publications/46739>

80) Ivan Sascha Sheehan, “Assessing and Comparing Data Sources for Terrorism Research.” in Lum C., Kennedy L. (eds) *Evidence-Based Counterterrorism Policy*, Springer Series on Evidence-Based Crime Policy, vol 3. Springer, (New York, NY: 2012), p.35

strive to find a way forward.

There has been a dogged attempt by scholars to try to understand terrorists, attempt to demystify their journeys towards terrorism, and at the heart of this literary corpus, struggle to identify both the causes and causal factors in the hope of making sense of the threat of terrorism.

The field of terrorism is not without its inherent complexity that the field itself has unfortunately inherited over the course of history. The challenge of defining terrorism as antiquated an argument as it is, has yielded no overwhelming agreement. In the creation of a database, the proclivity to embrace these challenges as a necessary limitation of the field would be essential. The “greater recognition of *conceptual* differences in definitions of terrorism used into existing datasets will also benefit researchers struggling with the problem of interpreting differing results from different datasets.”⁸¹⁾

(3) Data Diversity

The ICPVTR database aspires to main a database that moves beyond the aggregation of news sources, but one that is adept at strengthening assessments by academics or policy-makers, and security practitioners alike. In commending the work of the ICPVTR Pathfinder database, Graham Ashton, Head of the International Investigation Team from the Bali Bombing notes “ICPVTR’s counter-terrorism database has assisted us to gain a better understanding of terrorism. The Bali attack in October 2002 was the first suicide attack by Southeast Asian terrorists. The timely provision of images of suicide attacks from outside the region by Gunaratna enabled us to draw a comparison and more quickly conclude that the Bali attack was indeed a suicide attack.”⁸²⁾ The ICPVTR database’s provision of a holistic repository of information enables the support of a diversity of research questions given the broadbased curation of data sets that emphasized on the

81) Ibid, p.35

82) ICPVTR, *A Decade of Counter-Terrorism Research and Education (2002 - 2012)*, <https://www.rsis.edu.sg/wp-content/uploads/2015/04/A-Decade-of-Counter-Terrorism-Research-and-Education.pdf>

use database that the Centre has gleaned through the years.

(4) Predictive Insight

The ability to offer predictive insight is dependent on the foundations upon which a database is built on. For instance, a counter terrorism database will yield comparatively positive results dependent on the nature of information that it manages in turn. As an entity on its own, the database will not be able to offer predictive insight. However, coupled with the eye of trained practitioners or scholars on the ground asking the appropriate questions in order to help extrapolate both patterns and trends, it will enable to use the data to as part of their toolkit, will ensure that predictive insight and projections can be gleaned to some extent.

2. The Pathfinder – Moving Beyond Data Management

The ICPVTR Global Pathfinder Database has gone through two evolutions thus far and is presently in the process of undergoing its third evolution. After the initial beta testing period, the Pathfinder will be set for its launch in approximately the first quarter of 2018. Broadly through the course of the three waves of evolution, the ICPVTR database is moving from a data management system to that of data management plus i.e. this would entail going beyond mere data aggregation, management and retrieval to include varied gradients of software that would include elements of automation.

(1) Global Pathfinder I

Global Pathfinder I was a Distillery supplied InterQuest system that ICPVTR had initially used. The InterQuest system was a basic knowledge repository system that was built to both manage and store data. At the start, the functions of GP I embraced the necessity of the time, which was data management as the Centre had started out and building its mettle. Over time, the InterQuest that was primarily for data storage was found to be unfriendly for users, it had limited utility beyond storing data, did not have functions to retrieve data in usable formats. Additionally, it was extremely expensive to maintain. While designing the second generation Global Pathfinder these issues, based on

extensive feedback from the users, are being taken care of. This began the foray into looking into the Centre's database as one that went beyond the confines of purely managing and storing data.

(2) Global Pathfinder II

In its present iteration, the Global Pathfinder II is a second-generation data management system that was then developed in-house by ICPVTR with a generous grant by World-Check under the "IDSS/ICPVTR - World-Check Fellowship" project. Under the guidance AP Lim Ee Peng of the NTU School of Computer Engineering, the Global Pathfinder II Database was completed. Its additional design and features made it user-friendlier than the first generation system.

To improve the databases' information retrieval, the interface of Global Pathfinder II is divided into 3 types - searching data, manipulating and handling data; and analyzing data. These capabilities were built to improve the ability to search data. The database while focused on the transnational threat

The first is the global searching interface, which allows users to search within the dataset they are interested in by simply entering key words, regardless of the type of data. Global searches are the most common uses searches and it can search for all categories in the database. Global searching is a keyword search similar to searching for documents on the Internet. Global searching in Global Pathfinder II allows a user to search across all fields of all questionnaires that the users have access to. Any search results found will meet the exact search criteria entered. Results may differ between users depending on their respective access to data in Global Pathfinder II.

The second is the directory-searching interface. This interface is specially designed to enable the search only within a type of data, for instance a group profile or incident. It accepts a wide range of query conditions, such as date, key word and number. Field based searching is used to search and retrieve response of a single questionnaire where the search criteria are entered into one or more fields of the questionnaire. This search questioner is the same as that which is found in the profile fields. How do field-based searches work? If you are searching with more than one field of data or more than

one section of the questionnaire, it is important to know how Global Pathfinder II combines your search criteria to find your matching responses. A single piece of search criteria are known as a search term. Different question types can generate different numbers of search terms. Text and each entry of checkbox questions produce single terms, while radio and select lists can produce multiple terms for the one question depending on how many entries you select. When you enter your search criteria and Global Pathfinder II combines all the search terms in specific manner to search the database.

Both of the interfaces of Global Pathfinder II are similar to the ones used in the first generation Global Pathfinder I, but built on the “index technique” deployed while simultaneously improving the query speed. The last is listing interface to list all entries of some kind of data. This is a new functionality in which interface does not require any query parameter. Users can browse the entries page by page or jumping to certain listing page while the entries can be sorted in varying ways. The schema adopted here is completely different from the InterQuest used in Global Pathfinder I, this interface allows users to have entire dataset on the click of a button, sort them out and use the data.

Viewing all relevant data of a single data type (profiles, incidents etc.) provides much greater convenience to the user. The ‘Show/Hide’ interface is embedded in the GPII system allows users to view only the part they are interested without scrolling up or down much to locate it. This is useful for the entries with many data or data, which are heavily linked to other entries. This is a significant enhancement from GPI’s InterQuest, system where it integrates, links, and views on administration information into one page. It additionally avoids redundant blank lines being displayed.

Data manipulation and handling takes place on two interfaces, data modification and data upload. These two interfaces work almost identically, except that the latter creates new records. The added feature on GPII is that instead of committing change section by section of a data entry, the new interface saves the change into database field by field, after data is entered or the changes effected. Moreover, users could see the change immediately after they commit the data or the changes. In GPI it would take a while

to see the changes made. In this instance, users did not need to worry about losing their data (new data or modifications) which could happen if data is manipulated section by section as seen in the earlier GPI. Moreover, at the back-end of the GPII system, a 'confliction avoiding rule' is used to enable different users to modify the same data entry as long as they do not work on the same field of that entry. This would then enable various analysts to work in collaboration.

Finally the analysis segment consists of two functions, entity linking and statistical reporting interface. Prior to actual linking operation, users have to bookmark the data entries they will use. To work more efficiently, the new "entity linking" interface allows multiple links to be created at the same time even if the link types are different. Unlike the list function of InterQuest, this interface is easy to use and quite intuitive. As in the data manipulation interfaces, users can see the result instantly without leaving the page they are at.

The reporting interface is a completely new function. It produces two kinds of statistical reports - table and diagram. Currently the report is incident-oriented while it will be extended to profiles and linked entities. By specifying the period and the filtering conditions (like incident target, tactic etc) and the number of instances to be compared, the reporting interface will generate the statistical information presented both in table and diagram format. To ease the observation on fluctuations, two kinds of diagram are available; curve diagram and histogram. The table can be exported as Excel file format and the diagram can be downloaded as image and thus be directly inserted into the writing. This will immensely help analysts for their monthly incident reports and for presentations.

Another significant improvement with GPII is that, it reads all types of documents - word, pdf, ppt, jpeg, txt, html etc- uploaded into the system. The earlier InterQuest run GPI was unable to do that. Thus even if documents were uploaded to the system InterQuest was unable to find the document if the search criteria (keyword) was embedded in the document itself. With the new system, it is possible to find all documents whether the keyword is embedded in the document or entered in the data entry field.

The “map interface” developed helps to visualize recent news and incidents at the corresponding points in a real map, which will mainly be based on Google Map. The existing database analytical function allows users to create statistical reports on terrorist and counter terrorist activities. The ability to filter and isolate comparisons according to tactics, targets and casualties add to the ability to create unique analysis. The GPII system is comparatively easier to use, intuitive, and faster, compared with the first generation GPI InterQuest system.

(3) Pathfinder

In its third generation the ICPVTR database will henceforth be known as *Pathfinder*. The name change is in recognition that the terrorism is transnational and global. This third evolution of the database with its new platform will enable the creation of a more adept repository of information, enhance the analytic capacity of the database, augment the general user interface and initiate automation to facilitate the creation and management of data. The goal would be to make Pathfinder not only a more user-friendly knowledge repository but amplified by better analytic capability.

In its third iteration, the new Pathfinder database will move towards enhancing search functions, increasing analytic capability and empowering itself through automation. Increased automation wherein the database would ingest both structured as well as unstructured data while relational data. The content and metadata is tagged and indexed for search, discovery, correlation, analysis, and sharing. This provides the database the option to ingest other forms of data (Internet Forums, News, and Social Media) for analysis and with Semantics to identify relationships. These enhanced search functions will include amongst others relevancy, weighting, and document and term frequency amongst others. The personalized and custom preference searches will expand the ability to cross compare data. Enhanced visualization of the relationship between objects can help case research to be more intuitive for users. It also helps to discover what may not have been obvious just based on document links that may earlier have been coded individually by analysts but with the new system automated.

The broadening of the elements that goes into a terrorist group and individual profile

to include the presence of the group on social media platforms as well as cyber capabilities. This will be an expansion of the data that has been aggregated on position, function, and hierarchy, political and historical background. Expanded on and automated would be ability to automate the links to incidents of terrorism as well as groups or individuals. The indictments, speeches and interviews conducted would nuance and add depth to the understanding of the group and or individual.

Integration of platforms will be principal in the reinvigorated Pathfinder. These will include data that has been aggregated across a few sources at Centre including audio visual materials with short summary documents included. Explorations are presently done to work towards automated transcription of audio files. This would save a considerable amount of time that can then be reallocated towards enhancing assessments and analysis. Expanded and updated visual analytic capability would place this third iteration of the Pathfinder in a more competitive position to create up to date, tactile and unique visuals that will better facilitate the work of analysts and security practitioners. This will help considerably enhance assessments made.

With the new Pathfinder and added feature will be the enhanced multilevel security due to the sensitivity of different information available on the database the database will incorporate security configuration to cater for different access level of subscription users. As a subscription based database, the multi-level security will enable a broader range and ability wherein the subscriptions can be categorized and access provided accordingly. The growing need for tiered access stems from the variety of information the Centre has gleaned over time. The Pathfinder will have a three-tiered division in terms of access levels to the data sets that has been aggregated over time.

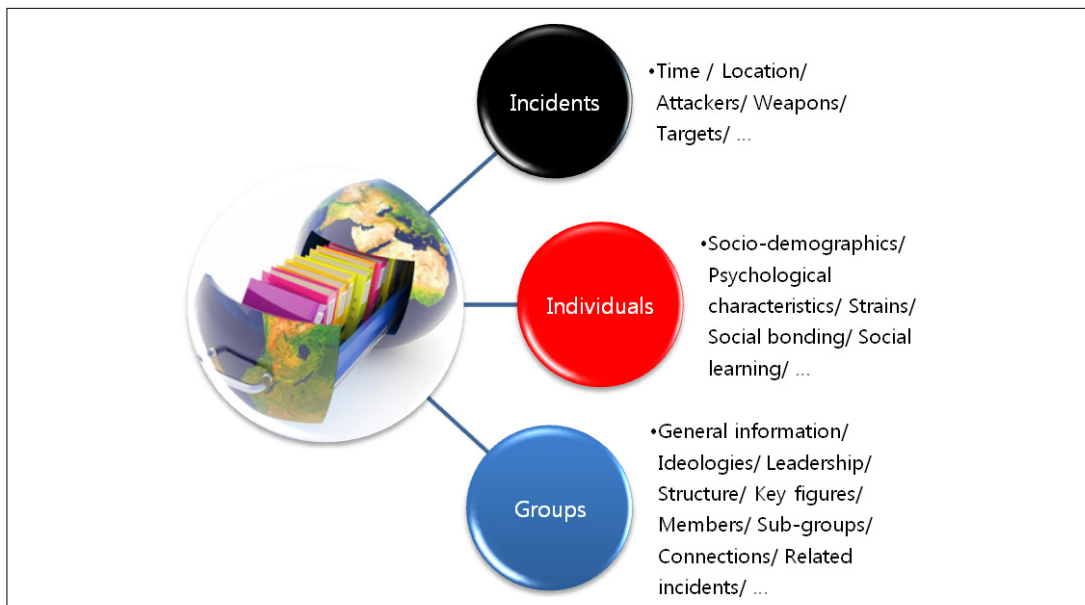
Throughout the three iterations of the ICPVTR database, from its initial beginnings as a data repository to its gradual evolution to become more than a system of data management alone, the integrity of the core concepts and foundation of the database has not been compromised. Today databases whilst maintaining their integrity as premier repositories, need to evolve into data management plus. It is in recognition of this that the decision was undertaken to take the database to the next level of its evolution. This would take into due consideration available platforms and methods for

data aggregation as well as means to showcase the finding using up-to-date visual analytics that can help with assessments. Over time alongside astute analytical capability, these platforms strengthen the enable analyst and enhance the work of the security practitioners.

V. Suggestions and Conclusion

Workable suggestions can be presented by the integration and comparison of theoretical propositions and cases of ISVG and START. The most fundamental framework of the terrorism and insurgency database should be three factors - incidents, individuals, and groups. Theoretical propositions on terrorism indicated the importance of such three factors. Also, both ISVG and START developed their database including all three factors. Thus, information of incidents, individuals, and groups should be included in a new database in South Korea on terrorism and insurgency. Each factor needs to be separately categorized from other factors. However, each factor can be interchangeably cross-searched with other factors. The following Figure 6 illustrates such a concept.

[Figure 6] An illustration of terrorism & insurgency database structure



For incidents, sub-categories need to include information on time of an incident, location of an incident, attackers, weapons, targets, and other related factors associated an incident. Cases of ISVG and START show lists of specific sub-categories within the database. Also, rational choice theory, script theory, and situational crime prevention theory propose important variables and attributes that should be included as sub-categories under the category of incidents.

For individuals, sub-categories include a person's socio-demographic information, psychological characteristics, personalities, strains, social bonding variables, and social learning variables. Cases of ISVG and START include examples of individual profiles within their data classification and entry under the category of individuals. However, plenty of information in both ISVG and GTD is about socio-demographic features. By contrast, much information on psychological characteristics, personality traits, strains, social bonding variables, and social learning variables is missed. START's other database projects such as PIRUS and PIRUS-FF corrected the deficiency of GTD and integrated with the existing GTD. However, for a new database, much information on individuals can be counted within the database from the start. Various theories of criminal psychology, strain, social bonding, and social learning can propose significant variables and attributes as sub-categories under the category of individuals. Inclusion of such individual information is particularly important for now because a pathway of individual radicalization toward violent extremism becomes one of the most salient features of the modern terrorist attacks.

For groups, sub-categories include information on general information, ideologies, leadership, structure, key figures, members, sub-groups, connections to other groups and individuals, and incidents that are related to the group. Cases of ISVG and START illustrate lists of sub-categories associated with information on terrorist or insurgency groups. Also, theories on types of group structure, network formation, and decision making-process within a group can propose additional information of sub-categories.

Construction and daily operation of a new database can benchmark both ISVG and START. Research teams need to be formed. A leading researcher can be appointed for each team made of undergraduate and graduate students. The leading researcher guides,

supervise, and assist his or her team members for the data collection and maintenance. The committee needs to be formed made of top-notch terrorism experts in the nation. They could be professors, doctoral level researchers, or much experienced senior level practitioners. The committee set the standard of the database, determines the variables and attributes in the database make a judgment on ambiguous and controversial issues, and provides supervision and consultation for the construction, maintenance and utilization of the database.

The case of Global Pathfinder shows the importance of continuation of enhancement of database. “The most pressing challenge in collecting terrorism event data is instead finding the relevant events in an ever increasing mountain of global electronic information.”⁸³⁾ For most databases it is based on “identifying a string of relevant print and electronic news sources and then using human coders to enter these sources onto a database.” Increased need for computational methods that will play an increasing pertinent role in the database construction this is perhaps best seen in the expanded schema that ICPVTR has built in terms of the areas that are being assessed. The careful maintenance of the database stems from utilizing computational methods to carefully curate and manage the data. There increased volume of data compounded with the multiplicity of platforms adds to this challenge. Relevant data in this instance includes not only attacks that have taken place but including plots that have failed or have been interdicted as well. These nuances yet add value to the assessments that follow.

Following examples of ISVG, START, and Global Pathfinder, a new database can utilize the concept of OSINT and relational database. In addition, the new database should be enhanced in accordance with technical developments and the change of environments. Various publicly accessible sources can be used for the purpose of data collection. Perhaps, lists of useful open sources can be recorded and internally circulated. Search procedures, techniques, and skills could be standardized. For doing so, manuals and code books could be written and standardized training sessions and on-job trainings could be practiced. Governmental sources, classified reports, interview

83) Gary LaFree and Laura Dugan, The Global Terrorism Database, 1970-2010 in (Eds) V.S. Subrahmanian in *Handbook of Computational Approaches to Counterterrorism*, (Springer: New York, 2013) p. 19

data, and intelligence reports can be added to the OSINT-based database. This will enrich the quantity and quality of the database. For the construction of relational database, identification numbers can be assigned to a specific incident, individual, and group. Research staffs needs to be trained for the handling of relational database and the assignment of identification numbers.

Finally, a new database of terrorism and insurgency can become the hub of research, policy development, and education & training. The database encourages quality analysis and systematic research. It can serve many analysts and researchers to study on terrorism and insurgency. For doing so, it contributes to the knowledge development on the field of terrorism and insurgency. Based on the empirical based reports and analysis, a workable policy can be developed. It positively affects the field of counter-terrorism and counter-insurgency. Finally, the accumulated knowledge through the database construction and research & policy development can be utilized to educate and train the future generation of academics, analysts, researchers, and practitioners on the field of terrorism and insurgency. Such a future generation continues to contribute to the national security. This virtuous cycle of research, policy development, and education & training has been much proved by the cases of ISVG and START. The initial database construction served as the hub of such a positive development.

Terrorism can happen any time in any place. South Korea cannot be regarded as a safe place from terrorism threat any more. It is the matter of time. As mentioned earlier, IS designated South Korea as its public enemy in 2015. As recent developments in Marawi shows, ISIS tries to expand its scope of activities to Asian countries. ISIS will establish footholds using individuals who have been marginalized, and groups which have different identities from their societies in Asian countries. In this sense, South Korea should develop measures to prevent terrorism by building up databases focusing on incidents, individuals and groups with incessant enhancement. A new database of terrorism and regional conflicts in the Asian region has much promise as seen in the cases of ISVG, START, and Global Pathfinder. It seems worth striding a first step now.

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Bringing ASEAN in: A Way to make ASEAN more concerned with North Korean Threats

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Bringing ASEAN in: A Way to make ASEAN more concerned with North Korean Threats

〈Abstract〉

Increasingly ASEAN is emerging as one of the major players in the Korean Peninsula issue recent years. Korean government has been making effort to engage ASEAN countries with Korean Peninsula issue in support for South Korea's position. North Korea has been depending its position in ASEAN countries, fully utilizing its strategic advantages such as diplomatic relations with all 10 ASEAN countries and the record of historical interactions between North Korea and Southeast Asian countries.

Meanwhile, ASEAN countries increasingly are concerned with Korean Peninsula issue and North Korea's potential threats. Nevertheless, for many reasons, it has been reluctant to be a significant role player in this matter. There are still debate going on among ASEAN security and foreign policy experts on whether it is a good idea for ASEAN to be a part of Korean Peninsula issue by making its position clearer.

Those positive towards ASEAN's role in the Korean Peninsula issue argue that given ASEAN's capacity and more importantly given the imperative for ASEAN and coming ASEAN Community to be an important international relations player in the region, it is essential for ASEAN to make its voice heard in this matter. Those who are against ASEAN's engagement with Korean Peninsula issue reject the idea. ASEAN is not able to make a significant impact on the Korean Peninsula issue in which major global powers' interests clash. It would cause a strategic backlash for ASEAN if it puts its hand in the Korean Peninsula and North Korea issue.

This study explores some policy options for Korea to make ASEAN more concerned with Korean Peninsula issue and more specifically on potential North Korean threats. For that purpose, this paper first examines what kinds of efforts so far have been made by Korean government and what kind of impacts it had on ASEAN countries' perception on Korean Peninsula and North Korea. Following this, the paper surveys individual

countries' as well as collectively ASEAN's perception on Korean Peninsula issue and North Korean threats. This section explores what is the historical interaction between individual Southeast Asian countries and North Korea as well.

Main argument of this paper is in the section V. This particular section and the argument in this section is based on a premise – given the extensive and substantial economic, socio-cultural connections between Korea and ASEAN, any undesirable conflict between two Koreas in the Korean Peninsula would not work for ASEAN's interests. If there is a serious armed dispute or conflict in the Korean Peninsula, it is easy to imagine that the economic and socio-cultural interaction between Korea and ASEAN would stop. It will be a huge economic and other kinds of loss for South Korea. At the same time, ASEAN countries would have much to lose as well.

ASEAN is the second largest trading partner and investment destination for Korea. An emergency situation in the Korean Peninsula means a stop in flow of goods and investment between Korea and ASEAN countries. While ASEAN countries, in the long term, can diversify its trading and investment channel, a significant economic damage due to the situation in the Korean Peninsula is not avoidable in a short term.

In addition, there are substantial number of foreign workers and marriage migrants from ASEAN countries in Korean. Not just the workers' remittance, which accounts for significant part of national income in some ASEAN countries, but also the workers' and migrants' lives would be in danger if there is an armed conflict between the two Korea. Despite the best efforts of ASEAN countries to evacuate their nationals in the Peninsula, it would cost the countries a lot. Korea's ODA to Southeast Asian countries would stop as well.

ASEAN is trying to build ASEAN community via ASEAN Political-Security Community, ASEAN Economic Community, and ASEAN Socio-cultural Community. One of the goal of ASEAN Political-Security Community is to make ASEAN as a central player in the regional strategic scene. If so, ASEAN cannot avoid dealing with Korean Peninsula and North Korean threats, which are one of the most important security and strategic issues in the region. Furthermore, instability on the Korean peninsula would destabilize Northeast Asia and the broader East Asian region, including Southeast Asia. This

situation will create an unfavourable environment for trade and investment also in Southeast Asia.

When Korean government approaches ASEAN countries to ask ASEAN's support, these arguments are good points to put forwards. The intention is not to intimidate ASEAN countries with all these numbers and data, but ASEAN has to know the potential damages and losses that would be incurred by undesirable situation in the Korean Peninsula. Then we can expect more constructive and active role of ASEAN countries to build peace and security in the Korean Peninsula and to cope with North Korean threats.

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I. Introduction

In the decades since South Korea (hereafter Korea) established a partnership with the Association of Southeast Asian Nations (ASEAN) and with individual ASEAN countries, the Korean government has made a concerted effort to win ASEAN's support for its position on security crises on the Korean Peninsula. It is unclear, however, if these attempts have been successful or not. ASEAN countries, both individually and collectively, are indeed more aware of the security threat posed by North Korea today. When they release a statement following a North Korean provocation, they are more supportive of South Korea whereas in the past they were strictly neutral between the two Koreas. Unfortunately, a statement has often been the extent of their response to North Korean provocations.

This lukewarm attitude despite the Korean government's efforts is a major source of frustration when it comes to security cooperation with individual ASEAN countries or with ASEAN collectively. Despite substantial at least in the eyes of the Korean government - efforts by Korea, it has not been easy to change ASEAN countries' attitude towards North Korea. Many of these countries still have diplomatic relations, trade partnerships, and military exchanges with North Korea. One obvious question arising in this context might be why have the Korean government's attempts to persuade ASEAN countries been unsuccessful? Why has it not had any fundamental impact on ASEAN countries' attitude towards North Korea? Is there a better way to persuade ASEAN countries to be more concerned with the Korean peninsula security situation and with the North Korean threat, including its nuclear weapon and missile development?

As long as ASEAN countries remain apathetic towards Korean peninsula security issues and the North Korean threat, any Korean attempts to upgrade security cooperation with ASEAN countries will be meaningless. Security cooperation has to contribute toward managing security circumstances on the peninsula along with managing other regional security problems. Therefore, how to make ASEAN countries more concerned with Korean peninsula issues and North Korean threats is the number one priority and prerequisite for meaningful Korea-ASEAN security cooperation.

This report aims to find arguments useful to make ASEAN more concerned with the

Korean peninsula and North Korean threat. To date, the Korean government's approach to ASEAN countries has been quite simple and based on two lines of thinking. The first argument states that the North Korean threat is of grave concern for South Korea; ASEAN countries and South Korea share many strategic, economic and sociocultural interests; therefore ASEAN countries should support Korea's position on Korean peninsula issues. The second argument states that North Korea's nuclear weapons development is a substantial threat to the entire Asia-Pacific and global stability, so ASEAN countries have to be more concerned with Korean peninsula issues and the North Korean threat to the peace and stability of the region. Both arguments in and of themselves are not wrong. Nevertheless they have been largely ineffective. If ASEAN is needed to manage the Korean peninsula security situation, and if Korea wants ASEAN's support, then the Korean government has to articulate a more effective argument to persuade ASEAN to take a stronger stance.

This report sets out a series of arguments that can effectively persuade ASEAN countries to take a clearer position on the Korean peninsula and on North Korea's provocations and threats. For those ASEAN countries to take a stronger position on Korean peninsula issues -- where major global powers such as the US, China, Japan and Russia have longstanding strategic interests -- ASEAN countries have to acknowledge that peace and stability on the Korean peninsula is very important for their interests. In particular, the case that ASEAN countries would also face grave economic consequences due to instability on the Korean peninsula has not been convincingly made to date. What is more, the interests of ASEAN countries have to be clearly shown in plain numbers rather than complicated and abstract rhetoric. With this assumption, this report provides supporting evidence for the types of arguments that the Korean government has to employ to persuade ASEAN countries.

For this purpose, the second section of this study, following this introduction, will discuss Korea's past efforts to engage ASEAN countries on Korean peninsula issues which, despite sincere effort, has been less than satisfactory. Although past efforts raised the level of interest among ASEAN countries, they have fallen short of pushing ASEAN countries to action or to a clearer position.

The third section outlines the current views of ASEAN and major ASEAN countries towards the security situation on the Korean peninsula and North Korean threats. It shows that the level of ASEAN countries' support and interest in the peace and security of the Korean peninsula are insufficient despite the serious security threats posed by North Korea.

In the fourth section, before the conclusion, it shows the potential damage to ASEAN if peace and security on the Korean peninsula is broken. Compared to other factors, it focuses on the economic consequences which are easily shown in numbers and thus are more persuasive and recognisable for the audience, ASEAN countries. The potential economic damage will be shown through trade relations, Korean investment in ASEAN countries, Korean official development assistance (ODA), ASEAN workers' remittances, and economic losses in the tourism industries of ASEAN countries. These are direct losses that ASEAN countries will have to bear if peace on the Korean peninsula is broken. There are at the same time indirect economic costs for ASEAN countries, which would come from not just from the Korean peninsula, but from extra-ASEAN trading partners and investors. Practically and policy-wise, the arguments and data can be effectively adopted when the Korean government approaches ASEAN countries to seek their support for its position on Korean peninsula issues and on North Korean threats.

II. Korea's Effort to Engage ASEAN on the Peninsula Issue

Korea and ASEAN have been engaging each other extensively through economic cooperation, but seldom reach out to each other on politico-security issues, particularly on North Korean issues, despite North Korea's deepening involvement in the region. The post-Korean War era saw low economic exchanges between the two Koreas with Southeast Asia, hence the culminating relations was purely for diplomatic competition, for winning recognition and votes in the United Nations. The vigorous diplomacy launched by Park Chung-hee towards Southeast Asia was triggered by North Korea's proclamation that it would establish relations with any states that supported the Bandung principle, whereas Korea was excluded from the Non-aligned Movement (NAM) due to its alliance with the US. Vigorous diplomacy also coincided with the Vietnam War,

where Korea sent troops to the region upon US request, and marked Korea's direct strategic involvement in Southeast Asia. Nonetheless, following the Indochina War, Korea reduced its strategic involvement and ASEAN-Korea bilateral interactions did not take off until the 1990s.

South Korea's motivation in expanding its relations with ASEAN regional actors encompassed not only on political legitimacy but also in the security domain. The shared security interest in their security alliance with the US moved South Korea closer to Thailand and the Philippines. As US influence in Southeast Asia waned and focused on the Middle East, Southeast Asia was merely a Second Front in the Global War on Terrorism (GWOT) that entailed ASEAN plus Three (APT) members of South Korea, China, and Japan cooperating on counterterrorism. The cooperation between South Korea and ASEAN member states later also expanded to include maritime cooperation following Japan's maritime cooperation policy across the Malacca Straits. Korea filled the gap that Japan left while also complementing the existing initiatives.

Due to the pressure of competing with China as it increased its presence and cooperation with Southeast Asia and ASEAN since the 1990s, Japan and South Korea responded positively to the ASEAN platform and ASEAN initiatives for fear of losing out. Prior to the 1997-1998 Asian Financial Crisis, South Korea under President Kim Young-sam adopted an independent foreign policy style that was driven by the need for South Korea's internationalization (Segyehwa). Thus, the ASEAN process was perceived as a good platform for Korea to reach out and to be more widely accepted by the international community, particularly after winning the legitimacy war against North Korea in normalizing relations with China in 1992.

The deepening of South Korea's involvement in the ASEAN process was carried out by the Kim Dae-jung government. Echoing Malaysian Prime Minister Mohamad Mahathir's call for an East Asian regional grouping for Asians without Western powers' interference, Kim Dae-jung proposed an East Asian Vision Group (EAVG) which was well-received by the ASEAN members but was immediately faced with the challenge of further development due the 1997-1998 Asian Financial Crisis. However, the initiative was adapted into the new initiative and finally culminated in the East Asia Summit (EAS).

This is remarkable given that South Korea could be portrayed as US-centric in its approach to foreign policy, while the US was sceptical and expressed its displeasure at the creation of such a grouping at the time.

Kim Dae-jung crafted a comprehensive engagement policy towards North Korea which later became known as the Sunshine Policy. The policy was regarded as a groundbreaking South Korean approach towards North Korea and he won a Nobel Peace prize for his policy. The initiative received support from ASEAN states. However, while ASEAN members pledged support during the Korea-ASEAN summit and also at the ASEAN Plus Three Summit in 2001, Kim Dae-jung did not seize the opportunity to request member states' support for information sharing on North Korea or any initiatives and cooperation with North Korea.¹⁾ This has been the pattern until recently which signifies the Korean government's low expectations of ASEAN and its member states to play a significant role in regard to North Korea and Korean peninsula security issues.

However, with North Korea's latest provocations extending beyond the peninsula and the recent case of Kim Jong Un's assassination of his half-brother, Kim Jong Nam, Korea needs to formulate a concrete cooperation strategy with ASEAN in order to counter North Korean threats.

Before the Six-Party Talks on denuclearising North Korea, ASEAN Secretary General Surin Pitsuwan lobbied to have North Korea joining the ASEAN Regional Forum (ARF) in 2000, and North Korea responded positively to becoming a full partner of the ARF without hesitation.²⁾ When the ARF was set up over 1993-1994, without specific reference to any specific conflict and no mechanism for dispute settlement, regional problems were intended to be addressed in general terms and the main aim of the ARF was to keep the dialogue channels open. As the first North Korean nuclear crisis broke out in 1993-1994, the issue became a subject of exhortation in ARF for the subsequent years, along with the issues of the South China Sea and Taiwan. Although no substantive

1) Cheong Wa Dae, Office of the President, Republic of Korea. November 6, 2001. ASEAN Reaffirms Support for President Kim's Sunshine Policy. Seoul: Presidential Archives of Korea

2) Surin Pitsuwan, Perspectives on Korea's role in ASEAN, in Steinberg, D. I. (Ed.). (2010). Korea's changing roles in Southeast Asia: expanding influence and relations. Institute of Southeast Asian Studies, pp. 27.

measures came out of the ARF meetings, the process was crucial for the participating governments as the bilateral meetings held on the sidelines of the ARF served a confidence-building function that defines the critical relationship among the participants. In the case of North Korea, it was primarily between the US, China, South Korea, which also contributed to promoting the Four Power Talks in 1997 (involving US, China, South Korea, and North Korea). ASEAN took pride in insisting on the ASEAN Way for the format of conduct of the ARF, which enabled dialogues to take place.³⁾ Since North Korea's admission to become a participant in the ARF, bilateral meetings among the members of the Four-Party Talks and later the Six-Party Talks were conducted along the structured dialogues format of the ARF. To this day, the ARF remains the only multilateral international forum that North Korea is part of (after officially quitting the Six-Party Talks in 2009). Thus, engaging North Korea through the ARF would be a crucial first step to initiate dialogue and to ensure North Korea is accountable as a member of the international community.

ASEAN has played its diplomatic centrality in all ASEAN platforms, including the East Asia Summit, of which South Korea is most fond of among the ASEAN platforms. The positive perception of the EAS among the participating members is due to the non-inclusion of the US, of which South Korea could focus on its national strength and interest in the process instead of being beholden to US pressure and interest. Korea should utilise the exact feature of diplomatic centrality of ASEAN that its members are extremely proud of, instead of imposing Korea's own agenda in the process.

3) Michael Leifer characterised the format as structured dialogues for addressing the confrontational nature of regional security problems. See Leifer, M. (1998). The ASEAN regional forum. A model for cooperative security in the Middle East?, Working Paper No. 1998/1, p. 11.

III. Korea's Interest in ASEAN's Evolving Roles for Peace and Security in East Asia

Although the efforts had increased and been consistent in recent years, the Korean government has yet to fully utilize ASEAN as part of its North Korea policy and to realize its full potential. This is surprising given the increased involvement of North Korea in this region via trade, financial networks, and political relations forged with the regional players, South Korea and Southeast Asia have not seen each other as the number one strategic partner and the bilateral interactions between the two remain dominated by economic and other non-traditional security cooperation.⁴⁾

ASEAN has sought to express regional reconciliation in institutionalized form, and this is crucial for the Korean peninsula and Northeast Asia of which there is no indigenous institutionalism except those built on the ASEAN platform. As the Moon Jae-in government's North Korea policy adopts a more conciliatory approach, Korea could continue to seize the opportunities offered not only by existing ASEAN platforms, but also to begin new initiatives with ASEAN. Any new initiatives in cooperation with ASEAN must respect the ASEAN Way principle.

Realistic Korean expectations of ASEAN's role on the Korean peninsula remain low and scepticism still dominates on both sides regarding the possibility of deepening engagement on the North Korean issue. Conversely, among the ASEAN states, none perceives the region or ASEAN as important for South Korea strategically. This was (and still is) largely due to Korea's inclination to rely on its US ally for managing North Korean security challenges.

Korea's diplomacy towards Southeast Asia has been likened to the US approach to the region. The US approach was and is largely based on a hegemonic posture, commonly perceived as forceful by the small states. Korea's diplomatic advancement in Southeast Asia was encouraging in the past few years especially under the Park Geun-hye

4) This point has been observed since the past decade and the condition has not changed much. See David Koh, *South Korea and Southeast Asia: Ideas for deepening the partnership*, in Steinberg, D. I. (Ed.). (2010). *Korea's changing roles in Southeast Asia: expanding influence and relations*. Institute of Southeast Asian Studies, pp. 33.

administration. However, some governments expressed displeasure at Korea's forceful posture in demanding regional governments' support for Korea's initiatives.⁵⁾ For instance, when Northeast Asia Peace and Cooperation Initiative (NAPCI) was launched, some ASEAN members took offense that the initiative was launched and developed in Europe for the first two years before being marketed to Southeast Asia. ASEAN policy makers question the sincerity of the Korean government in seriously considering ASEAN as a model for NAPCI. Observing the cold response by North Korea towards the initiative, ASEAN's diplomatic gesture was to support the initiative rhetorically despite a lack of confidence in its implementation.

Out of 10 members, 4-5 ASEAN states maintain embassies in Pyongyang. Despite the close relationship shared between Southeast Asian states with North Korea, ASEAN as a regional organization would yield greater leverage vis-a-vis North Korea. This is evidenced by the atrocities committed by North Korea on the territories of countries which maintain cordial relations with North Korea, namely Myanmar, Malaysia, Cambodia and Vietnam. Bilaterally, North Korea used to enjoy close relations with Cambodia, Indonesia, Malaysia, Singapore, Thailand, and Vietnam. The recent assassination of Kim Jong Nam left Malaysia and Vietnam cautious of their dealings with North Korea. In addition, the exposure of Singaporean companies that breached international sanctions by exporting luxury goods and critical resources like oil to North Korea has also limited bilateral exchanges with immediate effect.

ASEAN would not be able to provide an extra venue for the two Koreas to extend the battleground outside of the peninsula. But ASEAN should act as an honest broker for peace, based in the principles of non-alignment, ASEAN neutrality, and ASEAN Centrality. To achieve that, ASEAN could play a sub-regional role in Korean security issues, and be a major player, if Korea wishes to rely on a third party's neutrality in approaching North Korea to jump start multilateral (if not bilateral) dialogue.

Why does the Korean peninsula security problem require ASEAN to invest the political will? North Korea is cash-strapped which compels it to ensure its survival through deep

5) Conversations with diplomatic officers who wish to remain anonymous.

involvement in illicit activities, including arms and weapons of mass destruction (WMD) proliferation, which is mainly conducted through the ASEAN region, making Southeast Asia a vital illicit financial hub for North Korea. The threat has been expanded to harm member state's national interests and security. North Korea assassinated Kim Jong Nam using VX nerve agent, an internationally banned chemical weapon, in Malaysia, while using Cambodia as training ground for its agents, and victimizing the nationals of Indonesia and Vietnam in the plot. Given the 1983 Rangoon bombing by North Korean agents in then-Burma, in which over twenty senior Korean cabinet officials were murdered, and the latest assassination of Kim Jong Nam in Malaysia, it is high time for ASEAN members and South Korea to recognize the imminent harm that can be brought forward by North Korea. Korea needs to abandon the outdated perspective that ASEAN states and ASEAN are outsiders to Korean security issues.

There is a large space for Korea government to interact with ASEAN and the respective ASEAN countries for advancing the peace process on the Korean peninsula. To deny North Korean access to foreign currency, Korea should invest in forging a useful platform with ASEAN to engage North Korea. This ASEAN platform for peace can be Track 1 and Track 1.5 meetings. Track 1 can be built along the Foreign Ministers' meeting, while Track 1.5 could consist of former government officials and interest groups including think tank researchers, entrepreneurs, and NGO representatives. There are already numerous existing Track 2 exchanges between ASEAN members and North Korea, such as the Chosun Exchange between Singaporean and North Korean entrepreneurs; and joint agricultural cooperation between Thailand and North Korea. Track 1 and 1.5 meetings are also available through the official Vietnam-North Korea joint study group on economic reform, North Korea's membership in the Council for Security Cooperation in the Asia Pacific (CSCAP), and invitation by the ASEAN-Institutes of Strategic and International Studies (ASEAN-ISIS) and ISIS Malaysia to the Asia-Pacific Roundtable conference.

Given its priority on establishing or drawing the new economic map as proposed by the Moon government, Korea can cooperate with ASEAN on providing incentives to North Korea on agreeing to dialogue through ASEAN. ASEAN would only play a mediator role on the Korea peninsula, either it involves economic inducement or not. With several

suggestions based on the existing ASEAN members' exchanges with North Korea, ASEAN can propose to contribute to the joint economic venture for peace, such as an ASEAN Park in North Korea's special economic zone. One such possibility is joint agricultural cooperation, based on the existing collaboration model between Thailand and North Korea on silk and food production. This is not only beneficial for North Korea, which urgently needs such assistance, but the production could receive South Korean support and be beneficial for agricultural ASEAN states. China is believed to be interested in such initiatives given its own failed attempt in convincing North Korea to conduct economic reform to stabilize the regime.

ASEAN's role in a peace process between the two Koreas will not require ASEAN and its members to either denuclearize North Korea or to resolve Korean security problems, which are unrealistic for ASEAN to carry out. However, as an honest broker, ASEAN can contribute to helping manage the conflict, by providing a communication channel between the two Koreas. ASEAN can be the lifeline for North Korea not only in terms of small trade but also to provide a communication line for North Korea to make known its plight and engage with regional stakeholders and also the international community.

Korea has expectations of ASEAN, and the same applies for ASEAN of Korea. Hence, the peace process cooperation has to be mutually interactive and reciprocal. ASEAN and Korea may not be on the same page on North Korea due to different national and institutional interests, but good coordination on the respective roles and division of labor in the peace process will contribute to a well-orchestrated joint collaboration on Korean peninsula peace building. ASEAN requires dialogue with Korea to clarify whether the current Moon Jae-in government (or any future Korea government) prioritizes the 'peace' element in its North Korea policy and willingness to consent to ASEAN playing a modest proactive role in engaging North Korea on behalf of Korea and other Six-Party Talks members. Korea may lead from behind to avoid inciting distrust from North Korea of the new peace initiative. Echoing President Moon's emphasis on peaceful co-existence of the two Koreas, ASEAN respects the national interest of both sides and will continue to liaise and mediate between the two for long term peace and prosperity of the greater East Asia.

IV. ASEAN Perceptions of North Korea and the Korean Peninsula

This chapter seeks to describe the perceptions of ASEAN and its key members (particularly the six main ASEAN states of Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) towards North Korea in terms of that country as a security concern, bilateral relations, North Korea-ASEAN relations, and inter-Korean relations, including how they view past and current relations.

In order to ascertain these state-level perceptions, this report mainly surveys the available news reports (online and print) since the year 2000 when North Korea, which was under the rule of then supreme leader Kim Jong Il, joined the ASEAN Regional Forum (ARF) as an observer. The information trawl over the last 17 years, therefore, seeks to determine the aforesaid perceptions during the rule of Kim Jong Il at the turn of this century until his death in 2011, and under the new leadership of his successor Kim Jong-un from 2011 to 2017. The purpose is to ascertain any discernible development or even change of perceptions between 2000-2011 and 2011-2017.

1. ASEAN

In summary, ASEAN's perceptions of North Korea, North Korea-ASEAN relations, and inter-Korean relations are multi-faceted. First and foremost, all ASEAN countries have had trading relations with North Korea since they established official diplomatic ties with Pyongyang since the 1970s. According to one analysis published in May 2017, North Korea-ASEAN trade has been averaging about USD 181 million per year since 2010, which though small, is not insignificant.⁶⁾ ASEAN's ongoing trading relationship with North Korea reflects its non-ideological position when it comes to economics as emerging markets looking to exploit economic opportunities where they present themselves, member states will generally do business with any other country.

6) Kent Boydston, North Korea and the Southeast Asia Connection, Peterson Institute for International Economics, 26 May 2017, <https://piie.com/blogs/north-korea-witness-transformation/north-korea-and-southeast-asia-connection>

Secondly, most ASEAN states perceive the current behaviour of North Korea specifically its illicit pursuit of a nuclear weapons programme as an international security problem, especially after Pyongyang conducted its first underground nuclear test in October 2006. It can be inferred that the significant security problem posed by North Korea explains why ASEAN has continued to restrict its diplomatic relations with North Korea to the ARF and the Treaty of Amity and Cooperation (TAC) to date. In other words, there is a reason why ASEAN has not expanded its interactions with North Korea to include involving the country in other ASEAN-led initiatives such as the East Asia Summit (EAS) and the Regional Comprehensive Economic Partnership (RCEP), for example. In contrast, not only is Korea involved in the ARF, TAC, EAS, and RCEP, it is also tied with ASEAN as a Sectoral Dialogue Partner, Full Dialogue Partner, and Summit-Level Partnership.⁷⁾

Note that although ASEAN states have now taken the growing nuclear threat posed by the North Korea seriously, they could only be said to have begun raising their concerns more vociferously after Pyongyang conducted its first underground nuclear test in October 2006 when the UN Security Council condemned the test in the form of Resolution 1874. The first nuclear test served as a concrete indication of North Korea's progress in its suspected nuclear weapons development programme and it ran against the norms set in ASEAN's Bangkok Treaty of 1995 declaring the region as a Southeast Asia Nuclear Weapons Free Zone (SEANWFZ). It prompted the Association to support the international call for North Korea to participate and stay the course with the Six-Party Talks, with the shared vision of a denuclearised Korean peninsula.

It is likely that the unprecedented pace of nuclear and missile tests under Kim Jong Un prompted ASEAN to adopt a clearer and firmer collective position on North Korea by the middle of 2017. At the recently concluded ASEAN Summit in Manila in May 2017, ASEAN member states were able to come to an early consensus regarding the escalation of tensions on the Korean peninsula, driven by the spate of missile tests by North Korea since the start of this year. A day before the Summit, ASEAN foreign ministers even issued a statement expressing grave concern over the situation on the Korean peninsula,

7) Bawa Singh, Korean Peninsula Under the Nuclear Threat: How ASEAN Should Reciprocate? The Dialogue, 13 May 2017, <http://www.thedialogue.co/korean-peninsular-nuclear-threat-asean-reciprocate/>

including North Korea's two nuclear tests in 2016 and subsequent ballistic missile launches.⁸⁾ However, beyond this statement, and on top of past statements calling for North Korea to abide by UN resolutions set against it, it can be discerned that member states are not in agreement on what else ASEAN states can and should do to contribute to the management of the North Korean problem.⁹⁾

In this regard, the general view is that ASEAN and its members lack any discernible leverage to influence North Korea's behaviour.¹⁰⁾ At most, ASEAN could follow the suggestion by South Korea that it influence North Korea's behaviour by incentivising the halt and reversal of its nuclear-related activities with even deeper economic ties and the provision of humanitarian aid.¹¹⁾ At the end of the day, while ASEAN could play the role of facilitator between Korea and the North Korea, ASEAN has tended to perceive the solution to the ongoing security problem as lying in the hands of the major powers, particularly China and the US, and Japan.¹²⁾ Ultimately, the view is that the ongoing tensions between Korea and North Korea are an issue that must be worked out by these countries themselves. In this vein, ASEAN states have tended to view the threat posed by North Korea to the immediate stability of Northeast Asia as an issue that is geographically far removed from Southeast Asia, as compared to the ongoing tensions in the South China Sea.¹³⁾

8) Shawn Ho and Sarah Teo, Strengthening ASEAN-US Relations: Korean Peninsula as Conduit? RSIS Commentary, No. 083, 2 May 2017, <https://www.rsis.edu.sg/wp-content/uploads/2017/05/CO17083.pdf>

9) Jun Endo, ASEAN countries at impasse on North Korea, Asia Nikkei. April 27, 2017. <https://asia.nikkei.com/Politics-Economy/International-Relations/ASEAN-countries-at-impasse-on-North-Korea>; Sahil Mathur, ASEAN and North Korea: Strange Bedfellows? The Diplomat. May 3, 2017. <http://thediplomat.com/2017/05/asean-and-north-korea-strange-bedfellows/>

10) David Han, How should ASEAN respond to the North Korea threat? East Asia Forum, 10 June 2017. <http://www.eastasiaforum.org/2017/06/10/how-should-asean-respond-to-the-north-korea-threat/>

11) ASEAN to take bigger role in Korean Peninsula efforts, The Myanmar Times, 28 July 2017, <http://www.mmmtimes.com/asean-focus/27016-asean-to-take-bigger-role-in-korean-peninsula-efforts.html>

12) Tang See Kit, Facilitator or bystander: ASEAN's role in North Korea crisis, Channel News Asia, 16 May 2017, <http://www.channelnewsasia.com/news/asiapacific/facilitator-or-bystander-asean-s-role-in-north-korean-crisis-8850226>

13) Tang See Kit, Facilitator or bystander: ASEAN's role in North Korean crisis, Channel NewsAsia, 16 May 2017, <http://www.channelnewsasia.com/news/asiapacific/facilitator-or-bystander-asean-s-role-in-north-korean-crisis-8850226>

2. Indonesia

In summary, Indonesia has had significantly positive bilateral relations with North Korea since 2000, which is consistent with relations dating back to 1961 when both countries first established ties with each other under the respective leadership of President Sukarno and President Kim Il-sung. Indeed, it was Indonesia that served as one of North Korea's staunchest supporters for its admission as an observer to the ARF, alongside Vietnam.¹⁴⁾ The general view held by Jakarta is that North Korea's behaviour is best shaped by interacting with it than isolating it. In 2000, Indonesia and North Korea signed a memorandum to increase bilateral trade. Jakarta was reported to have viewed North Korea as a lucrative market for Indonesian goods.¹⁵⁾ In 2003, both countries also signed an agreement for mutual cultural exchanges.¹⁶⁾

Also, an enduring friendship between Indonesia and the North Korea seems to have persisted over the course of the 2000s. To use the words of a former Director-General for Defence Strategy with the Department of Defence, Major-General (retired) Sudrajat in January 2005, Indonesia sees North Korea as an old friend.¹⁷⁾ In that year, North Korea was reported to have offered the Indonesian government the opportunity to purchase arms including submarines and radar. Apparently, North Korea sought to forge bilateral defence cooperation. When asked if the purchase of North Korean weapons would threaten Indonesian defence relations with other countries, such as the United States, Major-General (retired) Sudrajat said, "We understand that North Korea is a country which is under embargo by the west, but with Indonesia, North Korea is an old friend."¹⁸⁾ To be sure, there were reports in 2006 that Indonesia experienced international pressure to take a position against North Korea's missile tests during that period.¹⁹⁾ Yet, by and large, Indonesia remained indifferent to the international view

14) Jamil Maidan Flores, The odd couple: North Korea and Indonesia, Jakarta Globe, 23 June 2012, <http://jakartaglobe.id/archive/the-odd-couple-north-korea-and-indonesia/>

15) Indonesia, N Korea agree to improve countertrade, Antara News, 21 February 2000.

16) North Korea this week, Yonhap News, 17 April 2003.

17) North Korea offers to sell arms to Indonesia, British Broadcasting Corporation (BBC), 28 January 2005.

18) North Korea offers to sell arms to Indonesia, British Broadcasting Corporation (BBC), 28 January 2005.

19) Postponement of Yudhoyono's Korean trip indicates pressure on RI, Antara News, 13 July 2006.

of North Korea as a security threat as Jakarta continued to forge a strategic partnership with Pyongyang, particularly in the area of trade.²⁰⁾

The cordial, if not close, relationship between Indonesia and North Korea can be said to have persisted even after 2011 under Kim Jong Un, as reflected by Indonesia's decision to award him the very same peace prize that his father, Kim Jong Il posthumously received in 2001. The award was established by the Sukarno Education Foundation, named after Indonesia's founding president. In response to local and international criticism of the award to Kim Jong Un, former President Sukarno's daughter, Rachmawati Sukarnoputri, defended the decision by saying that he contributed to "peace, justice and humanity, and that "[t]he allegations about human rights abuses [under Kim Jong-un] are untrue. That's all just Western propaganda. Those Western governments like to put ugly labels on North Korea."²¹⁾

Thus, despite South Korea's efforts at encouraging Indonesia to leverage its close relationship with North Korea to take a firm stance against Pyongyang's violation of UN resolutions and international sanctions aimed at curbing its illicit nuclear-related activities, Indonesia has chosen to hold back on the ground that pushing hard on North Korea is tantamount to infringing on the country's sovereignty.²²⁾ Nevertheless, there is a gap in the perception of North Korea between Indonesia's political elites and its citizens.

While 42% of the Indonesian public appears to have held positive views on North Korea in 2013, according to one poll conducted by British Broadcasting Corporation at that time, a separate poll in 2017 showed a decrease in positive views to 32%.²³⁾

20) Bantarto Bandoro, Korea and Indonesia set for strategic partnership, *The Jakarta Post*, 4 December 2006.

21) Indonesian foundation defends awarding Kim Jong Un peace prize, *The Straits Times*, 3 August 2015, <https://goo.gl/t5Bs7U>

22) Bihu Ray, South Korea seeks Indonesia's help to stop North Korea's nuclear program, *International Business Times*, 16 September 2016, <http://www.ibtimes.sg/south-korea-seeks-indonesias-help-stop-north-koreas-nuclear-program-3310>; Shin Hyon-hee, Indonesia eyes closer Korea ties, *The Korea Herald*, 9 November 2014, <http://www.koreaherald.com/view.php?ud=20141109000288>

23) Audrey Morallo, Philippines only country in Asia-Pacific with positive view of North Korea, *Philstar Global*, 15 July 2017, <https://goo.gl/UkPz78>; Zachary Keck, Why is Indonesia courting North Korea? *The Diplomat*, November 02, 2013, accessed August 15, 2017 <http://thediplomat.com/2013/11/why-is-indonesia-courting-north-korea/>

3. Malaysia

Broadly speaking, Malaysia has had significantly positive bilateral relations with North Korea from 2000 to 2017, following from similarly positive relations throughout the twentieth century. This relationship is characterised by both significant trade and business activities, and also an established political relationship at the senior levels of government to the extent that one analyst has said, Malaysia is one of North Korea's closest allies in Southeast Asia.²⁴⁾ To be sure, there was a momentary period of severe tensions in bilateral relations after the assassination of Kim Jong Un's half-brother, Kim Jong Nam, on 13 February 2017, on Malaysian territory. The resolution of that episode saw the resumption of what appears to be normal bilateral ties. Still, any ambivalence on the part of Malaysia on further deepening its relations with North Korea, particularly at the diplomatic level, appears to stem from Kuala Lumpur's perception that North Korea's illicit nuclear weapons programme is a threat to the international community.

Malaysia established official diplomatic ties with North Korea on 30 June 1973.²⁵⁾ It is likely that the economic relationship between the two countries forged ahead of political relations, since Malaysia, as an avowed non-aligned country, would be open to trading with any country in general. Indeed, over the course of the late twentieth century, North Korea imported oil, natural rubber and palm oil from Malaysia, which, in turn, imported iron, and steel products from North Korea. To be sure, growing relations were being forged at the bureaucratic level of their respective governments, particularly through Malaysia's provision of skills training to North Korean officials under a technical cooperation programme.²⁶⁾ Still, both sides only set up their embassies in each other's countries in 2003, and likely reflected the forging of closer ties especially after North Korea joined the ARF as an observer in 2000. The 2000s also saw the

24) Isaac Stone Fish, *Why One Obscure Malaysian University Gave Kim Jong Un an Honorary Doctorate*, *Foreign Policy*, 22 October 2013, <http://foreignpolicy.com/2013/10/22/why-one-obscure-malaysian-university-gave-kim-jong-un-an-honorary-doctorate/>

25) G. Surach, *Malaysia-North Korean ties low-key but stable since 1973*, *The Sun Daily*, 15 February 2017, <http://www.thesundaily.my/node/427878>

26) *Malaysia offers to train 30 North Koreans under technical cooperation programme*, *British Broadcasting Corporation (BBC)*, 5 June 2001.

promotion by Malaysia and North Korea of each other's countries as tourist destinations. In 2009, Malaysia became the first country whose citizens were allowed by North Korea to visit the country without a visa, although it is believed that this visa waiver arrangement was in place prior to 2009.²⁷⁾

In the same year of Kim Jong Un's accession to power in 2011, three further developments occurred. Firstly, Kim Jong Un received an honorary doctorate from Malaysia's HELP University in 2013.²⁸⁾ Secondly, it was reported that the two countries decided to enhance co-operation in information-related areas. Thirdly, North Korea opened a direct air route, through the North Korean state airline Air Koryo, to Malaysia to attract even more tourists from the country. In January 2017, the Malaysian government decided to stop allowing Air Koryo access to the country following the implementation of recent UN Security Council sanctions and pressure from the United States. However, both countries still signed a memorandum of understanding in the exchange of culture in that same year despite Malaysia's imposition of travel restrictions.

On balance, trade relations between Malaysia and the North Korea remain significant despite some reports stating that the value of trade has dipped recently. Some Malaysian media reports this year note that [b]ilateral trade between Malaysia and North Korea has grown over the years, involving mainly palm oil and chemical products as indicated by statistics provided by the Malaysia External Trade Development Corp (Matrade).²⁹⁾ In 2012, only a mere USD 5,000 worth of official trade was registered between the two countries. In 2014, the value of trade rose to about USD 1.8 million, and in 2015, the figure stood at around USD 5 million. While this figure dropped to about USD 4 million in 2016, the decrease was attributed to lower exports from Malaysia; North Korea

27) Fazleena Aziz, Only Malaysians can visit North Korea without a visa, The Star Online, 9 March 2009, <https://archive.is/20140123162517/http://www.thestar.com.my/Story/>

28) Isaac Stone Fish, Why One Obscure Malaysian University Gave Kim Jong Un an Honorary Doctorate, Foreign Policy, 22 October 2013, <http://foreignpolicy.com/2013/10/22/why-one-obscure-malaysian-university-gave-kim-jong-un-an-honorary-doctorate/>

29) Bilateral trade with North Korea has grown over the years, The Star Online, 24 February 2017, <http://www.thestar.com.my/news/nation/2017/02/24/matrade-bilateral-trade-with-n-korea-has-grown-over-the-years/>

actually increased its imports from Malaysia in that year, totalling about USD 1.9 million which nearly matches the total value of bilateral trade in 2014. Indeed, Matrade's Chief Executive Officer, Datuk Dzulkifli Mahmud, was reported to have said in December 2016 that Malaysia hoped to increase trade with North Korea. He further added that North Korea was looking to make Malaysia the gateway to South-East Asian markets, and that [t]here are still a lot of uncharted areas that both nations can explore for the benefit of our trade and economy as a whole.³⁰⁾

It is important to note, however, the year 2016 also representing a turning point for Malaysia's shift away from its previously soft approach on North Korea's illicit nuclear-related activities to a much firmer position, including supporting UNSC resolutions against North Korea.³¹⁾ In light of increased nuclear and missile tests that year, Malaysia has begun condemning North Korea's actions in line with its pursuit to bolstering its own non-proliferation record, including through stronger export controls.³²⁾ Some analysts have observed that, as such, bilateral ties have now become increasingly complicated. At the end of the day, Malaysia does support a peaceful negotiation and reunification of the North Korea and Korea.³³⁾ In fact, Kuala Lumpur has previously tried on several occasions to persuade Pyongyang to come to an agreement with Seoul regarding their differences.³⁴⁾

30) Bilateral trade with North Korea has grown over the years, The Star Online, 24 February 2017, <http://www.thestar.com.my/news/nation/2017/02/24/matrade-bilateral-trade-with-n-korea-has-grown-over-the-years/>

31) North Korea's Kim Jong-un honoured by Malaysian university, Associated Press, 24 October 2013; Malaysia urged to vote for UN resolution on North Korea, The Jakarta Post 10 November 2016, <http://www.thejakartapost.com/seasia/2016/11/10/malaysia-urged-to-vote-for-un-resolution-on-north-korea-.html>

32) Malaysia condemns North Korean nuclear test, MalaysiaKini, 9 September 2016, <https://www.malaysiakini.com/news/355267>; <http://thediplomat.com/2017/02/the-myth-of-a-north-korea-malaysia-special-relationship/>

33) North Korea's Kim Yong Nam to visit Malaysia, Bernama, 2 March 2002.

34) Jalil Hamid, Malaysia puts NKorea on Asia security forum agenda, Reuters, 27 May 2006.

4. The Philippines

In summary, the Philippines has a highly transactional economic relationship with North Korea that stands at odds with its overall perception of North Korea as a significant international security problem. Interestingly, despite its late diplomatic recognition of North Korea, the Philippines is currently the third largest trading partner of North Korea after China and India, as was reported by August 2017 (using data from the International Trade Center (ITC) of the World Trade Organization).³⁵⁾ It is also interesting to note that a 2017 survey of global attitudes finds that the Philippines is the only country in which more than half of its citizens had positive perceptions of North Korea.³⁶⁾ Nevertheless, there is no information to suggest that the Philippines government has leveraged its strong economic relations with North Korea to contribute to peace and stability on the Korean peninsula.

The Philippines and North Korea established diplomatic ties on 12 July 2000, making it the last ASEAN country to do so.³⁷⁾ The assessment is that like other ASEAN countries, the Philippines has chosen to maintain a separation between the economic and political aspects of its relationship with North Korea. In a bid for further conciliation, the Philippines and North Korean governments did sign a cultural cooperation agreement in July 2011 but there is no further information in the open source literature to describe the current status of such of cooperation.³⁸⁾

The Philippines' apprehension towards recognising North Korea can be explained by the fact that Manila has tended to view North Korea as an international security threat since the end of Korean War; a view that remains generally unchanged to date. To date, the Philippines' stand-offish diplomatic relationship with North Korea is reflected

35) Bae Min Kwon, Report: China accounts for more than 90% of North Korea's total trade, DailyNK, 11 March 2017, <https://www.dailynk.com/english/m/read.php?num=14462&cataId=nk00100>

36) Philippines only country in Asia-Pacific region with positive view of North Korea, PhilStar Global, 15 July 2017, <http://m.philstar.com/breakingnews/show/549f8788016080e3afbda124aee246bf?t=7007elq5ip4cl eihqmh7dkg1d0>

37) Philippines, North Korea establish diplomatic relations, Agence France-Presse, 12 July 2000.

38) North Korea, Philippines sign 'executive plan' for accord on cultural ties, BBC Monitoring Asia Pacific, 1 July 2011.

by the fact that it is the only ASEAN country that does not have a North Korean embassy on its soil nearly 17 years after establishing official ties. In addition to the general concern about stability on the Korean peninsula, and North Korea's development of nuclear weapons, it has been established that North Korea did extend its support to the New People's Army (NPA), which is a communist rebel group operating in the Philippines. In regard to the latter security concern, one of the Philippines' rationale for establishing formal relations with Pyongyang was to negotiate the prevention of arms transfers from North Korea to the NPA and possibly other insurgent groups in the Philippines.³⁹⁾ In the last few years, the concern of the Philippines has shifted towards North Korea's nuclear warhead and missile development programmes in line with Pyongyang's increased testing of these components that contribute to its overall nuclear weapons capability.⁴⁰⁾

Available media reports suggest that South Korea did have some expectation that the Philippines would exploit its significant economic relationship with North Korea to facilitate better inter-Korean relations in general.⁴¹⁾ However, the Philippines has not articulated any independent foreign policy position on North Korea beyond President Rodrigo Duterte's criticisms of nuclear warhead and missile testing. At most, the Philippines could be said to be backing UN and ASEAN-related positions relating to North Korea's threatening behaviour. It appears that Filipino administrations have rationalised their self-restraint in not promulgating a clear position on the challenges posed by North Korea on the basis of not wanting to worsen the general state of tensions.⁴²⁾ If any priorities can be gleaned from Manila it is that the prevention of the next nuclear test should be the utmost priority for the international community, as opposed to the resumption of an inter-Korean dialogue between Pyongyang and

39) Diplomatic sources say Philippines: North Korea set to sign bilateral agreements, BBC Monitoring, 29 June 2007.

40) See for example, Martin Petty and Neil Jerome Morales, Philippines' Duterte calls North Korea's Kim a 'fool' over nuclear ambitions, Reuters, 2 August 2017, <https://www.reuters.com/article/us-northkorea-missiles-philippines-idUSKBN1AI17W>

41) South welcomes establishment of North-Philippines diplomatic ties, BBC Monitoring, 12 July 2000, 2000.

42) Bill Casas, PH urges restraint on Korea situation, Manila Standard, 14 August 2017, <http://manilastandard.net/news/top-stories/244387/ph-urges-restraint-on-korea-situation.html>

Seoul.⁴³⁾ Indeed, following pressure from the United States to isolate Pyongyang over its missile tests, the Philippines, as the current chairman of ASEAN, attempting to rally member countries to formulate a common position on how to engage with North Korea in a bid to stop further testing.

5. Singapore

In summary, the Republic of Singapore does perceive the North Korea to be posing a significant international security problem. However, the predominant perception is that North Korea like any foreign market of opportunity for the island-state whose survival depends on maximising international trade with other states is economically valuable as a country to do business with. In other words, interest in North Korea is mostly economic rather than political.⁴⁴⁾

Singapore does take seriously North Korea's nuclear weapons programme as an important international security issue, particularly the destabilising effects of North Korea posing a nuclear threat to South Korea, the United States and Japan. Singaporean government officials have also said that they would support the denuclearisation of North Korea should Pyongyang agree to it.⁴⁵⁾ Singapore has also been a long-time advocate of the Six-Party Talks, with the view that North Korea ought to participate in this initiative.⁴⁶⁾ However, Singapore's overall concern over the North Korean nuclear threat has tended to be muted from 2000 until the period marking Kim Jong Un's accession to power.

Notwithstanding Singapore's perception of North Korea as a potential nuclear threat, Singapore–North Korea bilateral relations have tended to be cordial since the

43) John Paolo Bencito, Duterte talks with Trump on North Korea's missile launch, Manila Standard, 29 April 2017, <http://manilastandard.net/news/national/235377/duterte-talks-with-trump-on-north-korea-s-missile-launch.html>

44) Ko Soo-Suk, Singapore, North Korea have reasons to be tight, Korea JoongAng Daily, 18 May 2015.

45) Singapore, North Korea holds talks, Associated Press, 2 August 2006.

46) North Korea's number two leader in Singapore for official visit, Channel News Asia, 1 August 2008.

island-state established diplomatic relations with Pyongyang on 8 November 1975. North Korea maintains an embassy in Singapore while the latter has accredited a non-resident ambassador to Pyongyang from its embassy in Beijing. On top of having warm diplomatic ties, Singapore-North Korea bilateral relations have been quite significant in economic terms, with Singapore ranking as North Korea's 10th largest trade partner by 2010 (accounting for 2% of North Korea's trade, and 6.5% of North Korea's trade deficit).

Apparently, the Singapore Business Federation (which is essentially a national-level chamber of commerce) signed a Memorandum of Understanding with North Korea's Chamber of Commerce to allow the two countries to facilitate mutual business exchanges in 2008. However, other reports suggest that informal business links have existed since at least the 1990s in the area of consumer goods and raw commodities.⁴⁷⁾ It should also be noted that North Korean officials have been receiving economic training in Singapore under the arrangement of a private non-profit group in Singapore called the Choson Exchange since 2009.⁴⁸⁾

To be sure, Singapore is known to conduct its trade relations with the North Korea in line with the current UN sanctions regime against North Korea.⁴⁹⁾ Thus, while North Korea is reported to have expressed interest in expanding its investment and trade agreements with Singapore, the Singaporean government itself has remained cautious about deepening economic ties unless Pyongyang complies with international demands to halt and reverse its nuclear weapons related activities.

47) Ri Jong Ho, high-level defector and former official in Office 39, says North Korea gets much more oil from Russia than previously known, North Korean Economy Watch, 1 July 2017, <http://www.nkeconwatch.com/2017/07/01/ri-jong-ho-high-level-defector-and-former-official-in-office-39-says-north-korea-gets-much-more-oil-from-russia-than-previously-known/>

48) From 2011 to 2016, as many as 100 North Korea officials received training in business, finance, law, and economic policy. The rationale, according to the Choson Exchange is that entrepreneurship provides a viable path towards positive change and a healthy civil society in North Korea. See, Working for positive change, Choson Exchange, <https://www.chosonexchange.org/about/>

49) Singapore Alleges Shipping Company Helped N. Korea Smuggle Arms, Thai News Service, 13 June 2014.

6. Thailand

In summary, Thailand and North Korea share growing economic and diplomatic ties that are at odds with Bangkok's generally firm stance against Pyongyang's illicit nuclear-related activities, which it has disapproved of from the beginning by supporting various international sanctions and bans.⁵⁰⁾ Bangkok has remained very consistent in its criticisms of North Korea's nuclear warhead and ballistic missile tests since the 2000s.⁵¹⁾

Overall, it is clear that among ASEAN members, Thailand holds the most negative perception of North Korea, though this view is not directly expressed during the official visits between the two countries.⁵²⁾

Having established official diplomatic ties in 1975, Thailand and the North Korea appear to have maintained a basic, if not distant, relationship to date. It is worth acknowledging that Thailand's foreign policy position on North Korea does partly stem from its strong relationship with the United States.⁵³⁾ The decision to restrict the diplomatic relationship lies with Thailand, which openly rejected the North Korea's invitation to establish an embassy in Pyongyang in 2015.⁵⁴⁾ It is also important to note that Thailand is the primary interim destination for North Korean defectors, which may add further friction in bilateral relations. North Korean defectors are known to use Thailand as part of their land-based escape route through Asia to resettle in third countries, particularly South Korea.⁵⁵⁾

50) Thailand/North Korea: Commerce Ministry forbids Thai exporters to export or import weapons to or from North Korea, Thai News Service, 19 May 2007.

51) Thailand's statement on North Korea's launching of a working satellite, Thai News Service, 14 December 2012.

52) Delegation from the Democratic People's Republic of Korea (North Korea) visited Thailand as part of the Annual Exchange Programme of Visit and the 40th Anniversary of Thai North Korea Diplomatic Relations, Thai News Service, 15 May 2015.

53) Tillerson presses Thailand for more action on North Korea, New York Post, 8 August 2017, <http://nypost.com/2017/08/08/tillerson-presses-thailand-for-more-action-on-north-korea/>

54) N. Korean ambassador asks Thailand to open Pyongyang embassy, NK News, 13 January 2015, 2015, <https://www.nknews.org/2015/01/n-korean-ambassador-asks-thailand-to-open-pyonyang-embassy/>

55) Song Jiyong and Alistair D. B. Cook, *Irregular Migration and Human Security in East Asia* (New York: Routledge, 2015), p. 146.

Available data suggests that significant trade relations only took off in the 2000s with trade actually declining between 2008 and 2011 before picking up again and actually increasing four-fold.⁵⁶⁾ In 2016, Thai businesses generated about USD 53 million worth of official trade with North Korea, making it Pyongyang's fourth largest partner after the Philippines (at USD 89 million). As one of the major trading partners of North Korea under Kim Jong Un's rule, Thailand has recently expressed its intention to cut off trade ties with the North Korea in a bid to contribute to the international effort to coerce Pyongyang into aligning its current behaviour with prevailing international norms.⁵⁷⁾ Overall, it is clear that among ASEAN members, Thailand exudes the most negative perception of North Korea, even if this view is not directly expressed during the official visits between the two countries.⁵⁸⁾

Thailand's perception of inter-Korean relations is one that should be working towards greater peace and stability. In this respect, Thailand has consistently supported the need for the Six-Party Talks with the objective of achieving the denuclearisation of the Korean peninsula.⁵⁹⁾ Unlike other ASEAN members, Bangkok has been clear-minded about the need for ASEAN to play a role in supporting negotiations involving the North Korea and the need for North Korea to participate.⁶⁰⁾

56) Leo Byrne, Country profile: Thailand and North Korea, NK News, 9 February 2015, <https://www.nknews.org/2015/02/country-profile-thailand-and-north-korea/>; N. Korean ambassador asks Thailand to open Pyongyang embassy, NK News, 13 January 2015, 2015, <https://www.nknews.org/2015/01/n-korean-ambassador-asks-thailand-to-open-pyonyang-embassy/>

57) Richard S. Ehrlich, Thailand-North Korea ties in the spotlight, Asia Times, 22 June 2017, <http://www.atimes.com/article/thailand-north-korea-ties-spotlight/>

58) Delegation from the Democratic People's Republic of Korea (North Korea) visited Thailand as part of the Annual Exchange Programme of Visit and the 40th Anniversary of Thai North Korea Diplomatic Relations, Thai News Service, 15 May 2015.

59) Thailand /North Korea: Thailand's statement on the underground nuclear test by the Democratic People's Republic of Korea on 25 May 2009, Thai News Service, 27 May 2009.

60) Thailand/North Korea: Ambassador of the Democratic People's Republic of Korea pays a courtesy call on Foreign Minister Kasit on the occasion of his assumption of office, Thai News Service, 24 May 2010.

7. Vietnam

In summary, the Democratic Republic of Vietnam has had major changes in its relations with North Korea in recent years. Vietnam was the first ASEAN country to establish formal diplomatic relations with North Korea in January 1950. Until the end of the 2000s, Vietnam had very warm relations with North Korea in every sector, especially in the military sphere, due to both sides sharing similar ideological roots under the broad umbrella of communism.⁶¹⁾

However, since 2009, the swing away from North Korea has occurred because of Hanoi's growing alignment with the United States in geo-economic terms. More importantly, Vietnam has forged stronger economic ties with South Korea that has become the second largest investor in the country since a bilateral strategic partnership was established in 2009. In tandem with this shift, Vietnam's perception of North Korea has also developed from general support, to indifference and now to growing criticism of its illicit nuclear-related activities. In recent years, Vietnamese officials have begun raising the issue of denuclearisation of the Korean peninsula in bilateral talks with their North Korean counterparts.⁶²⁾ Apart from claiming that North Korea is acting against UN resolutions, Vietnam shows support for a dialogue between North Korea and Korea to maintain stability and peace.⁶³⁾ As such, while Vietnam continues to provide significant food aid to North Korea including the signing of a Memorandum of Understanding in agricultural cooperation in 2014⁶⁴⁾ previous areas of cooperation appear to have waned.⁶⁴⁾

61) Vietnam, North Korea Vow to Boost Party Relations, Viet Nam News, 10 November 2010; Vietnam, North Korea boost military ties, Thai News Service, 28 March 2011; Vietnam, North Korea to boost trade ties in trade, culture, Thai News Service, 13 May 2008; Vietnam, North Korea Beefing up Policy Exchange, Trade, Investment, Viet Nam News, 12 May 2008.

62) Party official receives North Korea guest, Thai News Service, 15 December 2014

63) Vietnam supports efforts to boost dialogue on Korean peninsula, Voice of Vietnam, 17 February 2017, <http://vovworld.vn/en-US/news/vietnam-supports-efforts-to-boost-dialogue-on-korean-peninsula-513730.vov>

64) Vietnam, North Korea Sign MoU to Enhance Agro Ties, Viet Nam News, 4 November 2014.

V. A New Way to Approach ASEAN Countries for a More Active ASEAN Engagement with Korean Peninsula Issues

Despite the Korean government's continuous efforts to persuade ASEAN countries to be more concerned about the Korean peninsula and North Korea's threats, the attitudes of ASEAN countries are in general quite neutral or even apathetic as we have seen in chapter 3. In major North Korean provocation cases, ASEAN countries' view of the threat is lukewarm. This attitude has not changed significantly even after North Korea developed nuclear weapons. In recent months, North Korea has tested its intercontinental ballistic missiles (ICBM), which are supposed to be able to reach as far as the US mainland. This means that ASEAN countries are within range of North Korean ICBMs, which potentially can deliver nuclear warheads. Of course, ASEAN countries are so much concerned with a possibility that North Korea would threaten ASEAN countries with the ICBM and nuclear weapons. Nevertheless, it is a potentially grave threat for the peace and stability of the region, including Southeast Asia.

Then what is a way to overcome this apathy of ASEAN countries? The Korean government has tried many different options to persuade ASEAN countries. The government has pulled economic strings including Korea's ODA to ASEAN countries, trade and investment. Of course, the Korean government has not pulled its ODA out of Southeast Asia. Korea only said that Southeast Asia is receiving significant ODA from Korea and given that it is natural for those countries' to support Korea's position on the Korean peninsula. In addition, ASEAN countries were told that the North Korea's threat is not just of concern for the Korean people; it poses a grave threat to the whole region. North Korea's nuclear weapons program is likely to destabilise the whole region, including Southeast Asia. Despite all this rhetoric and arguments, the Korean government's attempts to engage ASEAN countries have been less than satisfactory.

ASEAN countries, like other countries, are likely to respond to a visible interests or loss. The peace and stability of the region is a common good, which anyone can bandwagon with when it is provided by someone's effort. Since there are other countries which are willing to provide these common goods, ASEAN can rest assured that the peace and security of the region will be preserved despite the threats from North Korea. However, those countries may have second thoughts if concrete losses are visibly suggested, preferably, in the form of numbers. For example, if the Korean peninsula

were to experience open conflict, how much economic damage would it have for ASEAN countries? This is visible and felt strongly for those countries. Of course, Korea should not intimidate anyone with this potential economic and other type of losses, but it is a strong basis for Korea to persuade any country to be more concerned with the Korean peninsula problem. In this section, I will provide some concrete losses and damages that ASEAN countries would experience if there is an emergency situation on the Korean peninsula. With this, the Korean government can approach ASEAN countries and can persuade them to engage more in Korean peninsula issues while understanding why they have to take North Korean threats seriously.

1. Trade

Then what are the disadvantages or negative impacts that ASEAN countries would experience if there is an emergency situation on the Korean peninsula such as a substantial provocation by North Korea, or the use of nuclear weapons on the Korean peninsula that would severely constrain Korea's investment into or trade with ASEAN countries? First, we can think about the impacts in the trade area. Trade is the most important economic interaction between Korea and ASEAN countries. We first have to gauge the impact on the trade relationship between Korea and ASEAN when it is hit by an emergency situation on the Korean peninsula and subsequent impacts on individual ASEAN economies.

	Korea's Ranking	
	Export	Import
Brunei	2nd	5th
Cambodia	-	7th
Indonesia	6th	4th
Laos	-	4th
Malaysia	10th	7th
Myanmar	5th	7th
Philippines	7th	4th
Singapore	7th	5th
Thailand	-	6th
Vietnam	4th	2nd

[Table 1] Korea's Ranking as a Trading Partner for ASEAN⁶⁵⁾

65) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 48-50. In each cell, - means that Korea is not ranked within the top 10 countries.

Korea is ranked 6th for exports, 5th for imports and 5th for overall trade from the perspective of ASEAN countries. Korea has continuously been ranked between 5th to 7th among ASEAN's trading partners since 2000. In 2015, Korea's exports to ASEAN were 74.8 billion USD and Korea's imports from ASEAN were 45 billion USD, which made the total trade volume between Korea and ASEAN almost 120 billion USD.⁶⁶⁾ If Korea-ASEAN trade were to stop due to a war on the Korean peninsula, ASEAN would immediately lose an export market of 53 billion USD.

	Export to Korea (Mil. USD)	Total Export (Mil. USD)	Korea's Portion (%)
Brunei	1,175	9,365	12.5
Indonesia	10,621	176,292	6.0
Malaysia	8,557	234,248	3.7
Philippines	2,532	61,796	4.1
Myanmar	527	22,460	2.3
Singapore	16,703	410,076	4.1
Vietnam	7,144	143,039	5.0

[Table 2] ASEAN Countries' Exports to Korea⁶⁷⁾

In addition, we have to think about the nature of Korea-ASEAN trade, especially focusing on what items of trade cause trade deficits for ASEAN countries towards Korea. If we look at Korea's exports to ASEAN countries, the major items for trade are electronic goods and parts (HS code 85), mineral fuel, petroleum, and petroleum refined items (HS code 27). These items are the No. 1 and 2 in Korea-ASEAN bilateral trade. ASEAN imports from Korea are not simply imports for consumers. The items are the parts or raw materials required for the next stage production, which are exports items. If the imports from Korea are not available, it means the exports from Southeast Asia to the world market and furthermore the whole economies of ASEAN countries would be seriously damaged. If the exporters of ASEAN countries are in trouble it would have consequences for local employment and the income of those employed in these export sectors in Southeast Asia, which subsequently would affect the Gross National

66) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 44-45.

67) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 62-63.

Production (GDP) of ASEAN countries. In short, any emergency situation on the Korean peninsula would have direct and substantial negative impacts on the ASEAN economy.

2. Investment

Southeast Asia is Korea's No. 2 or 3 investment destination. From ASEAN's point of view, Korea is the 6th biggest investor in ASEAN countries. Korea invested 9.7 billion USD into 10 ASEAN countries in 2015. Korea's investment comes after the EU, Japan, the US, China and Australia. In percentage terms, Korea's investment into Southeast Asia accounts for 3.3% of total foreign investment into Southeast Asia. ASEAN countries are building an economic community among themselves. They claim that ASEAN is a single economy. If we exclude intra-ASEAN investment, Korea's investment is 4% of the total investment into ASEAN.

	Including ASEAN		Excluding ASEAN	
	Investment (Mil. USD)	Percentage (%)	Investment (Mil. USD)	Percentage (%)
ASEAN	24,377	17.9	-	-
EU	29,268	21.5	29,268.5	26.2
Japan	13,381	9.8	13,381.1	12.0
US	13,042	9.6	13,042.3	11.7
Hong Kong	9,505	7.0	9,504.9	8.5
China	8,869	6.5	8,869.4	7.9
Australia	5,703	4.2	5,703.4	5.1
Korea	4,469	3.3	4,468.9	4.0
Taiwan	2,814	2.1	2,814.1	2.5
Canada	1,264	0.9	1,264.0	1.1
Others	23,487	17.2	23,487.5	21.0
Total	136,181	100.0	111,804.0	100.0

[Table 3] Major Partners' Investment to ASEAN Countries⁶⁸⁾

68) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 80-81.

While Korea's portion is just 4% of total FDI to ASEAN, Korea's position varies country by country. Korean FDI is ranked within the top ten in eight out of 10 countries. It is ranked 1st in Cambodia, 7th in Indonesia, 4th in Laos, 2nd in Malaysia, 2nd in Myanmar, 10th in the Philippines and 4th in Vietnam. If we exclude intra-ASEAN investment again, Korea's position is higher and more significant. Korea comes 5th, 2nd, 1st, 8th, 7th and 2nd in Indonesia, Laos, Myanmar, the Philippines, Thailand and Vietnam, respectively. In short, Korea is among the top three investors in Cambodia, Malaysia, Myanmar, Laos, and Vietnam 5 countries in Southeast Asia. Excluding intra-ASEAN investment, Korea is the top investor in Cambodia and Myanmar, and is 2nd in Malaysia, Laos, and Vietnam.

	Korean FDI (Mil. USD)	Total FDI (Mil. USD)	Percentage (%)
Cambodia	1,027	2,691	38.2
Indonesia	1,127	28,530	3.9
Laos	113	2,320	4.9
Malaysia	1,741	9,701	17.9
Myanmar	641	4,107	15.6
Philippines	94	4,211	2.2
Thailand	457	14,885	3.1
Vietnam	777	16,348	4.8

[Table 4] Korea's FDI to ASEAN Countries⁶⁹⁾

Korean investment into Cambodia, Malaysia and Myanmar deserves special mention. Korean investments in Malaysia and Myanmar are substantial from those countries' perspective. Korean investments account for 17.5% and 15.6% of the total FDI to Malaysia and Myanmar, respectively. If Korean investment in these two countries stops because of any undesirable circumstances on the Korean peninsula, it means a substantial economic shock for these two countries. Furthermore, Korean investment accounts for 40% of total FDI to Cambodia. If the inflow of Korean capital to Cambodia stops, then it would have disastrous consequences for the Cambodian economy.

Every country in the world, especially developing countries are trying hard to attract more FDI for economic growth. Through FDI, a country can expand facilities for

69) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 80-81.

manufacturing and build infrastructure. It has a good impact on national income by creating more jobs. Indirectly, technology transfer is expected through foreign direct investment. In addition, businesses set up with foreign capital can establish training institutions to staff people in their manufacturing lines. Overall there are many positive impacts of FDI. Korea foreign investment in Southeast Asia is particularly led by the manufacturing sector. If Korean capital is invested in the service industry, it is mostly investment in the retail sector rather than the financial and banking sector. The former creates more jobs for local people than the latter. Considering this, Korea's investment is very important in many respects for ASEAN countries. The loss of Korean FDI due to an emergency situation on the Korean peninsula will be a serious problem for ASEAN countries.

3. Workers' Remittances and Tourism

More than other aspects, migrant workers' remittances to their home countries is affected by the security situation on the Korean peninsula. According to Korea Immigration Service, there were more than 600,000 foreign workers in Korea as of January 2016. There were 273,453 people under the E-9 foreign migrant worker visa, under which most ASEAN migrant workers are employed. As the table below shows, there were 196,129 migrant workers from seven ASEAN countries in Korea which is 71% of all workers under the E-9 arrangement.⁷⁰⁾

Nationality	Number of People	Percentage (%)
Vietnam	49,275	18.0
Indonesia	38,581	14.1
Cambodia	35,269	12.9
Philippines	29,543	10.8
Thailand	24,217	8.9
Myanmar	17,751	6.5
East Timor	1,493	0.5
Southeast Asia total	196,129	71.7
Total	273,453	100.0

[Table 5] ASEAN Workers in Korea by Nationality⁷¹⁾

70) Korea Immigration Service. 2016. Monthly Statistics on Incoming/Outgoing People and Policy on Foreigners. January 2016.

Meanwhile, E-9 visa holders and visiting workers (ethnic Korean, H-2 visa holders) foreign workers' remittances to their home countries was 3.9 billion USD (4.1 trillion Korean Won) in the year 2013, according to a report published by IMO Migration Research and Training Centre in 2015. If this is divided further, foreign workers, excluding ethnic Koreans, have sent a total 2.8 billion USD to their home countries, which is 2.9 trillion Korean Won.⁷²⁾ The two statistics combined together allow us to estimate how much remittances by ASEAN workers are made. Since 70% of E-9 holding migrant workers are from Southeast Asia, roughly 70% of the E-9 holders' remittance flowed into ASEAN countries. Then, roughly more than 2 billion USD (around 2.1 trillion Korean Won) are sent to ASEAN workers based in Korea each year. Although this is a result of two different statistics combined, no one can deny that a substantial amount is annually remitted to Southeast Asia by foreign workers. We can safely say that an additional 2 billion USD of economic benefits will disappear for those ASEAN countries that send many foreign workers to Korea, including Indonesia, Cambodia, Thailand, and the Philippines.

Korean tourists to ASEAN countries will also be affected by any security situation on the Korean peninsula as well. The table below shows the number of Korean people who visited ASEAN countries in 2015. A total of 19.3 million Korean people made overseas trips in 2015. Out of that number, 4.92 million Koreans visited Southeast Asia which is 25% of the total number of Koreans who travelled overseas in 2015. Popular wisdom would expect that China is the number one destination for Korean tourists, but this is wrong. The number of Korean visitors to Southeast Asia outnumbers the number of visitors to China by 500,000.

71) Singapore, Malaysia, Brunei and Laos are excluded in this statistic. There are no people coming to Korea to work as inexperienced workers in Korea from three countries Singapore, Malaysia and Brunei. In addition, the chance for Laotian people coming to Korea as migrant workers is limited. If any, the number of Laotian workers in Korea is negligible.

72) Kang Dongkwan. 2015. Overseas Remittance and Issues of Remittance IMOMRTC Issue Brief. No. 2015-10. pp. 4-5.

	Korean Visitors	Percentage (%)
Total Korean Overseas Visitors	19,310,430	100.00
Thailand	1,376,925	7.13
Vietnam	1,152,349	5.97
Singapore	531,800	2.75
Philippines	997,135	5.16
Cambodia	352,506	1.83
Indonesia	145,926	0.76
Malaysia	205,013	1.06
Myanmar	63,715	0.33
Laos	96,085	0.50
Total	4,921,454	25.49

[Table 6] Korean Tourists to ASEAN Countries in 2015⁷³⁾

Meanwhile, the average spending of Korean tourists overseas was 1,084 USD per person in 2015 according to statistics published by the Korea Tourism Organization.⁷⁴⁾ Of course we cannot expect that people spend the same amount in different countries. Tourist spending varies country by country. Nevertheless, we can guess how much Korean tourists spent in ASEAN countries by multiplying the number of visitors and average spending by individual. In 2015, Korean tourists spent 5.3 billion USD in ASEAN countries. The economic loss of Southeast Asia countries in the form of tourist revenue would be 5.3 billion USD if Korean visitors stopped visiting ASEAN countries due to security reasons on the Korean peninsula.

Thailand is the most popular Korean tourist destination and will lose 1.5 billion USD in tourism revenue a year if Korean people stopped visiting Thailand. In addition, tourism revenue accounts for a substantial part of ASEAN countries GDP. The contribution that tourism makes to the national GDP in Southeast Asia is as follows: 9.6% in Indonesia, 15% in Malaysia, 11% in the Philippines, 10.3% in Singapore, 19.7%

73) Korea Tourism Organization. 2016. Major Destination of Korean Overseas Tourism (Dated February, 2016)

<http://kto.visitkorea.or.kr/kor/notice/data/statis/profit/board/view.kto?id=426283&isNotice=false&instanceId=294&rnum=2>. Original Data does not include data on Brunei (In Korean).

74) Korea Tourism Organization. Trends of Foreign Tourists, Korean Overseas Travel, Tourism Revenues and Spending (November 2015) (In Korean)

in Thailand, 9.7% in Vietnam.⁷⁵⁾ Therefore, the decrease of tourism revenue would have a significant impact on GDP of individual countries in Southeast Asia.

4. Political and Socio-cultural Interests

The economic losses that ASEAN countries would have to bear can be estimated in numerical form and are quite visible. Political, socio-cultural losses, however, cannot be shown tangibly. Nevertheless, those losses are as critical as economic ones. From a political-security perspective, ASEAN cannot remain neutral anymore on Korean peninsula issues or any undesirable security development on the peninsula. There are two potential threats to Southeast Asia arising from insecurity on the Korean peninsula. First, if there is any war or conflict on the Korean peninsula, it would have a negative impact on the building of the ASEAN Community, especially on establishing the ASEAN Political-Security Community. Second, Northeast Asia and Southeast Asia are no longer separate two regions they are largely viewed as an integrated single region by outsiders. Any tension or conflict in the region of which ASEAN is a part would have negative political, security and economic implications for ASEAN.

The year 2016 is a major turning point for ASEAN. At the end of 2015, the leaders of ASEAN countries announced the ASEAN Community. Building a community among ASEAN countries has been a long-term goal of ASEAN. The ASEAN Community is supposed to be built on the basis of three pillars ASEAN Political-Security Community (APSC), ASEAN Economic Community (AEC), and ASEAN Socio-cultural Community (ASCC). The ASEAN Political-Security Community is not just focusing on intra-ASEAN security and political issues. The blueprint of APSC mentions, in the interest of preserving and enhancing peace and stability in the region, the APSC seeks to strengthen the mutually beneficial relations between ASEAN and its Dialogue Partners and friends. In doing so, it also maintains the centrality and proactive role of ASEAN in a regional architecture that is open, transparent and inclusive.⁷⁶⁾

75) Tourism Information System, Tourism Industry's Contribution to National Economy by Countries (<https://know.tour.go.kr/main/main.do>) (In Korean)

76) ASEAN. 2009. ASEAN Political-Security Community Blueprint. (<http://asean.org/wp-content/uploads/images/archive/5187-18.pdf>)

If APSC intends to be truly central in the regional environment, then ASEAN has to be more proactive and has to make its position on major regional security issues heard. If ASEAN avoids engaging in regional security matters, the position of ASEAN and the meaning of ASEAN centrality will be eroded. In the same logic, ASEAN has to make its position clearer on Korean peninsula issues. Without the proactive role of ASEAN and without actively engaging on regional security issues, the position and meaning of APSC would be meaningless.

There is also a substantial socio-cultural cost that ASEAN has to bear if the stability on the Korean peninsula is threatened. In 2013, the Korean peninsula experienced major instability. From December 2012, North Korea launched a rocket, which was followed by US sanctions, a 3rd nuclear test by North Korea, and additional UN sanctions on North Korea. In the first half of 2013, a series of security developments unfolded on the peninsula including North Korea announcing the Korean War Armistice Treaty null and void, which was a response to Korea-US joint military exercises, invalidating a non-aggression agreement between North and South, cutting the military hotline on the west coast of the Korean peninsula between North and South, and eventually the closure of the Kaesung Industrial Complex. This series of events marked the most dangerous moment between the North and South in recent years.

In this development, the Thai government announced that there was a meeting to prepare the evacuation of Thai people on the peninsula. Then the Thai labour minister came out with a detailed plan to evacuate Thai nationals. According to this, Thai people on the peninsula were supposed to gather in Busan, a port city on the southern end of the Korean peninsula. Thai military aircraft and ships would be mobilized to transport these people to Japan, Taiwan and China.⁷⁷⁾ In addition, there was a specific order from the Thai government to the officer in charge of labor issues at the Thai Embassy in Seoul to update the names and phone numbers of Thai workers in Korea. Thailand is the only country that revealed this detailed evacuation plan in 2013. Nevertheless,

77) Thailand Ministry of Labor. 2013. Ministry of Labour ready to evacuate Thai from South Korea in case of emergency (dated 01 April 2013) (<http://www.mol.go.th/en/content/ministry-labour-ready-evacuate-thai-south-korea-case-emergency>)

other ASEAN countries have no option but to seriously think about evacuation of their nationals if there are mounting military tensions on the Korean peninsula.

Country	People	Country	People
Vietnam	148,950	Thailand	94,335
Philippines	54,518	Cambodia	44,562
Indonesia	42,090	Myanmar	21,926
Malaysia	10,707	Singapore	2,993
Laos	977	Brunei	143

[Table 7] ASEAN Nationals in Korea, 2017

As one can see in the above table, there were a total of 420,000 ASEAN people in Korea as of January 2017. A large portion of this figure were migrant workers as well as some for business, study, and tourism. The number also includes marriage migrants. If there is a military conflict or clash on the Korean peninsula, the safety of these ASEAN people will be an issue for ASEAN governments. In the event of war, the lives of these ASEAN people are in danger despite the best efforts of ASEAN governments to evacuate these people. It will be an extremely difficult operation. In addition, an emergency operation would cost enormous financial resources for ASEAN governments. An emergency situation on the Korean peninsula therefore not just threatens the lives of ASEAN people in Korea, but also is a heavy political and financial burden for ASEAN countries.

Official Development Assistance (ODA) to ASEAN countries, offered by Korea, is often categorized as an economic cooperation, but in fact it is within the categorization of socio-cultural cooperation under the Korea-ASEAN cooperation framework. It is unavoidable that the Korean government cannot offer ODA to the international community anymore if there is a military clash between North Korea and South Korea. Southeast Asia is a core focus of Korean ODA. Korea has taken ODA seriously not just as a means of development cooperation, but also as an instrument to facilitate economic cooperation between Korea and Southeast Asia.

	Grant	Loan	Others	Total	Percentage (%)
Cambodia	35.9	36.6	-3.9	68.6	17.7
Indonesia	23.5	6.1	-8.2	21.4	5.5
Laos	19.8	9.2	0.0	29.0	7.5
Malaysia	0.3	-	-	0.3	0.1
Myanmar	25.5	-	-	25.5	6.6
Philippines	32.7	33.7	-5.5	60.9	15.7
Thailand	3.4	3.4	-	3.4	0.9
Vietnam	50.3	136.7	-8.2	178.8	46.1
Total	191.4	225.7	-25.8	387.9	100.0

[Table 8] Korean ODA to ASEAN Countries in 2014, USD Mil.⁷⁸⁾

As shown in the above table, with the exception of Singapore and Brunei which are high income countries, all ASEAN countries receive ODA either through grants or loans. Korea provided 390 million USD in ODA to ASEAN countries in 2014. The ratio between grants and loans is 49:51. Vietnam is the biggest beneficiary of Korean ODA to Southeast Asia, receiving almost half (46%) of all ODA offered by Korea to Southeast Asia, followed by Cambodia and the Philippines. Indonesia, Laos and Myanmar receive similar amounts from Korea. Some more developed countries such as Thailand and Malaysia receive only a nominal amount from Korea. If there were a war or serious military clash between North Korea and South Korea, Korean ODA to Vietnam, Cambodia and the Philippines would stop. Of course, these countries would receive assistance from other countries. Nevertheless, the loss of Korean assistance would have an impact.

5. Indirect Impacts: Trade and FDI with Extra-regional Countries

Increasingly Northeast Asia and Southeast Asia are viewed as part of one integrated region of East Asia from the perspective of extra-regional observers. Any instability on the Korean peninsula could be interpreted as a source of instability in the other part of this integrated region including Southeast Asia. Already people in the region recognize that the two regions, Northeast Asia and Southeast Asia, are inextricably integrated when the two regions experienced a simultaneous economic crisis in 1997-98,

78) ASEAN-Korea Centre. 2016. 2016 ASEAN & Korea in Figures. pp. 38. Singapore and Brunei are not getting any types of Korea's Foreign ODA.

which propelled regional economic cooperation efforts such as the ASEAN+3 and EAS.

Given this development, any emergency or instability in Northeast Asia and the Korean peninsula would lead to a review of political, economic and security risks in Southeast Asia as well. Currently, ASEAN is one of the world's fastest growing economies. It attracts attention with its economic potential. In addition, the ASEAN Economic Community, which is an economically integrated 10 countries, is the icing on the cake. In 2016, the Organization of Economic Cooperation and Development (OECD) published a report on the Economic Outlook for Southeast Asia, China and India 2016. The OECD predicted that the average GDP growth rate of the ASEAN-10 countries from 2016 to 2020 would be 5.2% annually. If we exclude Singapore, which is an advanced economy, and Brunei, which is a high-income country based on natural resources, the average growth predicted outpaces that of China. ASEAN would grow 7% annually, while China is expected to grow 6% annually. Particularly, developing ASEAN countries such as Vietnam, Cambodia, Laos and Myanmar are expected to record more than 6% annual growth while Myanmar is expected to grow 8.3% annually.⁷⁹⁾

What matters here is that the economic growth of ASEAN countries is mainly driven by exports and FDI. Average trade dependency of ASEAN countries exceeds 100% and reaches to 121.8%. Southeast Asia is one of the most trade dependent regions in the world. Furthermore, those countries that lead economic growth in the region such as Malaysia, Singapore, Thailand and Vietnam are more dependent on trade than the other ASEAN countries. For example, Singapore's trade dependency is 326% while that of Vietnam is 179%.

Country	Trade Dependency (%)	Country	Trade Dependency (%)
Brunei	85	Myanmar	47
Cambodia	128	Philippines	63
Indonesia	42	Singapore	326
Laos	87	Thailand	127
Malaysia	134	Vietnam	179
ASEAN Average		21.8	

[Table 9] ASEAN Countries' Trade Dependency, 2015⁸⁰⁾

79) OECD. 2016. Economic Outlook for Southeast Asia, China and India 2016.

(http://www.oecd.org/dev/asia-pacific/SAEO2016_Overview%20with%20cover%20light.pdf)

80) World Bank Statistics (<http://data.worldbank.org/indicator/NE.TRD.GNFS.ZS>)

Even worse, the volume of trade between ASEAN and non-ASEAN countries is much bigger than that of intra-ASEAN trade. As shown in the table below, the average trade volume of ASEAN and non-ASEAN countries is three times bigger than that of intra-ASEAN trade. The only exception is Laos, which is still economically developing. Even in the case of Myanmar, the ratio between extra-regional trade and intra-regional trade is 60:40. In the remaining countries, the extra-regional trade volume is much bigger than that of intra-regional trade. In Vietnam, extra-regional trade is seven times bigger than that of intra-regional trade. This means that most ASEAN countries are much more dependent on extra-regional countries for their trade and thus are more vulnerable to the perception that those countries have of ASEAN countries. The perception is easily affected by political and security stability in the wider region of East Asia.

	Intra ASEAN Trade		Extra-ASEAN Trade	
	Volume (Mil. USD)	Percentage (%)	Volume (Mil. USD)	Percentage (%)
Brunei	2,645	27.6	6,947	72.4
Cambodia	4,462	22.7	15,214	77.3
Indonesia	63,610	21.7	229,452	78.3
Laos	4,357	64.4	2,407	35.6
Malaysia	102,848	27.4	272,321	72.6
Myanmar	11,467	39.4	17,637	60.6
Philippines	25,601	19.9	103,343	80.1
Singapore	182,051	27.5	481,059	72.5
Thailand	104,821	25.1	312,327	74.9
Vietnam	41,891	12.8	285,853	87.2
Total	543,751	24.0	1,726,559	76.0

[Table 10] ASEAN Countries' Intra/Extra-ASEAN Trade⁸¹⁾

With these two observations, the following conclusion can be drawn. Trade accounts for a significant part of ASEAN economic growth. If we look at the ratio between extra-regional and intra-regional trade, ASEAN countries are much more dependent on extra-regional trade. In this context, any undesirable development on the Korean

81) ASEAN Secretariat's Trade Statistics (http://asean.org/?static_post=external-trade-statistics-3)

peninsula will have significant negative impacts on these economies in Southeast Asia. Instability in Northeast Asia can cause concerns among extra-regional countries. This negative perception on the regional situation can cause negative assessments of the ASEAN economy, which eventually can result in capital flight and trade declines.

ASEAN has a bigger problem when it comes to investment, which drives ASEAN economic growth. As mentioned earlier, the more advanced economics in Southeast Asia have been to open to outside trade from early on. With this open economic structure, those countries have depended on FDI for their economic growth, including procuring much-needed capital from abroad. The trend continues today and FDI continues to fuel the economic growth of ASEAN countries.

Country	FDI in 2015 (Mil. USD)			Intra/Extra Ratio (%)	
	Intra-ASEAN	Extra-ASEAN	Total	Intra	Extra
Brunei	86.7	84.7	171.3	50.6	49.4
Cambodia	425.4	1,275.6	1,701.0	25.0	75.0
Indonesia	9,499.0	7,417.8	16,916.8	56.2	43.8
Laos	221.8	857.3	1,079.2	20.6	79.4
Malaysia	2,719.0	8,570.6	11,289.6	24.1	75.9
Myanmar	2,230.6	593.8	2,824.5	79.0	21.0
Philippines	66.2	5,658.0	5,724.2	1.2	98.8
Singapore	3,416.3	57,868.5	61,284.8	5.6	94.4
Thailand	1,413.7	6,613.8	8,027.5	17.6	82.4
Vietnam	2,153.5	9,646.5	11,800.0	18.2	81.8
Total	22,232.2	98,586.6	120,818.8	18.4	81.6

[Table 11] Intra/Extra-ASEAN FDI Flow in 2015⁸²⁾

As shown the table above, with the exception of Brunei, Indonesia and Myanmar, the remaining seven countries of ASEAN are more dependent on extra-regional investment than from other fellow ASEAN countries. In fact, with its recent economic opening, Myanmar will also be more dependent on extra-regional investment in the near future. In the case of Indonesia and Brunei, the gap between intra-regional and extra-regional investment is not big whereas 98.9% of FDI to the Philippines comes from extra-regional countries.

82) ASEAN Secretariat, Investment Statistics
(http://asean.org/?static_post=foreign-direct-investment-statistics)

As with trade, extra-regional investment assessments on the potential of ASEAN economies would be substantially and adversely affected by the security situation in Northeast Asia and on the Korean peninsula. This is because investors do not differentiate between Northeast Asia from Southeast Asia. They regard the two regions as a single integrated one region. Security problems in one part of the region will have negative impacts on another part. With 20% of intra-regional investment, fellow ASEAN countries would not be a big help for their neighbors. In sum, any security problem on the Korean peninsula will affect the perception of extra-regional investors and then adversely affect investors' confidence in the ASEAN economy, which will in turn have negative impacts on the future growth of ASEAN economies.

VI. Conclusion

The threat posed by North Korea and its nuclear weapons development is the most important security challenge facing the Korean peninsula. But the sense of threat is not shared by every country in East Asia. It is wrong to assume that other countries or regions will feel the same level of threat by North Korea as we have here in Korea. It thus does not make sense to approach other countries to seek their support for our position and policies on the assumption that they have the same threat assessment. However, it would also be wrong to assume that Southeast Asia should not feel threatened by North Korea's provocations due to its geographic distance given ASEAN countries belong to the same shared region of East Asia.

When we approach Southeast Asia to seek its support regarding Korean peninsula issues or the North Korea nuclear issue, Korea has to be more cautious on the one hand and has to be more strategic on the other. If we approach Southeast Asia with the assumption that they will feel the same way as we do about North Korea's threat, it only increases Korean peninsula fatigue among ASEAN countries. Yet if we approach Southeast Asia with a simple normative assertion that the North Korea threat is undermining the region's peace and stability, it will not impress upon ASEAN countries a sense of urgency.

This report argues that when we try to persuade ASEAN countries to take greater interest

in and support the Korean position regarding security challenges on the Korean peninsula, a better option would be to clearly articulate the specific benefits or costs that could be incurred to ASEAN countries. This is a very preliminary analysis, but could be deployed as a convenient tool in discussions of Korean security with ASEAN countries. Identifying tangible and clearly measurable consequences of insecurity will be more effective in persuading ASEAN countries.

The substantial volume of Korea-ASEAN trade and investment is crucial not only Korea but also for Southeast Asia. If there were a military clash or conflict on the Korean peninsula, all of this trade and investment, as well as the substantial remittances from migrant workers, would all come to a halt and would mean a substantial economic loss for ASEAN countries. More importantly, the safety and security of hundreds of thousands of ASEAN migrant workers, students, tourists, visitors and marriage migrants currently in Korea would be in danger.

Furthermore, instability on the Korean peninsula would destabilize Northeast Asia and the broader East Asian region, including Southeast Asia. This situation will create an unfavourable environment for trade and investment also in Southeast Asia. Given that one of the key pillars of economic growth in Southeast Asia is FDI from non-ASEAN countries, instability on the Korean peninsula would have grave and negative impacts on Southeast Asia's long term economic future. The vision of an ASEAN Political and Security Community in which ASEAN will play a bigger role in regional security issues will be tarnished if ASEAN maintains a neutral position or stays quiet on the Korean peninsula issue.

This report demonstrated the direct economic and other types of losses with reference to statistics on the ASEAN-Korea relationship. Further work is needed with more sophisticated analysis, methodology and modelling of the concrete benefits and costs arising from potential instability on the Korean peninsula for ASEAN countries. Then, it will be a very effective tool to adopt when Korea tries to engage Southeast Asia on the Korean peninsula issue and to persuade Southeast Asia to support Korea's position vis-a-vis North Korea.

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China's Maritime Disputes and Permanent Court of Arbitration: Compliance Problems

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〈Abstract〉

Like many other rising powers before, the People's Republic of China (PRC) pursues its foreign policy following its grand strategy for more power and influence. The PRC grand strategy has been fundamentally shaped and deeply colored by Beijing political interests that centered around the security of the one-party regime of the Chinese Communist Party (CCP). In the 2010s, such interests have led to a rather unambiguous Three-R strategy in dealing with China's main outside restrainer, the United States. Essentially, China eyes the top position of global power and leadership currently occupied by the United States with great amount of complex feelings of antipathy, dread, and envy. The deeply-rooted ideational path and the historical logic of Chinese polity determine that, without a sea change of sociopolitical institutions and values at home, the PRC is destined to be a lasting rival and challenger to the United States and Beijing is trying everything to resist, reduce, and replace the American power and leadership, first in the neighborhood and then wherever and whenever possible. To China's neighbors and the world at large, Beijing's Three-R strategy of resisting, reducing, and replacing is likely to constrain significantly international cooperation. It will increasingly force the nations especially in Asia to choose side, voluntarily or involuntarily, and to settle past scores and current and future issues with growing deference to Chinese demands and preferences.

Essentially, the PRC has a core interest of tenaciously protecting its political system of a non-hereditary autocracy that is fundamentally at odds with the dominant political values and norms represented by the current international leader. It is truly ironic that the U.S.-led post-Cold War liberal world order has enabled China to be secure and prosperous as a nation; yet it constantly makes the PRC rulers fundamentally insecure and discontent because the institutional and normative incompatibilities created by the tradition and ideation of Chinese politics. From the same imperial playbook, Beijing

has to keep away, confront, and challenge the American leadership in today's world and, ultimately, seek to replace Washington.

Therefore, the PRC has refused to be a full-fledged member of the post-Cold War world community by subscribing fully its values and rules and by shouldering proper shares of obligations. The fearful yet wealthy Chinese leaders are rule-of-force rulers, so they continuously seek refuge in more power through extensive state monopolies and extraction, aggressive mercantilist policies, and steady military expansions. Chinese leaders openly stated the goal of China's development is to have a "Rich Country and Strong Army," similar to the official purpose of the pre-World War II Japan, so to safeguard the CCP rule as China's top core interest, resist and deny American power, and replace American leadership, one step at a time. Accordingly, the PLA (People's Liberation Army) is already growing at a pace much faster than the red-hot Chinese economy for over two decades, with many expensive and blue-water capable and far-reaching military capabilities (such as anti-satellite ability, submarines, long distance missiles, blue water fleets, and airplane carriers) being actively developed.

The main constraint against Beijing's Blue Dream remains to be the military capabilities of those that could counter the PLA Navy. The U.S. Navy and the naval forces of the American allies chiefly Japan are the main external checking forces. The U.S. challenge of the Chinese claims in the South China Sea in the form of sailing within the 12 miles of the artificial Chinese islands and flying over those constructions are now perhaps the mostly noticeable signs of such external restrictions. However, the American will and capability in doing so should not be taken for granted, nor are they guaranteed forever. Some in the United States have long questioned the necessity and rationality to oppose and challenge the Chinese in those "very far away" places over a few "already built" islets. While the Chinese are investing heavily to resist, reduce, and replace the American leadership and power; some the United States are rationalizing and philosophizing the rise of China and especially the Chinese Blue Dream as some historical phenomena that will have to run their due courses. "As we watch Beijing's renewed assertiveness in its neighborhood, particularly in the South China Sea, should we hear echoes of Roosevelt's actions in the Caribbean?" commented a leading American scholar of international affairs, "If China really follows early 20th-century America's

footsteps, we ain't seen nothing yet." To use space for time or space for peace could very well become a new American policy versus China's Blue Dream. To the regional parties that may have disputes and conflicts with China over maritime interests and rights, from Korea, Japan, to the ASEAN (Association of Southeast Asian Nations), how to keep the United States engaged in the region with credible force and will remains the key. In an ironic way, what Beijing wants to achieve through the relentless pursuit of its Blue Dream may turn out to be unlikely even impossible in the end as a NATO-like (North Atlantic Treaty Organization) regional alliance network could very well emerge soon as the result to further contain and challenge the rise of the PRC.

China claims sovereignty over almost all the islands, reefs and rocks in the sea — including those hundreds of miles from Chinese shores. In the past two years, Beijing has turned seven reefs and rocks into nascent military outposts, with airstrips and radar installations under construction. An estimated \$5 trillion in global trade passes each year through the South China Sea, which is home to rich fishing grounds and a potentially vast wealth of oil, gas and other natural resources.

China has launched a massive land seizure and rebuilding effort throughout the South China Sea in recent years, transforming numerous reefs into artificial islands that can support military installations, all the while ignoring competing claims over the region by Brunei, Malaysia, Vietnam and Taiwan, as well as the Philippines. The Hague court also ruled that none of the Spratly Islands granted China an exclusive economic zone, and that its construction activities on Mischief Reef caused "irreparable harm" to the reef's ecosystem.

When the Philippines filed a case against China over territories that have been in dispute for years to the Permanent Court of Arbitration (PCA) in Hague in 2013, China accepted the challenge with confidence. In response to the Filipino's, filing China refuses to recognize the Philippine case and says all disputes should be resolved through bilateral talks. Beijing has stepped up its rhetoric ahead of an expected ruling by the Permanent Court of Arbitration in The Hague on the Philippines case.

With high confidence and extended arrogance, the Chinese Foreign Ministry spokesperson came out and said: "As far as I know, there are more than 40 countries

that have made statements or made their positions known through all kinds of means." She further went on by elaborating that "more and more countries are expressing themselves and showing their support for China on the South China Sea issue." She added that any unbiased country would support China. Countries including Burundi, Slovenia, Niger and Mozambique had pledged their support for China.

However, the verdict obviously came out against China in July 2016. Upon hearing the final decision, from the top leader to the media in China refused to accept it. Instead the Chinese government went out on its own in reaching the Filipino government in an attempt to coax it to nullify the verdict.

China could not accept the verdict by the Court for a couple of reasons. One is that it would undermine the legitimacy of its claims to the sovereignty over other territories that are currently in dispute with neighboring states. The other is that if concede to uphold the ruling, it will mean de facto nullification of its maritime demarcation lines, the so-called "Nine-dashed line." Both consequences will heavily affect the legitimacy of the Chinese regime who has proclaimed its outright sovereignty to maritime territories that basically covers the entire South China Sea.

A set of critical questions naturally arises at this juncture. Will China uphold the ruling as a "responsible state?" Will it abide by the rule of the institution that it is a member of? On what grounds does China refuse to accept the verdict? What will this mean to China's prospective status as a responsible state? Is this the beginning of China's exceptionalism? What will this all mean to the institutions whose rules and decisions are not legally-binding?

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I. China's Blue Dream: To Be a Great Maritime Power

1. China's Three-R Strategy

Like many other rising powers before, the People's Republic of China (PRC) pursues its foreign policy following its grand strategy for more power and influence. The PRC grand strategy has been fundamentally shaped and deeply colored by Beijing political interests that centered around the security of the one-party regime of the Chinese Communist Party (CCP). In the 2010s, such interests have led to a rather unambiguous Three-R strategy in dealing with China's main outside restrainer, the United States. Essentially, China eyes the top position of global power and leadership currently occupied by the United States with great amount of complex feelings of antipathy, dread, and envy. The deeply-rooted ideational path and the historical logic of Chinese polity determine that, without a sea change of sociopolitical institutions and values at home,¹⁾ the PRC is destined to be a lasting rival and challenger to the United States and Beijing is trying everything to resist, reduce, and replace the American power and leadership, first in the neighborhood and then wherever and whenever possible. To China's neighbors and the world at large, Beijing's Three-R strategy of resisting, reducing, and replacing is likely to constrain significantly international cooperation.²⁾ It will increasingly force the nations especially in Asia to choose side, voluntarily or involuntarily, and to settle past scores and current and future issues with growing deference to Chinese demands and preferences.

Essentially, the PRC has a core interest of tenaciously protecting its political system of a non-hereditary autocracy that is fundamentally at odds with the dominant political values and norms represented by the current international leader. It is truly ironic that the U.S.-led post-Cold War liberal world order has enabled China to be secure and prosperous as a nation; yet it constantly makes the PRC rulers fundamentally insecure and discontent because the institutional and normative incompatibilities created by the

1) For an analysis of tradition and ideation of the Chinese foreign policy, see Fei-Ling Wang, *The China Order: Centralia, World Empire, and the Nature of Chinese Power*, Albany, NY: SUNY Press, 2017.

2). Rosemary Foot & Andrew Walter, *China, the United States, and Global Order*, New York: Cambridge University Press, 2010.

tradition and ideation of Chinese politics. From the same imperial playbook, Beijing has to keep away, confront, and challenge the American leadership in today's world and, ultimately, seek to replace Washington.³⁾

Therefore, the PRC has refused to be a full-fledged member of the post-Cold War world community by subscribing fully its values and rules and by shouldering proper shares of obligations. The fearful yet wealthy Chinese leaders are rule-of-force rulers, so they continuously seek refuge in more power through extensive state monopolies and extraction, aggressive mercantilist policies, and steady military expansions. Chinese leaders openly stated the goal of China's development is to have a "Rich Country and Strong Army,"⁴⁾ similar to the official purpose of the pre-World War II Japan, so to safeguard the CCP rule as China's top core interest, resist and deny American power, and replace American leadership, one step at a time.⁵⁾ Accordingly, the PLA (People's Liberation Army) is already growing at a pace much faster than the red-hot Chinese economy for over two decades, with many expensive and blue-water capable and far-reaching military capabilities (such as anti-satellite ability, submarines, long distance missiles, blue water fleets, and airplane carriers) being actively developed.

Nourished by the surging calls of the PRC statist nationalism or patriotism, the rising Chinese power is already seen exercising a "new" leadership in East Asia as part of the overall strategic game with the United States. The Chinese disputes with Southeast Asian nations over the islets in the South China Sea and with Japan and Korea over the rights in the Yellow Sea and East China Sea are also moves in the direction of reducing and replacing the American power in the region through acquiring deference and submission based on fear, to be generated by achieving a power parity even superiority in the region versus the United States. An outspoken spokesman of the PLA opened declared that the PRC must build up its military power as fast as it can so to "make foes suffer and give friends goodies" and "only when we are not afraid of the United States anymore, other nations will then be afraid of us."⁶⁾

3) Yu Xilai, "Shijie zhixu de sanzong jiegou" (Three structures of world order), *Zhanlue yu guanli* (Strategy and management), Beijing, No. 2, 1998.

4) Hu Jintao, "Meeting the PLA Delegation", Xinhua & CCTV, Beijing, March 12, 2011.

5) Author's interviews of Chinese officials and scholars, 2015-17.

6) PLA Navy Major General Yang Yi quoted in Liu Bin et al, "Sijuji ganbu de 'shijie guan'" (Worldviews of the bureau-level officials), *Nanfang zhoumu* (Southern weekend), Guangzhou, April 27, 2012.

For its neighbors, China's Three-R strategy and the related policies towards the United States offers short-term opportunities but spells long-term trouble. Beijing's "united front" effort of resisting and reducing American power and influence creates windfalls for regional nations in terms of preferential trade terms, direct financial gains and overall friendly accommodation. Beijing's effort in this regard has seen some clear successes such as in the 2012 foreign ministers meeting of the ASEAN, where the Southeast Asian nations for the first time ever in 45 years, failed to agree on a joint-communiqué due to the disagreement between Cambodia and other members (the Philippines and Vietnam) about whether to mention the territorial disputes with China about the South China Sea.⁷⁾

As speculated by many, in the long run especially, China's imperialist tradition in the region is likely to re-manifests itself.⁸⁾ And indeed Beijing has become increasingly assertive and demanding, felt most acutely by its neighboring nations.⁹⁾ As some have already observed, Beijing is having its own version of Monroe Doctrine.¹⁰⁾ The expected further tensions in the U.S.-China rivalry is likely to force East Asian nations to take sides more explicitly and expensively down the road. One interesting and yet largely overlooked development is perhaps the success of the Shanghai Cooperation Organization (SCO) that China has helped to create and has been very active in. Over the past few years, President Xi Jinping's ambitious "One Belt One Road" strategy is aiming at reshaping the geopolitics and geo-economy on and around the Eurasian continent.

As a basis for Beijing's Three-R strategy, the PRC has been increasing its military spending at a speed much faster than China's economic growth for many years (see diagram below).

China's military spending increased greatly since 2000

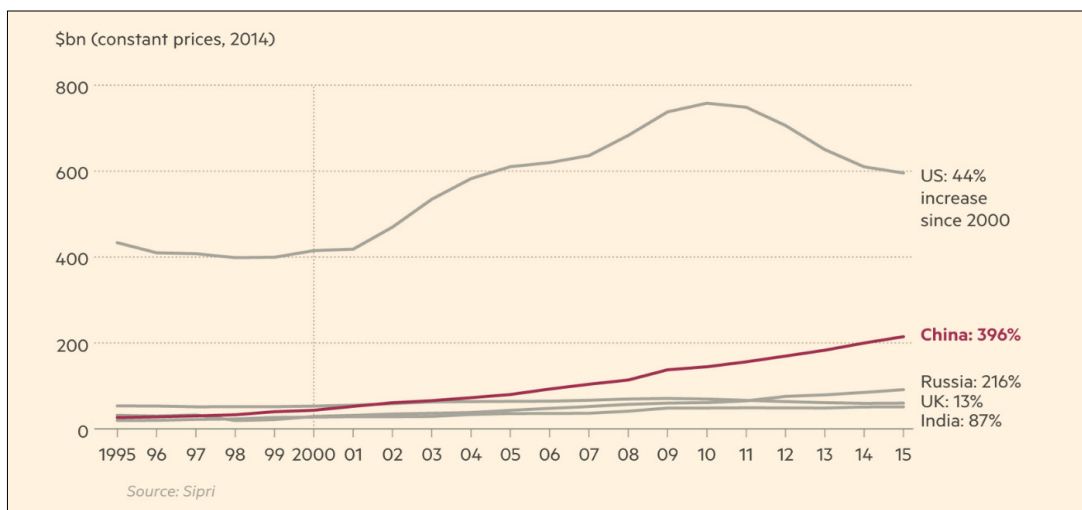
7) Sopheng Cheang, "ASEAN fails to reach common ground on China row," AP, Phnom Penh, July 13, 2012.

8) Yuan-kang Wang, *Harmony and War: Confucian Culture and Chinese Power Politics*, New York, NY: Columbia University Press, 2010.

9) Author's interviews of officials and analysts in East Asia, 2011-14.

10) Steven Walt, "Dealing With a Chinese Monroe Doctrine," *The New York Times* on line, May 2, 2012.

2. China's Blue Dream of Great Maritime Power



With that as the background, we can now outline China's maritime strategy. Since at the latest 2012, Beijing has the determined policy to become "a great maritime power."¹¹⁾ At the Chinese Communist Party's (CCP) 18th Party Congress in 2012, Beijing declared that it will seek to become a great maritime power (海洋强国) that requires a strong navy (the PLAN) that would be "commensurate with China's international standing." Subsequent PRC defense white paper (released in 2013) reaffirmed the goal. On August 28, 2013, the top Chinese leadership, the Politburo of the CCP presided by Xi Jinping, had a special session to discuss the construction of a great maritime power. A major CCP publication defined the Chinese Blue Dream of great maritime power as to "exert its great comprehensive power to develop, utilize, protect, manage, and control oceans." An American analyst believes that the PRC is building a large and effective coast guard; a world-class merchant marine and fishing fleet; a globally recognized shipbuilding capacity; and an ability to harvest or extract economically important maritime resources.¹²⁾

11) CCTV, "Xi Jinping: to push forward the construction of a maritime great power (习近平: 推动海洋强国建设), chinanews.com/shipin/2013/07-31/news264229.shtml. Keith Johnson, Dan De Luce, "U.S. Gears Up to Challenge Beijing's 'Great Wall of Sand'," *Foreign Policy*, September 22, 2015. *AFP*. "US Defense Chief Warns of Conflict in South China Sea," November 8, 2015.

12) Michael McDevitt, "Beijing's Dream: Becoming a Maritime Superpower," *National Interest*, July 1, 2016.

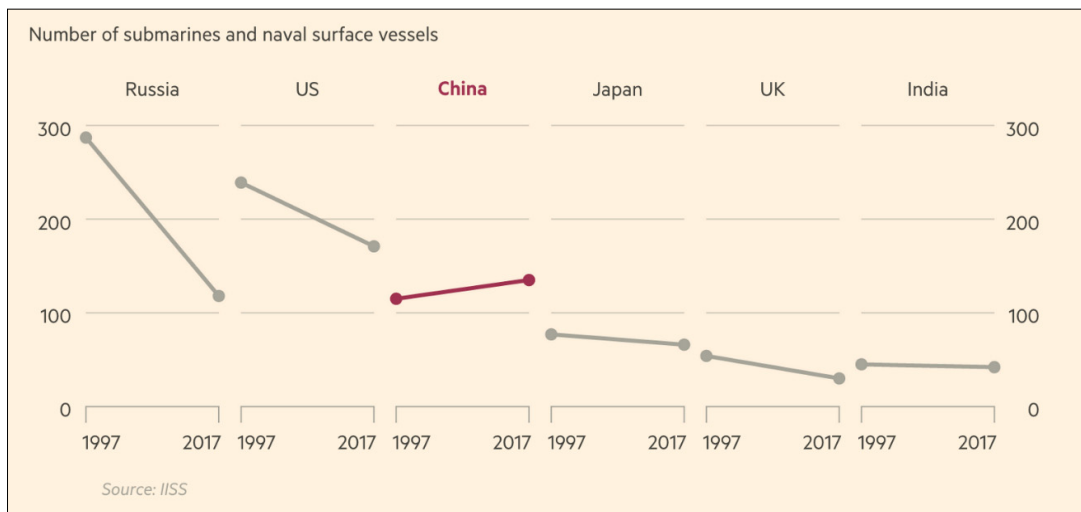
China's booming maritime interests includes shipping and natural resources harvesting. Therefore, it is Beijing's attempt to control the major sea lanes in the East and South China seas and beyond. It calls for expanding China's naval presence beyond the Island Chain in the West Pacific and deeply into the Indian Ocean. For that, blessed by its massive financial resources due to its extraordinary ability of extraction of the world's second largest economy, the PRC has invested heavily in port-infrastructure all over the world. Accordingly, China has spent greatly to grow its military power through building and militarizing artificial islets and developing its fleets, "launching new warships like making dumplings." Beijing has also used its financial means to effectively pursue its maritime strategy through diplomacy. The great expansion of the China's maritime power seems to be only somewhat checked by its prudent wish to avoid a direct military confrontation with the navies of the United States (and its allies such as Japan) at this time. But the fear of that confrontation, which has been predicted by many Chinese analysts as inevitable, may now increasingly lose its restraining ability.¹³⁾ As one PRC analyst argued, the rising Chinese Blue Dream of great maritime power is poised to have a "historical clash" with the United States that has been the dominant maritime power in the West Pacific since World War II.¹⁴⁾ In 2006, China had only seven warships that could be called modern; by 2017, it had 70 and the number will reach 90 by 2020.¹⁵⁾ This is Beijing's way to control its self-declared "maritime territory" of more than 300 square kilometers that often significantly overlaps with the maritime territories of many of its neighbors.

13) Ibid.

14) Zhu Feng, "China's speed of island building in the South China Sea led to the rapid rise of American strategic suspicions," (朱锋:中国在南中国海岛礁建设速度让美战略戒心急升) <http://www.aisixiang.com/data/95882.html>. Posted January 3, 2016.

15) Toshi Yoshihara, Comments at Center of New American Security, Washington DC, July, 2017.

[Figure 1] Chinese Navy: world's fastest-growing

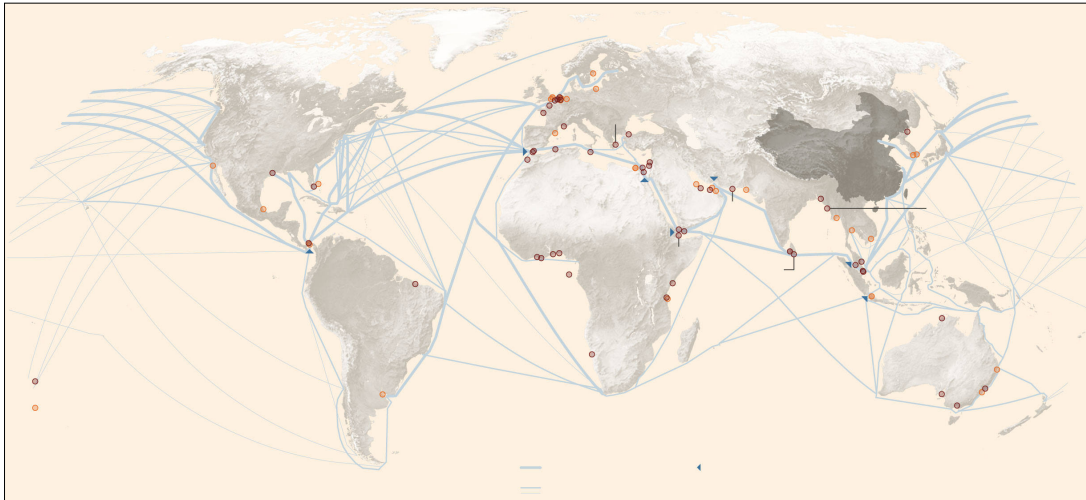


An important part of China's Blue Dream is to expand Chinese control of foreign ports. Given that the Chinese economy is powered by its vast export-import business - China is now the world's largest trader nation - that mostly involving transporting bulky labor-intensive and resource-heavy products, Beijing has been investing massively in building and control major ports around the world. By the end of 2015, China has invested in two-thirds of the world's fifty largest container ports, rising from twenty-percent in 2010. And those ports handled 67 per cent of global container volumes, up from 42 per cent in 2010.¹⁶⁾ The much-watched Chinese developments of ports include Pakistan's Arabian Sea port of Gwadar and Djibouti on the Horn of Africa that are perched on the world's energy shipping route: China moves most of its imported oil on the sea-lanes nearby. The PRC uses investment and political pressure to get its way. An interesting case is Colombo of Sri Lanka, where the government in 2017 was pressured by Beijing to resume the Chinese constriction and control of the port after suspending the project for 18 months.¹⁷⁾

16) James Kynge, Chris Campbell, Amy Kazmin and Farhan Bokhari "Beijing's global power play, How China rules the waves," *Financial Times*, January 12, 2017.

17) Mercy A. Kuo. "The Power of Ports: China's Maritime March," *The Diplomat*, March 08, 2017.

[Figure 2] China's Investment in Major Ports since 1994.



(Ports in China and Hong Kong not shown. Includes investments announced and completed.) Sources: King's College, London; FT research; CIA (shipping routes).

Another major and much watched aspect of China's maritime strategy has been to construct artificial islets in the disputed South China Sea on the mostly submerged and rocks. Spending untold billions and mobilize large number of people, the PRC has created at least seven sizable islands out of the previously partially even totally submerged reefs in strategic locations in the South China Sea over the past few years. This increased the PRC controlled "territory" in the South China Sea by many hundreds of times. Considerable disturbance of the marine-life environment and local eco-system aside, the Chinese making of islands have literally demonstrated the Chinese determination and investment in pushing Beijing's blue dream for maritime great power to, first, establish its dominance in its neighboring waters. Reports about the militarization of those artificial islands suggest that the PLA has the control of those footholds in the blue waters.

Chinese construction in the disputed Spratly Islands

- Chinese claimed territorial waters
- Reef reclaimed or built on by China
- - - Philippines exclusive economic zone, under UN rules



100km — 100 miles — Source: Philippine Government



[Figure 3] Building Islands: Subi Reef – Before and After



[Figure 4] Building Islands: Johnson South Reef – Size-wise (original islet inside the red square)



[Figure 5] Building Islands: Fiery Cross Reef- Speed Matters



3. Observations of China's Blue Dream for Great Maritime Power

It is still at an early stage of China's effort to realize its Blue Dream for a Great Maritime Power status. Much of the effort remains flux and changeable, chiefly subject to the interaction between China and its neighboring countries especially the United States. A few observations, however, may have become obvious:

First, the PRC Blue Dream is deeply rooted in its overall strategy that aims at resisting, reducing, and replacing the American leadership and power. It is politically very determined and heavily invested with many vest-interest groups already emerged to greatly shape Beijing's policy agenda. Despite the many nationalistic rhetoric for more space, resources and glory—which are indeed gaining lots of followings inside the PRC—the Chinese Blue Dream is not mostly based on economic calculation or driven by a traditional imperialist/colonialist expansion plan. It serves chiefly the ruling CCP's political objective. As long as Beijing continues to harbor its political insecurity and views the U.S. as its leading external detractor and constrainer, China will continue to push out, on land and especially in the sea, with little even no regard of economic cost-benefit analysis. The current programs and activities in the South China Sea, for example, are parts of that overall strategy and parts of more, potentially global, steps for further ventures that appears disregarding the cost, financial or otherwise. There is therefore no reason to think that Beijing will stop after securing its oil-shipping routes and “protecting” its claimed three million square km “maritime territory.”

Second, since the main goal of the PRC Blue Dream is about power and control so to restore its past dominance in East Asia and resist, reduce, and replace the power and leadership of the United States, not so much about financial and colonial gains, the affected parties in the region may actually face a complex mixture of good and bad news. On the one hand, there are the opportunities for short-term peace and financial gains for the cooperative and the acquiescent. On the other hand, there is an almost certain fate of political subjugation in the long run. The neighbors in disputes with the PRC have to show accommodation even submission for possible though not guaranteed peace and prosperity under the advancing China Order. They could also engage in an expansive and nasty arms race and confrontation that may necessitate

their alliances with outside powers (mainly the United States and perhaps also Australia, India, and Russia). This may shift the geopolitics in the region and beyond, even resulting in a new alliance network in the Western Pacific and Indian oceans. The current taking shape of a U.S.-Japan-Australia-India security and military cooperation is perhaps one of the major consequences of Beijing's push for its Blue Dream. It is becoming increasingly clear that a confrontation with the PRC's massive money machine and the increasingly mightier PLA Navy is probably beyond the ability of the most if not all of the regional entities. Even Japan, the third largest economy in the world, is likely inadequate in facing the PRC short of a massive rearmament of the Japanese military, something will surely set off alarms in many capitals. Smaller regional countries such as the Philippines under President Rodrigo Duterte may hope to play smart diplomacy and count on Beijing's good will of generosity and self-constraints. Given the nature and determination of China's Blue Dream, such plays are likely to be transitional and ineffective in the end. The pending development of Chinese presence in the Scarborough Shoal area, for example, will likely spell an end of Manila's wishful policy.

Third, given that Beijing has generally dismissed the role of international law governing the disputes in the South and East China seas, there is likely very limited effect of international organizations and legal process in dealing with the Chinese maritime expansion. Despite the fact that Beijing has vowed it will never be a bullying hegemon and promised "to always protect international rule of law, fairness and justice," it has firmly rejected the international Permanent Court of Arbitration on the Law of the Seas regarding the Philippines arbitration case.¹⁸⁾ China's anti-establishment action, while fully expected as a part of the Blue Dream, doesn't necessarily mean that Beijing will be totally rule-less or lawless in the region and beyond regarding maritime rights. Rather, it suggests that the PRC is pushing for a new maritime order under its dominance, within or outside the existing international regimes. Though it is still too early to see what that China Order on the sea would entail, it may not be too much a stretch to find the answer in the past effort by the Japanese Empire before and during World War II.

18) Graham Allison, "Of Course China, Like All Great Powers, Will Ignore an International Legal Verdict," *The Diplomat*, July 11, 2016. Xi Jinping, "China does not accept any arbitration" (习近平:中国不接受任何仲裁), *Beijing:Xinhua*, July 12, 2016.

Finally, the main constraint against Beijing's Blue Dream remains to be the military capabilities of those that could counter the PLA Navy. The U.S. Navy and the naval forces of the American allies chiefly Japan are the main external checking forces. The U.S. challenge of the Chinese claims in the South China Sea in the form of sailing within the 12 miles of the artificial Chinese islands and flying over those constructions are now perhaps the mostly noticeable signs of such external restrictions. However, the American will and capability in doing so should not be taken for granted, nor are they guaranteed forever. Some in the United States have long questioned the necessity and rationality to oppose and challenge the Chinese in those "very far away" places over a few "already built" islets.¹⁹⁾ While the Chinese are investing heavily to resist, reduce, and replace the American leadership and power; some the United States are rationalizing and philosophizing the rise of China and especially the Chinese Blue Dream as some historical phenomena that will have to run their due courses. "As we watch Beijing's renewed assertiveness in its neighborhood, particularly in the South China Sea, should we hear echoes of Roosevelt's actions in the Caribbean?" commented a leading American scholar of international affairs, "If China really follows early 20th-century America's footsteps, we ain't seen nothing yet."²⁰⁾ To use space for time or space for peace could very well become a new American policy versus China's Blue Dream. To the regional parties that may have disputes and conflicts with China over maritime interests and rights, from Korea, Japan, to the ASEAN (Association of Southeast Asian Nations), how to keep the United States engaged in the region with credible force and will remains the key. In an ironic way, what Beijing wants to achieve through the relentless pursuit of its Blue Dream may turn out to be unlikely even impossible in the end as a NATO-like (North Atlantic Treaty Organization) regional alliance network could very well emerge soon as the result to further contain and challenge the rise of the PRC.

19) Lyle J. Goldstein, "The South China Sea Showdown: 5 Dangerous Myths," *The National Interest*, September 29, 2015

20) Graham Allison, "China's Maritime Provocations Are Nothing Next To America's Adventurism A Century Ago," *Huffpost*, July 25, 2017.

II. Rule by Law? Or Rule by Power?: Implications for Maritime Territorial Disputes in South China Sea

When the Philippines filed a case against China over territories that have been in dispute for years to the Permanent Court of Arbitration (PCA) in Hague in 2013, China accepted the challenge with confidence. In response to the Filipino's, filing China refuses to recognize the Philippine case and says all disputes should be resolved through bilateral talks. Beijing has stepped up its rhetoric ahead of an expected ruling by the Permanent Court of Arbitration in The Hague on the Philippines case.

With high confidence and extended arrogance, the Chinese Foreign Ministry spokesperson came out and said: "As far as I know, there are more than 40 countries that have made statements or made their positions known through all kinds of means." She further went on by elaborating that "more and more countries are expressing themselves and showing their support for China on the South China Sea issue." She added that any unbiased country would support China. Countries including Burundi, Slovenia, Niger and Mozambique had pledged their support for China, the Foreign Ministry said this week.²¹⁾

However, the verdict obviously came out against China in July 2016. Upon hearing the final decision, from the top leader to the media in China refused to accept it. Instead the Chinese government went out on its own in reaching the Filipino government in an attempt to coax it to nullify the verdict.

China could not accept the verdict by the Court for a couple of reasons. One is that it would undermine the legitimacy of its claims to the sovereignty over other territories that are currently in dispute with neighboring states. The other is that if concede to uphold the ruling, it will mean de facto nullification of its maritime demarcation lines, the so-called "Nine-dashed line." Both consequences will heavily affect the legitimacy of the Chinese regime who has proclaimed its outright sovereignty to maritime territories that basically covers the entire South China Sea.

21) Reuters, May 20, 2016.

A set of critical questions naturally arises at this juncture. Will China uphold the ruling as a “responsible state?” Will it abide by the rule of the institution that it is a member of? On what grounds does China refuse to accept the verdict? What will this mean to China’s prospective status as a responsible state? Is this the beginning of China’s exceptionalism? What will this all mean to the institutions whose rules and decisions are not legally-binding?

1. The Ruling and the Award

The Court’s verdict unequivocally rebuked China’s expansive maritime claims and increasingly assertive posturing in adjacent waters. An arbitral tribunal, constituted under Article 287, Annex VII of the United Nations Convention on the Law of the Sea (UNCLOS), presented the Philippines a landmark victory against China. Not only did the tribunal exercise jurisdiction on almost all of the Philippines’ arguments, it also ruled favorably on the thorniest and consequential items, particularly China’s doctrine of “historic rights.” (See APPENDIX-2)

By skillfully limiting its case to questions of “sovereign rights” and maritime entitlement claims, the Philippines transformed the UNCLOS into a primary legal reference for resolving the South China Sea disputes. In response, China rejected the decision with characteristic braggadocio, dismissing it as a “a piece of scrap paper” that is “null and void” in the view of the Chinese nation. It has insisted that the arbitration body has gone beyond its mandate by ruling against China’s claims in the South China Sea.

But as legal experts have argued, it is ultimately up to the arbitration bodies—not signatories—constituted under the aegis of the UNCLOS to decide whether they can exercise jurisdiction over a maritime dispute or not. Last October, the arbitration body flatly rejected China’s invocation of exemption clauses (Art. 298, Section 2, Part XV) under the UNCLOS.

Contrary to China’s claims, the verdict, in accordance to Article 296 as well as Article 11 of Annex VII of the UNCLOS, is *final* and *binding*. As a signatory to the convention, it is incumbent upon China to comply accordingly.

But the question of enforcement has cast a long shadow on the momentary triumphalist deluge in Manila and other likeminded capitals, which welcomed the verdict as a milestone in promoting ruled-based resolution of maritime disputes. No wonder the Rodrigo Duterte administration called for patience, sobriety, and self-restraint. Without the support of its key allies, particularly the United States and Japan, and regional players such as the Association of Southeast Asian Nations (ASEAN), the Philippines face an uphill battle in translating its *de jure* victory into *de facto* gains on the ground.

What is at stake here isn't only the Philippines' interests within its exclusive economic zone (EEZ), but no less than the future of the regional security architecture. And this is precisely why the United States, which has taken up the cudgels for upholding international law by protecting freedom of navigation in global waters, should immediately ratify the UNCLOS. Otherwise, its moral authority as the anchor of East Asian order and emerging containment strategy against China will continue to come under question.

The verdict didn't fully nullify China's expansive claims in adjacent waters, but it dramatically compressed it, at least in the eyes of international law. The tribunal ruled that China's doctrine of "historic rights," which serves as the basis of its "Nine-dashed line" claims, is "incompatible" with modern legal regimes, specifically the UNCLOS. In the tribunal's assessment, "there was no evidence that China had historically exercised exclusive control over the *waters* or their resources."

Since the UNCLOS and arbitration bodies under its aegis can't exercise jurisdiction over territorial disputes, the tribunal fell short of determining the ownership of contested land features in the area. Yet, it further reduced China's claims in the area by ruling that there are no naturally-formed "islands"—land features that can independently support human habitation—in the Spratlys.

Most land-features occupied by China, the court ruled, are low-tide-elevations, which can neither generate sovereignty claim nor enjoy maritime entitlements. Chinese occupied land features such as the Johnson South Reef, Hughes Reef, and the Scarborough Shoal were determined as "rocks," which can at most generate 12 nautical miles of territorial sea, but can't generate their own EEZs.

With China not possessing even a single island in the Spratlys, the verdict made it clear that the Asian powerhouse doesn't have any overlapping EEZs with the Philippines or other claimants (Brunei, Malaysia, Taiwan, and Vietnam all have competing claims in the Spratlys). China's southernmost island province, Hainan, is located more than 600 nautical miles away. But what about China's artificially-made islands in the Spratlys?

Not only are they legally inadmissible (see Article 60 of UNCLOS), the tribunal ruled, but they are also "incompatible with the obligations" of member states, "inflict[ing] irreparable harm to the maritime environment" and "destroy[ing] evidence of natural condition of features" in the Spratlys. The verdict also made it clear that China "violated the Philippines sovereign rights" by preventing the Southeast Asian country from enjoying its sovereign rights—from fishing to offshore oil and gas development—within its EEZ.²²⁾

Beijing refuses to recognize the authority of the permanent court of arbitration (PCA) in The Hague, the UN-appointed tribunal that adjudicates in international disputes over maritime territory, in this issue. China has stated: "It will neither accept nor participate in the arbitration unilaterally initiated by the Philippines."

In October, 2015, however, the PCA ruled that: "Both the Philippines and China are parties to the convention [on the law of the sea] and bound by its provisions on the settlement of disputes." It also found that China's refusal to participate did not deprive the court of jurisdiction and that the Philippines' decision to commence arbitration unilaterally was not an abuse of the convention's dispute settlement procedures.²³⁾

China claims about 90% of the South China Sea, including the archipelago of islands, reefs and atolls known as the Spratlys. In May 2016, US officials claimed the Chinese had built up an extra 800 hectares (2,000 acres) to their occupied outposts across the South China Sea over the previous 18 months.

22) Richard Javad Heydarian, "The day after: Enforcing The Hague verdict in the South China Sea," July 25, 2016, <https://www.brookings.edu/opinions/the-day-after-enforcing-the-hague-verdict-in-the-south-china-sea/> (검색일: 2017년 6월 2일).

23) Heydarian, "The day after: Enforcing The Hague verdict in the South China Sea,"

The main focus of activity has been on Mischief Reef, where satellite images reveal the island is growing bigger, and is surrounded by fleets of dredgers and tankers. The US has grown increasingly alarmed at China's maritime muscle-flexing, combined with the lack of cohesion among US allies in the region, and has begun to challenge Beijing's claims more directly on water and in the air.

Islands deemed suitable for human habitation, under the rules of the U N convention on the law of the sea (UNCLOS), can generate legitimate territorial claims to the surrounding waters and seabed – opening up access to potential mineral or energy resources as well as providing strategic military bases. Among submissions made by the Philippines is one that argues: “Mischief Reef, Second Thomas Shoal and Subi Reef are low-tide elevations that do not generate entitlement to a territorial sea, exclusive economic zone or continental shelf, and are not features that are capable of appropriation by occupation or otherwise.”

Manila also asserts that: “China's claims to sovereign rights and jurisdiction, and to 'historic rights', with respect to the maritime areas of the South China Sea encompassed by the so-called 'nine-dash line' are contrary to the convention and without lawful effect to the extent that they exceed the geographic and substantive limits of China's maritime entitlements under UNCLOS.” Beijing is also accused of unlawfully preventing “Philippine fishermen from pursuing their livelihoods by interfering with traditional fishing activities at Scarborough Shoal” and “endangering the health and well-being of Philippine personnel at Second Thomas Shoal.”²⁴⁾

24) 2017. 7. 31. UN tribunal at The Hague to rule on rival claims to South China Sea islands | World news | The Guardian
<https://www.theguardian.com/world/2015/nov/23/south-china-sea-dispute-hague-competing-claims> 2/3

2. What is Unclos and Permanent Arbitration Court?

(1) PCA as an institution

Over 160 countries and the European Union have signed on to the United Nations Convention on the Law of the Sea (Unclos). The United States, however, has long declined to do so. Now, China has indicated that it might exit the convention if an upcoming ruling by an international tribunal runs counter to its questionable position: that nearly the entire South China Sea is its territory.

The Permanent Court of Arbitration ('PCA') is an intergovernmental organization that provides a variety of dispute resolution services to the international community. It has unparalleled experience in the administration of interstate arbitrations that concern oceans and the law of the sea. To date, it has acted as Registry in eleven *ad hoc* arbitrations brought in accordance with Annex VII of the 1982 UN Law of the Sea Convention. It has also administered a number of arbitrations involving the law of the sea that were not brought under the Convention.

The Permanent Court of Arbitration is an intergovernmental organization tasked with facilitating arbitration and other modes of dispute resolution between States, State entities, intergovernmental organizations, and private parties. The PCA is an autonomous institution, governed by the 117 States that are party to the PCA's founding conventions: the 1899 Convention for the Pacific Settlement of International Disputes, and its 1907 counterpart. The PCA is the oldest intergovernmental institution for the resolution of international disputes, and has developed into a modern, multi-faceted arbitral institution that has evolved with the dispute resolution needs of the international community.

The PCA's caseload has grown significantly over the last 15 years. It includes interstate disputes arising under treaties or special agreements; investment disputes arising under bilateral or multilateral investment treaties; and disputes arising under contracts between private parties and States, other State controlled entities or intergovernmental organizations. In addition to arbitration, the PCA also administers a range of dispute resolution mechanisms, including mediation, conciliation, fact-finding commissions,

expert determinations, and review panels.

The PCA International Bureau is the secretariat of the organization and is headed by the PCA Secretary-General. The International Bureau is engaged in the day-to-day work of the organization in providing administrative support to arbitration tribunals or commissions operating under the PCA's auspices. The PCA's caseload encompasses territorial, maritime, and treaty disputes between States, as well as international commercial and investment disputes between States and private parties. The PCA's Secretariat is also available to assist in the selection of arbitrators, and may be called upon to designate or act as appointing authority. In addition to its work in the resolution of particular disputes, the PCA is a centre for scholarship and publication, and a forum for legal discourse. The International Bureau has its headquarters at the Peace Palace in The Hague, the Netherlands.

Since September 2014, the PCA has administered seven interstate arbitrations concerning oceans and the law of the sea. Six of these were Annex VII arbitrations:

The Bay of Bengal Maritime Boundary Arbitration between Bangladesh and India, PCA Case No. 2010-16;

The Atlanto-Scandian Herring Arbitration (The Kingdom of Denmark in respect of the Faroe Islands v. The European Union), PCA Case No. 2013-30;

The Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom), PCA Case No. 2011-03;

The Republic of the Philippines v. The People's Republic of China, PCA Case No. 2013-19;

The Arctic Sunrise Arbitration (Netherlands v. Russia), PCA Case No. 2014-02; and
The Duzgit Integrity Arbitration (Malta v. São Tomé and Príncipe), PCA Case No. 2014-07.

The PCA promotes the peaceful resolution of international disputes through other activities. For example, the PCA administers other types of dispute resolution procedures, such as mediations, conciliations, fact-finding commissions, expert determinations and review panels, including in the context of the law of the sea. The PCA also maintains a Financial Assistance Fund to enable developing States to meet

the costs of dispute settlement. This facility has been used in an interstate arbitration concerning the law of the sea. In 2014 the PCA held a number of guest lectures covering law of the sea cases to audiences that included government officials and diplomats, representatives of other international organizations, and fellows from the International Tribunal for the Law of the Sea and the Nippon Foundation.

The Under-Secretary-General for Legal Affairs has invited the PCA to contribute to the United Nations Secretary-General's 2015 report on oceans and the law of the sea. The invitation requests information on the activities undertaken by the PCA that are connected to specific provisions of UN General Assembly Resolution 69/245 and that have occurred since September 2014. The provision of Resolution 69/245 that is most relevant to the PCA is Part IV on the "Peaceful settlement of disputes".

(2) The PCA and The 1982 UN Convention on the Law of the Sea

The 1982 United Nations Convention on the Law of the Sea (the "Convention"), sets forth in Part XV rules for the resolution of disputes between State Parties arising out of the interpretation or application of the Convention. Pursuant to Article 287(3) of the Convention, arbitration under Annex VII is the default means of dispute settlement if a State has not expressed any preference with respect to the means of dispute resolution available under Article 287(1) of the Convention. Likewise, pursuant to Article 287(5) of the Convention, if the parties have not accepted the same procedure for the settlement of the dispute, arbitration under Annex VII is the default means of dispute settlement.

Since the Convention came into force in 1994, 11 cases submitted to arbitration under Annex VII of the Convention have been administered by the PCA:

1. *The Duzgit Integrity Arbitration (Malta v. São Tomé and Príncipe)*, PCA Case No. 2014-07, which was instituted in October 2013 and is still pending;
2. *The Arctic Sunrise Arbitration (Netherlands v. Russian Federation)*, PCA Case No. 2014-02, which was instituted in October 2013 and is still pending;

3. *The Atlanto-Scandian Herring Arbitration (Denmark in respect of the Faroe Islands v. European Union)*, PCA Case No. 2013-30, which was instituted in August 2013 and terminated by a tribunal order issued in September 2014, following an agreement between the Parties reached in August 2014;
4. *The Republic of the Philippines v. The People's Republic of China*, PCA Case No. 2013-19, which was instituted in January 2013 and is still pending;
5. *The Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)*, PCA Case No. 2011-03, which was instituted in December 2010 and decided by a final award rendered on 18 March 2015;
6. *The Bay of Bengal Maritime Boundary Arbitration (Bangladesh v. India)*, PCA Case No. 2010-16, which was instituted in October 2009 and decided by a final award rendered on 7 July 2014;
7. *The ARA Libertad Arbitration (Argentina v. Ghana)*, PCA Case No. 2013-11, which was instituted in October 2012 and terminated by a tribunal order issued in November 2013 following an agreement between the Parties reached in September 2013;
8. *Barbados v. Trinidad and Tobago*, PCA Case No. 2004-02, which was instituted in February 2004 and decided by a final award rendered on 11 April 2006;
9. *Guyana v. Suriname*, PCA Case No. 2004-04, which was instituted in February 2004 and decided by a final award rendered on 17 September 2007;
10. *Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore)*, PCA Case No. 2004-05, which was instituted in July 2003 and terminated by an award on agreed terms rendered on 1 September 2005; and
11. *The MOX Plant Case (Ireland v. United Kingdom)*, PCA Case No 2001-03, which was instituted in November 2001 and terminated through a tribunal order issued on 6 June 2008.

The PCA has developed expertise in dealing with organizational, procedural, and substantive issues that may arise in Annex VII arbitrations. The Annex VII arbitrations relevant to the reporting period for the UN Secretary General's 2015 Report on oceans and the law of the sea are discussed in further detail in section E, below.²⁵⁾

(3) PCA's legal standing

The PCA is not a "court" in the conventional understanding of that term but an administrative organization with the object of having permanent and readily available means to serve as the registry for purposes of international arbitration and other related procedures, including commissions of enquiry and conciliation.²⁶⁾ The Administrative Council (formally the Permanent Administrative Council) is a body composed of all diplomatic representatives of Member States accredited to the Netherlands.²⁷⁾ It is presided by the Minister of Foreign Affairs of the Netherlands, who is also a member.²⁸⁾ It is responsible for "direction and control" of the International Bureau, directs the organisation's budget and reports on its activities.²⁹⁾ The International Bureau is the Secretariat of the PCA and is headed by the Secretary-General. It provides linguistic, research, administrative support to PCA arbitration tribunals.³⁰⁾

The judges or arbitrators that hear cases are called Members of the Court. Each member state may appoint up to four "of known competency in questions of international law, of the highest moral reputation and disposed to accept the duties of arbitrators" for a renewable 6-year term. Members of each member state together form a "national group".³¹⁾ Members may be selected in arbitration cases in which the PCA provides

25) CONTRIBUTION OF THE PERMANENT COURT OF ARBITRATION TO THE REPORT OF THE SECRETARY-GENERAL ON OCEANS AND THE LAW OF THE SEA

26) Shabtai Rosenne, "The Hague Peace Conferences of 1899 and 1907 and International Arbitration: Reports and Documents", T.M.C. Asser Press (2001), page xxi.

27) "Administrative Council" (<https://pca-cpa.org/en/about/structure/administrative-council/>). PCA. Retrieved 30 July 2016.

28) Article 49

29) Article 49

30) "International Bureau" (<https://pca-cpa.org/en/about/structure/international-bureau/>). PCA. Retrieved 2 August 2016.

31) "Members of the Court" (<https://pca-cpa.org/en/about/structure/members-of-the-court/>). PCA.

support. National Groups may propose candidates for International Court of Justice members.³²⁾

The PCA sometimes gets confused with the International Court of Justice, which has its seat in the same building.³³⁾ The PCA is however not part of the UN system,³⁴⁾ although it does have observer status in the UN General Assembly since 1993.³⁵⁾

A. Procedure of Arbitration

In the Articles 30-57 of the Hague Convention of 1899 the rules of arbitration procedure are outlined. These rules are the adapted version of pre-existing treaties among the states. They were amended in 1907, the creation of a summary procedure for simple cases being the most conspicuous change. They came in handy again in 1920 to serve the Permanent Court of international Justice.

The first act of parties is the submission of the so called "compromises", stating the issue and the competence of the arbitrator(s). Basically the lawsuit is divided in two phases: written pleadings and oral discussion. During the first part of the procedure the agents and the barristers of parties submit and exchange all relevant documents corroborating their case.

Retrieved 2 August 2016.

32) "Members of the Court" (<https://pca-cpa.org/en/about/structure/members-of-the-court/>). PCA. Retrieved 2 August 2016.

33) "International Court of Justice" (<http://www.icj-cij.org/homepage/index.php?lang=en>). ICJ. "The International Court of Justice (ICJ) wishes to draw the attention of the media and the public to the fact that the Award in the South China Sea Arbitration (The Republic of the Philippines v. The People's Republic of China) was issued by an Arbitral Tribunal acting with the secretarial assistance of the Permanent Court of Arbitration (PCA). The relevant information can be found on the PCA's website (www.pca-cpa.org). The ICJ, which is a totally distinct institution, has had no involvement in the above mentioned case and, for that reason, there is no information about it on the ICJ's website."

34) "Arbitral court not a UN agency" (<http://www.asianews.network/content/arbitral-court-not-un-agency-22594>). Retrieved 20 July 2016. "... they confuse the PCA with the UN's International Court of Justice (ICJ)."

35) "A/RES/48/3 29th plenary meeting 13 October 1993" (<https://www.un.org/documents/ga/res/48/a48r003.htm>). United Nations General Assembly. "General Assembly of the United Nations - Observers" (<https://www.un.org/en/ga/about/observers.shtml>). UN.

In the second phase there is a verbal debate in front of the Court that retires once the debate is over to deliberate and conclude the case by a simple majority of votes.

The verdict in the writ, possibly including the dissenting views of a minority of arbitrators, is then undersigned by president and secretary (previous to 1907 by the arbitrators) and read to a public session to which the agents and lawyers of the parties are summoned. The award binding on the parties and no appeal is allowed. However, a minor restriction for revision is made in case fresh evidence of a decisive nature has come up between the debate and the award. Naturally, any decision as to its relevance and the subsequent admission of the request is up to the Court, while the compromise fixes the period within which the demand for revision must be made. It is this Article 55, incidentally, which led to heated argument within the body of the Third Commission in 1899.³⁶⁾

B. PCA courtroom.

Parties to the Convention on the Pacific Settlement of disputes of 1899 (71 member states) and 1907 (101 member states) are automatically parties to the PCA. As 51 are parties to both conventions, the PCA has 121 member states: 119 members of the United Nations, as well as Kosovo and Palestine.³⁷⁾

PCA is one of the oldest institutions for international dispute resolutions. It was established in 1899 by the first Hague Peace Conference under Articles 20 to 29 of the 1899 Hague Convention for the Pacific Settlement of International Disputes. At the second Hague Peace Conference, the earlier Convention was revised by the 1907 Convention for the Pacific Settlement of International Disputes. The Conference was convened at the initiative of Czar Nicolas II Nicholas II of Russia "with the object of seeking the most objective means of ensuring to all peoples the benefits of a real and lasting peace, and above all, of limiting the progressive development of existing

36) Eyffinger, Arthur (1988). *The Peace Palace: residence for justice, domicile of learning*. Carnegie. p. 136. ISBN 9066113316.

37) "Member States" (<https://pca-cpa.org/en/about/introduction/member-states/>). PCA. Retrieved 30 July 2016.

armaments."³⁸⁾

C. How it functions

PCA tribunals have jurisdiction for disputes based on the PCA founding documents (the Conventions on Pacific Settlement of International Disputes), or based on bilateral and multilateral treaties. Its Secretary General furthermore acts as an appointing authority for Appointing Authority When problems arise in designating arbitrators for an arbitration under UNCITRAL arbitration rules (e.g. because one of the parties refuses to designate an arbitrator, or when the designated arbitrators are unable to agree on designation of a third arbitrator), the PCA Secretary-General may be requested to serve as an appointing authority. This option is also open for other arbitration agreements, in which the Secretary General is designated.³⁹⁾ Between 2011 and 2015, 257 of such requests were submitted.⁴⁰⁾

Interstate arbitration based on the Hague Convention Arbitration between two states takes place when two member states of the PCA decide to submit a dispute for arbitration to a PCA Tribunal. The Tribunal consists of 5 arbitrators, two of which are selected by each party to the arbitration (and one of whom may be a national of the party concerned). The four arbitrators choose the fifth and presiding arbitrator.⁴¹⁾

Interstate arbitration based on UNCLOS

The United Nations Convention on the Law of the Sea (UNCLOS) provides for a dispute

38) Loukas A. Mistelis (1 May 2010). *Arbitration Rules-International Institutions-3rd Edition* (<https://books.google.com/books?id=FkPSAAQBAJ&pg=PT300>). Juris Publishing, Inc. p. 300. ISBN 978-1-933833-56-9.

39) "PCA Secretary-General as Appointing Authority" (<https://pca-cpa.org/en/services/appointing-authority/pca-secretary-general-as-appointing-authority/>). Permanent Court of Arbitration. Retrieved 30 July 2016.

40) "115th Annual Report" (<https://pca-cpa.org/wp-content/uploads/sites/175/2016/02/PCA-annual-report-2015.pdf>) Permanent Court of Arbitration. Retrieved 30 July 2016.

41) "1907 The Hague Convention for the Pacific Settlement of International Disputes" (http://avalon.law.yale.edu/20th_century/pacific.asp). Retrieved 31 July 2016.

resolution mechanism regarding maritime boundaries in which member states can choose either

the

1. International Tribunal for the Law of the Sea
2. International Court of Justice,
3. arbitral tribunal (constituted in accordance with Annex VII, UNCLOS)
4. a special arbitral tribunal (constituted in accordance with Annex VIII).

If two member states have elected different dispute resolution measures, the third option is to be used.⁴²⁾ As of August 2016, the PCA has administered 12 cases initiated by States under Annex VII to the UNCLOS,⁴³⁾ thus administering all cases initiated under this Annex except for one.⁴⁴⁾

3. China's reaction

The Chinese government reacted angrily to PCA's decision on July 6 2016, calling the ruling invalid. Some internet users also lashed out at the UN, apparently thinking the international body was linked to the tribunal. "When we make such sacrifices to keep peace, a subsidiary of the UN makes a ruling against China's sovereign rights. So what do you want to do?" a Chinese microblogger wrote in response to a UN post after the ruling was announced.

China was a founding member of the United Nations in 1945 and one of the five permanent members of the UN Security Council, along with the United States, Britain,

42) United Nations Convention on the law of the sea
https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf. Retrieved 31 July 2016. "article 287" Missing or empty |title= (help)

43) <https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Press-Release-No-11-English.pdf>

44) "United Nations Convention on the Law of the Sea" (<https://pca-cpa.org/en/services/arbitration-services/unclos/>). PCA. Retrieved 31 July 2016.

France and Russia. China has pledged to be more engaged in the UN, and is the second-biggest contributor to the organization's peacekeeping operations, paying 10.2 per cent of the UN's peacekeeping operations budget.⁴⁵⁾

Chinese government expressed its discontent by pinpointing to western media's reports that it claimed to misconstrue the public. It first attacked the irrelevancy of the authority of The Hague-based Permanent Court of Arbitration (PCA) to the backing of United Nations, and claimed to be false. Furthermore, it reasserted the statement from the United Nations that it has nothing to do with the PCA in The Hague. Beijing therefore assertively proclaimed that the verdict issued by PCA was an ill-founded award through the abuse of law on the arbitration case unilaterally initiated by the Philippines against China in 2013.

At top, even Chinese President Xi Jinping rejected the ruling and said "China's territorial sovereignty and maritime interests in the South China Sea" will not be affected. China's foreign ministry said on its website, "The award is null and void and has no binding force." China had boycotted the proceedings at the court, saying the body has no jurisdiction over the dispute, and insists it will not accept, recognize or implement any ruling on the South China Sea, despite being a signatory to UNCLOS along with the Philippines. Chinese President Xi signaled that he was in no mood to back down. "The islands in the South China Sea have been Chinese territories since ancient times," he said, according to state media. "China opposes and will never accept any claim or action based on these awards." (See APPENDIX-3 for more detailed explanation on China's official stance on jurisdiction over territories sovereignty rights in South China Seas)

Just a week before the arbitration final decision, Beijing refused to participate in the arbitration process and launched a global propaganda campaign. Foreign Minister Wang Yi was quoted as telling Secretary of State John F. Kerry that the case was a "farce." His ministry said it was delusional to think China would bow to diplomatic pressure to accept the ruling. In a statement issued just hours before The Hague panel announced its decision, a spokesman for China's foreign ministry said it would not accept "any

45) United Nations stresses separation from Hague tribunal, *South China Morning Post*, 14 July, 2016

so-called material" from the court. The Foreign Ministry said China "solemnly declares that the award is null and void and has no binding force.

State media Xinhua and online netizens expressed strong dissatisfaction the ruling. A Weibo user said in his posting that "We should unite behind the country's claim and make no concessions on the South China Sea dispute even if we have to go to war," while another user said "China should show no fear for any future economic sanction" shall China decide not to comply with the order. In its harsh-worded editorial, Xinhua even lambasted the international arbitration court to be "the source of chaos."

In short, Beijing says the tribunal lacked the jurisdiction to rule on Manila's various submissions. Though its decision is legally binding, the court lacks any mechanism to enforce its rulings.

China also went on to attack the integrity of PCA by questioning the eligibility and the selection process of a Japanese nationality judge.

After the Philippines submitted the Notification and Statement of Claim to the International Tribunal for the Law of the Sea (ITLOS) on Jan. 22, 2013, a five-member arbitral tribunal was created by then ITLOS president and former Japanese ambassador to the United States Shunji Yanai.⁴⁶⁾

According to Chinese state-run media, Yanai's role in selecting a panel highlighted "bias" in the arbitration process. The reports claimed Tokyo's own maritime disputes with Beijing in the East China Sea over the Japanese-controlled Senkaku Islands, known as Diaoyu in China, made a Japanese national unfit to play such a key a role in the case.

In an editorial in *The Jakarta Post*, June 2016, China's ambassador to Indonesia, Xie Feng, claimed that Yanai, who served as ITLOS president from 2011 to 2014 and Japan's ambassador to the U.S. from 1999 to 2001, "went to great pains to form a temporary tribunal" that can "hardly be considered as universally representative." Four of the panel's five members are European. This sentiment was echoed in a spate of interviews in Chinese state media and Op-Ed articles published in foreign newspapers over the

46) "The Hague-based Permanent Court of Arbitration not related with UN," *Xinhua*, July 13, 2016.

past two months.

In May, the Chinese Communist Party mouth piece *People's Daily* blasted the arbitrators' nationality and claimed that the panel members "do not represent global, diverse perspectives, nor do they offer the outlook of different legal systems." In the commentary, written under the pen name "Zhong Sheng," a Chinese-language homonym for the phrase "voice of China" that is often used to express the paper's views on foreign policy, Yanai was again targeted.

Four of the judges, the commentary said, "were appointed by Shunji Yanai, a biased Japanese" former ITLOS president. "Considering the East China Sea dispute between China and Japan . . . Yanai should have avoided taking part, according to the law," the commentary added. "But he deliberately ignored this fact and clearly violated procedural justice requirements." ⁴⁷⁾

The editorial did not cite what "law" or "procedural justice requirements" it was referring to. Julian Ku, a professor of constitutional law at Hofstra University in New York, said that China's claims omit an important fact. "The only reason then-ITLOS president Shunji Yanai was involved is because China refused to exercise its right to appoint a member of the tribunal and to participate in the appointment of three others," Ku wrote on the influential Lawfare blog published in conjunction with the Brookings Institution.

"Because of China's boycott of the entire proceedings, Article 3 of UNCLOS Annex VII empowers the president of ITLOS to appoint members of the tribunal if one party refuses to participate. This power accrues to him only because of China's boycott," Ku wrote.

Asked for comment on the Chinese claims, Yanai, 79, told *The Japan Times* in an interview

Thursday that "these factors are completely irrelevant to this case." "I just happen to be a Japanese, but the annex to the convention provides that in case the arbitrators are not appointed by the parties or by agreement by the parties then the president

47) "UN Arbitration Court Rules Against Beijing in South China Sea Dispute," *VOA News*, July 12, 2016, <https://www.voanews.com/a/3413156.html>

of ITLOS must do it,” Yanai said. “I followed exactly these provisions. As the president of ITLOS, I didn’t act as a Japanese representative. I don’t represent the Japanese at all in the tribunal. That is quite obvious.”

China could have chosen a Chinese arbitrator for the tribunal, Yanai said, but instead decided to ignore the process. “So in this case, I had to do the job,” he said.

Asked about the makeup of the tribunal and the number of European nationals on it, Yanai was unwavering on his decision. “This is a legal body. This is not a U.N. political institution. So the first consideration must be given to the legal capabilities of arbitrators,” he said. “All (tribunal members) are very knowledgeable people, and people of integrity. And in the international community, this constitution was very well received — except by China.” Lingering resentment over Japanese militarism and its brutal campaign in World War II remain a sore point in China, and the ruling Communist Party has often harnessed anti-Japanese sentiment to further its goals.

Analysts say that by focusing on Yanai’s nationality and the European judges, Beijing could be working to dilute the authority of the court as it works to bolster domestic approval of its policies in the South China Sea, which it calls a “core interest.” On June 28, Chinese Foreign Ministry spokesman Hong Lei blasted Japan over what he labeled as a “disgraceful track record” on the South China Sea issue. Hong said that some in Japan were “anxious to see the world in disorder” and were “running a negative publicity campaign” while “stoking tensions in the region and sowing discord among countries there.”

According to Alex Calvo, a guest professor at Nagoya University’s Law Department, Yanai’s role in the case could put Tokyo in an awkward position. “Beijing has a point when she stresses the geographical imbalance of the tribunal, and we could say, more generally, the postwar international legal architecture,” Calvo said. “This is clearly a sore point with the Chinese, and they are working hard to set up their own institutions.”

As for Yanai himself, Calvo noted that while the Senkaku and South China Sea disputes are not officially related, they could “cast a shadow over Yanai’s impartiality.”

Still, Calvo said, in terms of black letter law, he saw no reason for Yanai to have excused

himself. "Furthermore, the proper way for China to ask that would be to become a formal party to the proceedings, not through the media," he said.

Others see the court as bending over backward to accommodate a recalcitrant China. Citing the early replacement of one judge tapped for the panel over a reported conflict of interest, James Kraska, research director at the Stockton Center for the Study of International Law at the U.S. Naval War College, said Yanai's conduct had been "eminently fair." "Judge Yanai replaced one of his earlier picks once it was discovered that the selected jurist was married to a Filipino national," Kraska said. "The change underscores the responsible and fair, unbiased approach by Judge Yanai. "The idea that being Japanese makes him a biased or incapable jurist is incorrect and goes against the idea of universal standards of justice and rule of law that transcend national identity." More pressing, though, according to Nagoya University's Calvo, is China's hard-driving push to present the case as unfair. This, he said, could ultimately result in a diminishing of both the tribunal and the UNCLOS treaty. "Will this be followed by some sort of alternative to UNCLOS?" Calvo said. "I would dare say it will, if China's relative power keeps rising."⁴⁸⁾

China's government has whipped up nationalist sentiment in recent years to support its "indisputable sovereignty" over a huge swath of the South China Sea, and it has engaged in an intensive program of island-building there to extend its de facto control. About 100 demonstrators marched outside the Chinese consulate in Manila, calling on Beijing to relinquish the Scarborough Shoal, shouting "Chexit Now" - a play on the term coined for Britain's controversial push to leave the European Union.

China is now faced with a dilemma: It can signal its displeasure at the ruling by extending that program and militarizing the islands it controls, risking confrontation and even conflict with emboldened Asian neighbors and the United States. Or it can suspend the program and adopt a more conciliatory approach, at the risk of a loss of face domestically.

48) "Beijing turns on Japanese judge as Hague tribunal ruling over South China Sea nears," *Japan Times*, July 8, 2016.

Nevertheless, the outcome of the case will provide an important indication of China's willingness to submit to international law, and of what kind of global power it wants to become.⁴⁹⁾

4. China's rapprochement to the Philippines

Chinese President Xi Jinping and his Philippine counterpart, Rodrigo Duterte, held a telephone conversation Wednesday to discuss bilateral ties and regional cooperation. Xi met Duterte twice 2016 and reached important agreements, which led to the comprehensive rapprochement in bilateral ties. At present, the two countries are deepening political mutual trust and carrying out cooperation in various fields, resulting in a channel of dialogue and consultation on the South China Sea issue that are being set up.

All these efforts, in line with the fundamental interests of the two countries and peoples, have been fully affirmed by their Asian neighbors and the international community, according to Xi. Xi called on China and the Philippines to promote their pragmatic cooperation in all fields so as to better benefit the two countries and peoples. China also expressed its appreciation toward the Philippines' key role in boosting cooperation in East Asia along the right direction as the rotating presidency of the Association of Southeast Asian Nations (ASEAN).

President Xi welcomed Duterte, the leader of a friendly neighbor of China and important partner of the Belt and Road Initiative, to attend the upcoming Belt and Road Forum for International Cooperation to be held on May 14-15 2017 in Beijing, saying he looks forward to meeting with the Philippine president again.

For his part, Duterte also expressed that he was happy to see Philippine-China friendship and solidarity enhanced and their exchanges and cooperation in various areas restored and pushed forward. As the rotating presidency of ASEAN, Manila hoped to advance the bloc's relations with China, and to conduct close communication and

49) "Beijing's claims to South China Sea rejected by international tribunal," *Washington Post*, July 12, 2016.

cooperation with Beijing in international and regional issues.⁵⁰⁾

China and the Philippines in October 2016 confirmed the establishment of a biannual bilateral consultation mechanism (BCM) on the South China Sea. The announcement was made in a joint press release issued after the first meeting of the China-Philippines BCM on the South China Sea. Under the BCM, officials from the respective foreign ministries and maritime affairs agencies will meet alternately in China and the Philippines once every six months.

Consensus on setting up the BCM was reached at the diplomatic consultations between the two foreign ministries January 2017. During the just concluded first meeting, which was co-chaired by Chinese Vice Foreign Minister Liu Zhenmin and Philippine Ambassador to China Jose Sta. Romana, both sides reiterated their commitment to cooperate and to find ways forward to strengthen mutual trust and confidence in an appropriate manner. Noting the South China sea issue has "returned to the positive trajectory" in bilateral relations, Romana said in his opening remarks that the Philippines is confident in the resilience of ties with China.

Both sides reaffirmed the importance of maintaining and promoting peace and stability, freedom of navigation in and flight above the South China Sea, addressing their territorial and jurisdictional disputes by peaceful means, without resorting to the threat or use of force, through friendly consultations and negotiations by sovereign states directly concerned.

The significance of the meeting lies in the fact the Philippines has returned to the right track of bilateral consultation and managing differences properly with China. It shows the Philippines' agreement on adherence to the China-championed "dual-track" approach, which calls for disputes to be resolved peacefully through negotiation between directly concerned parties, and for China and ASEAN members to work together to maintain peace and stability in the South China Sea, as delivered by the National Institute for South China Sea Studies.

50) "Chinese, Philippine presidents discuss ties, regional cooperation over phone," *Xinhua*, May 3, 2017.

The two countries are telling the international community that they are capable of handling issues of common concern without a third party's interference. The success of the first BCM meeting represents an important signal that China and the Philippines are jointly moving toward an early conclusion on the Code of Conduct (COC) in the South China Sea, Wu said, while adding that further efforts are needed from all parties on the issue. The two sides held discussions on issues including the promotion of next-step practical maritime cooperation and the possible establishment of technical working groups.

China hoped there would be some joint development in gas and oil before maritime disputes are ultimately solved. According to the press release, the second meeting of the BCM will be held in the Philippines in the second half of this year. "The word mechanism demonstrates the bilateral consultation will be institutionalized rather than just a once-off thing," Liu said.⁵¹⁾

5. US Reaction

The US is urging China to respect the upcoming ruling, which could happen this month and is widely expected to favor the Philippines. In 2013 the Philippines petitioned an international tribunal—the Permanent Court of Arbitration, in The Hague—to rule on whether China's "nine-dash line" (see below) is valid, under Unclos. US secretary of defense Ash Carter, speaking at the Shangri-La Dialogue June 2016, stressed the importance of China respecting the tribunal's ruling:

The United States views the upcoming ruling by the UN Arbitral Tribunal on the South China Sea as an opportunity for China and the rest of the region to recommit to a principled future, to renewed diplomacy, and to lowering tensions, rather than raising them. All of us should come together to ensure this opportunity is realized. That position is undercut, of course, by the US's own failure to join Unclos.

Despite efforts by the George W. Bush and Obama administrations, and support from

51) "China, Philippines confirm twice-yearly bilateral consultation mechanism on South China Sea," *Xinhua News*, July 31, 2017.

the US business community, environmental groups, and the military, the US Senate has never ratified the convention. Ratification has been blocked for years by a few conservative Republican senators, with Oklahoma's James Inhofe playing a prominent role. Many US conservatives consider involvement in some international organizations and treaties as detrimental to national interests, and as an infringement on national sovereignty.

While she was secretary of state, Hillary Clinton said in 2012 that opposition to the treaty was "based in ideology and mythology, not in facts, evidence, or the consequences of our continuing failure to accede to the treaty." In 2009, China officially submitted its nine-dash-line map to the United Nations. The map shows most of the South China Sea being enclosed by the line. The accompanying text included this passage: China has indisputable sovereignty over the islands in the South China Sea and the adjacent waters, and enjoys sovereign rights and jurisdiction over the relevant waters as well as the seabed and subsoil thereof (see attached map).

Vietnam, Indonesia, and the Philippines subsequently objected to it. They asserted, among other things, that China's claims, as reflected in the map, are without basis under the convention. They noted the line overlaps with the exclusive economic zones (EEZs) of other nations. Under UNCLOS, nations have exclusive rights to exploiting resources in their EEZs, which extend 200 nautical miles from the shore. Some worry that China might become more aggressive after a ruling that doesn't go its way. Indeed, almost immediately after the Philippines filed the case with the tribunal, China began setting about building, and later militarizing, artificial islands from which it could project its emerging maritime power.

In a show of strength of its own, the US Navy recently deployed not one but two aircraft carrier strike groups to the South China Sea—a rare move. Now the US, while trying to tell China to abide by the international law, faces a credibility gap. If China leaves the convention, as it's now threatened to do, there's little the US can say about it.⁵²⁾

52) "China is threatening to leave a major UN sea treaty—and there's nothing the US can say," June 21, 2016 <https://qz.com/712170/china-is-threatening-to-leave-a-major-un-sea-treaty-and-theres-nothing-the-us-can-say-about-it/>

6. Implications

Although any outcome can be arbitrarily dismissed as ‘debatable’, if properly understood there should be no doubt that despite Beijing’s endlessly repeated denunciations of the tribunal’s legitimacy — and even the competence and fairness of the arbitrators — China will be legally bound by the tribunal’s decision. China claims that it has ‘indisputable sovereignty’ over the land features and waters involved in the South China Sea. It refuses to be bound by the tribunal’s anticipated decision on the grounds that the decision will necessarily deal with issues of territorial sovereignty (who owns which disputed islands) and maritime delimitation (how conflicting national water boundary claims should be resolved) and that China has never consented to any third party impartial arbitration of these issues.

China’s argument here is misleading. The tribunal has already indicated that its award will not decide those issues but will only concern itself with other important questions, all of which involve the interpretation and application of UNCLOS and are therefore within the tribunal’s decision-making authority. By ratifying the Convention, which requires compulsory dispute resolution and commits all parties to abide by whatever decision results, China clearly consented to accept the arbitration tribunal’s decision.

The Convention plainly provides for the determination of such questions by an impartial, independent group of five specialists whose membership and rules of procedure are prescribed at length. No further consent is required from any nation that has ratified the Convention and has a relevant claim brought against it. When China ratified the Convention and agreed to be bound by any decision that resulted from such a compulsory third party determination, this consent was a free exercise of Chinese sovereignty and a solemn international treaty commitment to respect and comply with whatever decision emerged from the proceedings.

Of course, since China argues that in substance the issues raised by the arbitration involve questions of territorial sovereignty and maritime delimitation — and are therefore outside the scope of the tribunal’s jurisdiction — it has the right to present these arguments for the tribunal’s determination. But China declined to participate in the tribunal’s proceedings, unilaterally claiming that, since to its own satisfaction its

arguments are legally correct, it need not present them for the tribunal's impartial consideration. Despite this, the tribunal has done its best to evaluate China's jurisdictional arguments.

Just think what a legal system the world would have if a country that has consented to compulsory third party decision-making — as countries have in over 90 international agreements — could simply renounce its solemn treaty promise while remaining within the treaty system and thumb its nose at the decision of the authorised independent tribunal. The provisions of UNCLOS clearly prohibit such conduct, which obviously constitutes a violation of international law.

China is evidently frantic to avoid being branded a violator of international law, even though, as its supporters point out, the United States, in a dispute with Nicaragua three decades ago [3], ignored a decision of the International Court of Justice after the court rejected its claim that the court lacked jurisdiction. That unfortunate action of the Reagan administration continues to damage the US's reputation to this day. Washington's reluctance to accept impartial third party dispute resolution may well be one of the reasons why the United States, disappointingly, has never ratified UNCLOS.

China's current leaders, apparently only recently aware of the widespread opposition to their South China Sea legal stance, have been striving to limit the damage Beijing is about to suffer. Their spokespeople have presented all sorts of unpersuasive defenses of their government's refusal to honor its UNCLOS commitment. A few have even argued that China, by denouncing the tribunal's allegedly improper actions, has become the true defender of international law. Instead of trying to stand international law on its head, China would be wiser to renew bilateral negotiations with the Philippines on the basis of the tribunal's binding decision.⁵³⁾

The ruling could lead to more friction between China and the United States, with the issue seen as a key test of Washington's ability to maintain its leading role in Asian security in the face of China's rising power. The State Department's spokesman John Kirby said it "hopes and expects" that China and the Philippines will abide by the ruling.

53) Jerome A. Cohen, "Like it or not, UNCLOS arbitration is legally binding for China," July 11, 2016.

“We urge all claimants to avoid provocative statements or actions.” Philippine Foreign Secretary Perfecto Yasay Jr. called the ruling a “milestone,” but he also urged “restraint and sobriety” for all concerned. Richard Javad Heydarian, an assistant professor of political science at Manila’s De La Salle University, said the verdict is “the best-case scenario that few thought possible.” “It is a clean sweep for the Philippines,” Heydarian said, “with the tribunal rejecting China’s nine-dashed line and historical rights claim as well as censuring its aggressive activities in the area and, among others, the ecological damage caused by its reclamation activity.”⁵⁴⁾

Despite Tuesday’s ruling, the United Nations has no mechanism to enforce the decision, either through military action or economic sanctions. But it could prompt China’s other Asia-Pacific rivals to also file suit, putting increased diplomatic pressure on Beijing to reduce its presence in the South China Sea.

The United States has also challenged Beijing’s increasing aggressiveness in the region, holding a number of naval exercises and deploying warships near the rebuilt reefs to assert the international freedom of navigation rules.

China claims nearly the entire 3.5 million square-kilometer South China Sea, based on its so-called “nine-dashed line,” which it says is based on ancient maps. China’s claims overlap with not only the Philippines, but also Brunei, Malaysia, Vietnam and Taiwan. Some of the disputes stretch back decades or even centuries. But tensions have worsened in recent years, as Beijing has moved to assert its control over the territory.

China refuses to participate in the tribunal, arguing it has no obligation to do so under UNCLOS. Beijing has also repeatedly insisted it will not recognize what it predicts will be a biased ruling. In the meantime, China has continued to build artificial islands and military outposts in the contested waters, in an attempt to create “facts on the ground.”

Is the ruling binding?

Technically, yes. But in reality, UNCLOS has no way to enforce its rulings, since it does

54) “Beijing’s claims to South China Sea rejected by international tribunal,” *Washington Post*, July 12, 2016.

not have a police force, an army or a way to impose sanctions on those who ignore its decisions. Some analysts have speculated that the matter could be taken to the U.N. Security Council, but China and Russia, which are permanent members, would inevitably veto any action there.

- If the ruling is not enforceable, why does it matter?
- If, as expected, the court rules at least partially in the Philippines' favor, it could put important diplomatic pressure on China. It could also provide an important symbolic victory for Asian leaders who say Beijing is ignoring international law as it seeks to assert its power in the region.

A ruling against China would also set an important legal precedent and become part of international law. It could also encourage other countries who have territorial disputes with China to take similar legal action.

- What is the U.S. stance on the dispute?
- The U.S. says it takes no official position on China's various territorial disputes. But top officials have repeatedly criticized China's actions in the South China Sea and have urged China to accept the court's eventual ruling. However, any U.S. efforts to publicly shame Beijing may be limited by the fact that Washington itself has refused to ratify UNCLOS.

7. Will China comply?

China's next move is uncertain. Some have said it may withdraw in protest from the UNCLOS treaty system. But that can only be done with a year's notice, allowing other nations plenty of time to file last-minute cases. The move also may reinforce a perception that Beijing does not want to play by the established rules of international order.

China says it prefers to solve territorial disputes through direct negotiations, but has taken no meaningful steps toward holding talks. Instead, Beijing is seemingly content to let the disputes play out as it continues building in the disputed areas.

The verdict carries significant strategic implications. First of all, it has set an encouraging precedent for fellow ASEAN countries such as Vietnam and Indonesia, which have previously threatened to take China to court over the South China Sea disputes. Even Japan is considering compulsory arbitration against China in the East China Sea.

The verdict made it very clear that China enjoys no sovereign rights to exploit the marine and energy resources within the EEZs of a number of its ASEAN members, not only the Philippines. Even if none of China's neighbors actually pursue a legal warfare strategy, these countries are in a strong position to credibly threaten Beijing with simultaneous, multiple arbitration cases.

If China fails to comply with the verdict, Manila can also ask the International Seabed Authority, constituted under the UNCLOS, to suspend existing permits it has granted China to extract seabed resources in international waters. Manila also has the option of filing additional arbitration cases against China if the latter unilaterally exploits hydrocarbon and other natural resources within the Philippines' EEZ.

Aside from a potential "legal multiplier," major naval powers such as the United States, Japan, India, France, and Australia can invoke the arbitration verdict as a basis to conduct multilateral and sustained freedom of navigation operations close to China's artificially-created islands, many of which are actually built on low-tide elevations.

This way, responsible naval powers could "enforce" at least certain dimensions of the verdict, pushing back against China's excessive claims and assertive posturing in the high seas.

So far, however, it seems that China's threats and military patrols in the area are taming the passions of its neighboring states as well as the United States. Practically all countries in the region, including the Philippines and the United States, have called for calm and self-restraint. Only Japan had the audacity to explicitly remind China that, "the tribunal's award is final and legally binding...the parties to this case are required to comply." ASEAN failed to come up with a joint statement in the wake of the verdict, even if its earlier statements, particularly at the Sunnylands Summit, reiterated the importance of rule-based resolution of the disputes in accordance to the UNCLOS.

Philippine President Duterte, meanwhile, has made it clear that it is opting for a “soft landing” with China, and interested in launching direct talks with the Xi Jinping administration. He has refused to taunt Beijing by flaunting the verdict, partly to avoid further escalation, but also in the interest of reviving bilateral investment ties, which have suffered in recent years.

For now, it seems, the Philippines' strategy is to leverage the verdict as a bargaining chip in prospective bilateral talks. Months earlier, China first asked the Philippines to drop the arbitration case and now, reportedly, to set it aside in any prospective bilateral talks with its Southeast Asian neighbor. Since Beijing is clearly aware of how much the verdict means to Manila, which invested considerable diplomatic and political capital in its legal attack, most likely China's hardline position is for domestic political consumption, given how the Communist Party took an unequivocal position that the verdict is “null and void.”

The Duterte administration has called for unconditional talks, adamant that the verdict should be a basis for any bilateral dialogue. Despite the tough rhetoric adopted by both sides, plans for bilateral talks are set to proceed with former President Fidel Ramos, who deftly managed the South China Sea disputes in the mid-1990s, tapped as a potential special envoy to restart high-level bilateral talks with China.

However, there is no assurance that China is willing to compromise without concerted international pressure, led by no less than the United States with the support of key regional players such as ASEAN.

8. Possible measures/counter-response

Sam Tangredi, a specialist on anti-access/area denial (A2/AD) strategies at the US-based consulting firm Strategic Insight, argues that China's A2/AD ambitions must be defined in terms of diplomatic and economic activities, not just military.

China could ignore the ruling and justify its activities by passing a law declaring that the South China Sea, like Taiwan, has always been an internal region of China, and therefore international legal jurisdiction does not and has never existed, Tangredi said.

In that line of thinking, the independence or foreign control of the territorial seas cannot be tolerated and actions by other states to assert control are illegal and will be treated as a criminal action. Any resulting resistance or attack on Chinese agencies exercising outside legal authority would be treated as an attack against the state.

Tangredi, who wrote the recent book, "Anti-Access Warfare," said: "Authoritarian regimes are particularly sensitive to having 'legal' justifications for arbitrary actions, and that is the case with China."

The analyst also said he fears China would declare an Air Defense Identification Zone (ADIZ) over the South China Sea in response to the court ruling. China declared an ADIZ over the East China Sea (ECS) in November 2013, rattling Japan and the United States. The ECS ADIZ overlaps the Japanese-administered Senkaku Islands, which China claims as the Diaoyu Islands.

Wallace "Chip" Gregson, a retired US Marine and former US assistant secretary of defense for Asian and Pacific security affairs, said a new ADIZ in the South China Sea is a possibility, as well as other preemptive actions in Scarborough Shoal and Second Thomas Shoal.

"I believe that the most important thing for the Chinese leadership after the verdict will be to show the Chinese people that the verdict is irrelevant and that the Chinese leadership has triumphed over the foreign influences and 'the hegemon,'" Gregson said. "I think there will be, at the least, a period of high rhetoric accompanied by demonstration activity. This can take a number of different forms, from fly-bys and sail-bys in various territorial waters, including in the East China Sea."

More troublesome in many ways would be aggressive action with state-owned fishermen - increasingly armed - and maritime auxiliary ships and aircraft, Gregson said.

"Fishing areas enjoyed by other nations, sanctioned by the provisions of UNCLOS, can be overwhelmed by non-military Chinese assets. We and our allies have only limited ways to counter that." Andrew Erickson, a China military specialist at the US Naval War College, calls China's fishing boat militia "China's 3rd Sea Force" and capable of disrupting US freedom of

navigation operations in the South China Sea.

"For years now, China's been surreptitiously pushing territorial claims against weaker neighbors using its maritime militia, or 'Little Blue Men,'" he said.

Incidents involving these non-military forces include:

2009: harassment of the US Navy survey ship Impeccable;

2011: sabotage of two Vietnamese hydrographic vessels;

2012: seizure of Scarborough Shoal from the Philippines; and

2014: repulsion of Vietnamese vessels from disputed waters surrounding its HYSY-981 oil rig.

Despite these events, Erickson said China's maritime militia has not been mentioned in any public US government reports or in any public statements by Washington-based US government officials. "If the US government, with all of its resources and capabilities, has not yet begun to address this challenge openly and proactively, how can it expect its Asian partners to do so?"

The US government must "call out" China's maritime militia in public and in conversations with Chinese interlocutors, Erickson argued. Washington must make it clear that any elements that ignore repeated warnings by US vessels to refrain from disruptive activities would be treated as military-controlled vessels, he added. The US government also should impose consequences for any use of the maritime militia against US vessels, according to the analyst.⁵⁵⁾

55) "Manila Wins South China Sea Arbitration Case at The Hague," July 12, 2016, <http://www.defensenews.com/home/2016/07/12/manila-wins-south-china-sea-arbitration-case-at-the-hague/>

〈APPENDIX-1〉

GLOSSARY OF GEOGRAPHIC NAMES MENTIONED IN THIS AWARD

For ease of reference, and without prejudice to any State's claims, the Tribunal uses throughout this Award the common English designation for the following geographic features, the Filipino translations for which come from the Philippine National Mapping and Resource Information Agency, Philippine Coast Pilot (6th ed., 1995) (Annex 230) and the Philippines' Submissions, and the Chinese translations for which come from the Navigation Guarantee Department of the Chinese Navy Headquarters, China Sailing Directions: South China Sea (A103) (2011) (Annex 232(bis)).

As discussed at paragraph 482 below, the name of a feature as an bank, cay, island, reef, or shoal has no bearing on the Tribunal's determination of the status of those features under the Convention.

<u>English Name</u>	<u>Chinese Name</u>	<u>Filipino Name</u>
Amboyna Cay	Anbo Shazhou 安波沙洲	Kalantiyaw Cay
Cuarteron Reef	Huayang Jiao 华阳礁	Calderon Reef
Fiery Cross Reef	Yongshu Jiao 永暑礁	Kagitingan Reef
Flat Island	Feixin Dao 费信岛	Patag Island
Gaven Reefs	Nanxun Jiao 南薰礁	Burgos Reefs
Hughes Reef	Dongmen Jiao 东门礁	Chigua Reef (the Philippines refers to McKennan and Hughes Reefs as a single feature)
Itu Aba Island	Taiping Dao 太平岛	Ligaw Island
Johnson Reef	Chigua Jiao 赤瓜礁	Mabini Reef
Lankiam Cay	Yangxin Shazhou 杨信沙洲	Panata Island
Loaita Island	Nanyue Dao 南钥岛	Kota Island

<u>English Name</u>	<u>Chinese Name</u>	<u>Filipino Name</u>
Macclesfield Bank	Zhongsha Qundao 中沙群岛	Macclesfield Bank
McKenna Reef	Ximen Jiao 西门礁	Chigua Reef (the Philippines refers to McKenna and Hughes Reefs as a single feature)
Mischief Reef	Meiji Jiao 美济礁	Panganiban Reef
Namyit Island	Hongxiu Dao 鸿麻岛	Binago Island
Nanshan Island	Mahuan Dao 马欢岛	Lawak Island
North-East Cay	Beizi Dao 北子岛	Parola Island
Reed Bank	Liyue Tan 礼乐滩	Recto Bank
Sand Cay	Dunqian Shazhou 敦谦沙洲	Bailan Cay
Scarborough Shoal	Huangyan Dao 黄岩岛	Panatang Shoal or Bajo de Masinloc
Second Thomas Shoal	Ren'ai Jiao 仁爱礁	Ayungin Shoal
Sin Cowe Island	Jinghong Dao 景宏岛	Rurok Island
South China Sea	Nan Hai 南海	West Philippine Sea
South-West Cay	Nanzi Dao 南子岛	Pugad Island
Spratly Island	Nanwei Dao 南威岛	Lagos Island
Spratly Island Group	Nansha Qundao 南沙群岛	Kalayaan Island Group (Kalayaan Islands) (Spratly Islands or Spratlys)
Subi Reef	Zhubi Jiao 渚碧礁	Zamora Reef
Swallow Reef	Danwan Jiao 弹丸礁	Celerio Reef
Thitu Island	Zhongye Dao 中业岛	Pagasa Island
West York Island	Xiyue Dao 西月岛	Likas Island

(Source: PCA Case N^o 2013-19 IN THE MATTER OF THE SOUTH CHINA SEA ARBITRATION - before - AN ARBITRAL TRIBUNAL CONSTITUTED UNDER ANNEX VII TO THE 1982 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA - between - THE REPUBLIC OF THE PHILIPPINES - and - THE PEOPLE'S REPUBLIC OF CHINA, Arbitral Tribunal: Judge Thomas A. Mensah (Presiding Arbitrator), Judge Jean-Pierre Cot, Judge Stanislaw Pawlak, Professor Alfred H.A. Soons, Judge Rüdiger Wolfrum, Registry: Permanent Court of Arbitration, 12 July 2016, pp. xix-xx.)

〈APPENDIX-2 Press Release from the Arbitration Court〉

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PRESS RELEASE

THE SOUTH CHINA SEA ARBITRATION

(THE REPUBLIC OF THE PHILIPPINES V. THE PEOPLE'S REPUBLIC OF CHINA)

THE SOUTH CHINA SEA ARBITRATION

(THE REPUBLIC OF THE PHILIPPINES V. THE PEOPLE'S REPUBLIC OF CHINA)

The Hague, 12 July 2016

The Tribunal Renders Its Award

A unanimous Award has been issued today by the Tribunal constituted under Annex VII to the United Nations Convention on the Law of the Sea (the "Convention") in the arbitration instituted by the Republic of the Philippines against the People's Republic of China.

This arbitration concerned the role of historic rights and the source of maritime entitlements in the South China Sea, the status of certain maritime features and the maritime entitlements they are capable of generating, and the lawfulness of certain actions by China that were alleged by the Philippines to violate the Convention. In light of limitations on compulsory dispute settlement under the Convention, the Tribunal has emphasized that it does not rule on any question of sovereignty over land territory and does not delimit any boundary between the Parties.

China has repeatedly stated that "it will neither accept nor participate in the arbitration

unilaterally initiated by the Philippines.” Annex VII, however, provides that the “[a]bsence of a party or failure of a party to defend its case shall not constitute a bar to the proceedings.” Annex VII also provides that, in the event that a party does not participate in the proceedings, a tribunal “must satisfy itself not only that it has jurisdiction over the dispute but also that the claim is well founded in fact and law.” Accordingly, throughout these proceedings, the Tribunal has taken steps to test the accuracy of the Philippines’ claims, including by requesting further written submissions from the Philippines, by questioning the Philippines both prior to and during two hearings, by appointing independent experts to report to the Tribunal on technical matters, and by obtaining historical evidence concerning features in the South China Sea and providing it to the Parties for comment.

China has also made clear—through the publication of a Position Paper in December 2014 and in other official statements—that, in its view, the Tribunal lacks jurisdiction in this matter. Article 288 of the Convention provides that: “In the event of a dispute as to whether a court or tribunal has jurisdiction, the matter shall be settled by decision of that court or tribunal.” Accordingly, the Tribunal convened a hearing on jurisdiction and admissibility in July 2015 and rendered an Award on Jurisdiction and Admissibility on 29 October 2015, deciding some issues of jurisdiction and deferring others for further consideration. The Tribunal then convened a hearing on the merits from 24 to 30 November 2015.

The Award of today’s date addresses the issues of jurisdiction not decided in the Award on Jurisdiction and Admissibility and the merits of the Philippines’ claims over which the Tribunal has jurisdiction. The Award is final and binding, as set out in Article 296 of the Convention and Article 11 of Annex VII.

Historic Rights and the ‘Nine-Dash Line’: The Tribunal found that it has jurisdiction to consider the Parties’ dispute concerning historic rights and the source of maritime entitlements in the South China Sea. On the merits, the Tribunal concluded that the Convention comprehensively allocates rights to maritime areas and that protections for pre-existing rights to resources were considered, but not adopted in the Convention. Accordingly, the Tribunal concluded that, to the extent China had historic rights to

resources in the waters of the South China Sea, such rights were extinguished to the extent they were incompatible with the exclusive economic zones provided for in the Convention. The Tribunal also noted that, although

Chinese navigators and fishermen, as well as those of other States, had historically made use of the islands in the South China Sea, there was no evidence that China had historically exercised exclusive control over the waters or their resources. The Tribunal concluded that there was no legal basis for China to claim historic rights to resources within the sea areas falling within the 'nine-dash line'.

Status of Features: The Tribunal next considered entitlements to maritime areas and the status of features. The Tribunal first undertook an evaluation of whether certain reefs claimed by China are above water at high tide. Features that are above water at high tide generate an entitlement to at least a 12 nautical mile territorial sea, whereas features that are submerged at high tide do not. The Tribunal noted that the reefs have been heavily modified by land reclamation and construction, recalled that the Convention classifies features on their natural condition, and relied on historical materials in evaluating the features. The Tribunal then considered whether any of the features claimed by China could generate maritime zones beyond 12 nautical miles. Under the Convention, islands generate an exclusive economic zone of 200 nautical miles and a continental shelf, but "[r]ocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf." The Tribunal concluded that this provision depends upon the objective capacity of a feature, in its natural condition, to sustain either a stable community of people or economic activity that is not dependent on outside resources or purely extractive in nature. The Tribunal noted that the current presence of official personnel on many of the features is dependent on outside support and not reflective of the capacity of the features. The Tribunal found historical evidence to be more relevant and noted that the Spratly Islands were historically used by small groups of fishermen and that several Japanese fishing and guano mining enterprises were attempted. The Tribunal concluded that such transient use does not constitute inhabitation by a stable community and that all of the historical economic activity had been extractive. Accordingly, the Tribunal concluded that none of the Spratly Islands is capable of generating extended

maritime zones. The Tribunal also held that the Spratly Islands cannot generate maritime zones collectively as a unit. Having found that none of the features claimed by China was capable of generating an exclusive economic zone, the Tribunal found that it could—without delimiting a boundary—declare that certain sea areas are within the exclusive economic zone of the Philippines, because those areas are not overlapped by any possible entitlement of China.

Lawfulness of Chinese Actions: The Tribunal next considered the lawfulness of Chinese actions in the South China Sea. Having found that certain areas are within the exclusive economic zone of the Philippines, the Tribunal found that China had violated the Philippines' sovereign rights in its exclusive economic zone by (a) interfering with Philippine fishing and petroleum exploration, (b) constructing artificial islands and (c) failing to prevent Chinese fishermen from fishing in the zone. The Tribunal also held that fishermen from the Philippines (like those from China) had traditional fishing rights at Scarborough Shoal and that China had interfered with these rights in restricting access. The Tribunal further held that Chinese law enforcement vessels had unlawfully created a serious risk of collision when they physically obstructed Philippine vessels.

Harm to Marine Environment: The Tribunal considered the effect on the marine environment of China's recent large-scale land reclamation and construction of artificial islands at seven features in the Spratly Islands and found that China had caused severe harm to the coral reef environment and violated its obligation to preserve and protect fragile ecosystems and the habitat of depleted, threatened, or endangered species. The Tribunal also found that Chinese authorities were aware that Chinese fishermen have harvested endangered sea turtles, coral, and giant clams on a substantial scale in the South China Sea (using methods that inflict severe damage on the coral reef environment) and had not fulfilled their obligations to stop such activities.

Aggravation of Dispute: Finally, the Tribunal considered whether China's actions since the commencement of the arbitration had aggravated the dispute between the Parties. The Tribunal found that it lacked jurisdiction to consider the implications of a stand-off between Philippine marines and Chinese naval and law enforcement vessels at Second Thomas Shoal, holding that this dispute involved military activities and was therefore

excluded from compulsory settlement. The Tribunal found, however, that China's recent large-scale land reclamation and construction of artificial islands was incompatible with the obligations on a State during dispute resolution proceedings, insofar as China has inflicted irreparable harm to the marine environment, built a large artificial island in the Philippines' exclusive economic zone, and destroyed evidence of the natural condition of features in the South China Sea that formed part of the Parties' dispute.

An expanded summary of the Tribunal's decisions is set out below.

The Tribunal was constituted on 21 June 2013 pursuant to the procedure set out in Annex VII of the Convention to decide the dispute presented by the Philippines. The Tribunal is composed of Judge Thomas A.

Mensah of Ghana, Judge Jean-Pierre Cot of France, Judge Stanislaw Pawlak of Poland, Professor Alfred H.A. Soons of the Netherlands, and Judge Rüdiger Wolfrum of Germany. Judge Thomas A. Mensah serves as President of the Tribunal. The Permanent Court of Arbitration acts as the Registry in the proceedings.

Further information about the case may be found at www.pcacases.com/web/view/7, including the Award on Jurisdiction and Admissibility, the Rules of Procedure, earlier Press Releases, hearing transcripts, and photographs. Procedural Orders, submissions by the Philippines, and reports by the Tribunal's experts will be made available in due course, as will unofficial Chinese translations of the Tribunal's Awards.

Background to the Permanent Court of Arbitration

The Permanent Court of Arbitration (PCA) is an intergovernmental organization established by the 1899 Hague Convention on the Pacific Settlement of International Disputes. The PCA has 121 Member States. Headquartered at the Peace Palace in The Hague, the Netherlands, the PCA facilitates arbitration, conciliation, fact-finding, and other dispute resolution proceedings among various combinations of States, State entities, intergovernmental organizations, and private parties. The PCA's International Bureau is currently administering 8 interstate disputes, 73 investor-State arbitrations, and 34 cases arising under contracts involving a State or other public entity. The PCA has administered 12 cases initiated by States under Annex VII to the United Nations

Convention on the Law of the Sea.

In July 2013, the Tribunal in the South China Sea Arbitration appointed the PCA to serve as Registry for the proceedings. The Tribunal's Rules of Procedure provide that the PCA shall "maintain an archive of the arbitral proceedings and provide appropriate registry services as directed by the Arbitral Tribunal." Such services include assisting with the identification and appointment of experts; publishing information about the arbitration and issuing press releases; organizing the hearings at the Peace Palace in The Hague; and the financial management of the case, which involves holding a deposit for expenses in the arbitration, such as to pay arbitrator fees, experts, technical support, court reporters etc. The Registry also serves as the channel of communications amongst the Parties and the Tribunal and observer States.

Photograph: Hearing in session, July 2015, Peace Palace, The Hague. Clockwise from top left: Registrar and PCA Senior Legal Counsel Judith Levine; Judge Stanislaw Pawlak; Professor Alfred H. A. Soons; Judge Thomas A. Mensah (Presiding Arbitrator); Judge Jean-Pierre Cot; Judge Rüdiger Wolfrum; PCA Senior Legal Counsel Garth Schofield; former Secretary for Foreign Affairs of the Philippines, Mr. Albert F. Del Rosario; former Solicitor General Mr. Florin T. Hilbay, Counsel for the Philippines; Mr. Paul S. Reichler; Professor Philippe Sands; Professor Bernard H. Oxman; Professor Alan E. Boyle; Mr. Lawrence H. Martin.

SUMMARY OF THE TRIBUNAL'S DECISIONS ON ITS JURISDICTION AND ON THE MERITS OF THE PHILIPPINES' CLAIMS

1. Background to the Arbitration

The South China Sea Arbitration between the Philippines and China concerned an application by the Philippines for rulings in respect of four matters concerning the relationship between the Philippines and China in the South China Sea. First, the Philippines sought a ruling on the source of the Parties' rights and obligations in the South China Sea and the effect of the United Nations Convention on the Law of the Sea ("Convention") on China's claims to historic rights within its so-called 'nine-dash

line'. Second, the Philippines sought a ruling on whether certain maritime features claimed by both China and the Philippines are properly characterized as islands, rocks, low-tide elevations or submerged banks under the Convention. The status of these features under the Convention determines the maritime zones they are capable of generating. Third, the Philippines sought rulings on whether certain Chinese actions in the South China Sea have violated the Convention, by interfering with the exercise of the Philippines' sovereign rights and freedoms under the Convention or through construction and fishing activities that have harmed the marine environment. Finally, the Philippines sought a ruling that certain actions taken by China, in particular its large-scale land reclamation and construction of artificial islands in the Spratly Islands since this arbitration was commenced, have unlawfully aggravated and extended the Parties' dispute.

The Chinese Government has adhered to the position of neither accepting nor participating in these arbitral proceedings. It has reiterated this position in diplomatic notes, in the "Position Paper of the Government of the People's Republic of China on the Matter of Jurisdiction in the South China Sea Arbitration Initiated by the Republic of the Philippines" dated 7 December 2014 ("China's Position Paper"), in letters to members of the Tribunal from the Chinese Ambassador to the Kingdom of the Netherlands, and in many public statements. The Chinese Government has also made clear that these statements and documents "shall by no means be interpreted as China's participation in the arbitral proceeding in any form."

Two provisions of the Convention address the situation of a party that objects to the jurisdiction of a tribunal and declines to participate in the proceedings:

(a) Article 288 of the Convention provides that: "In the event of a dispute as to whether a court or tribunal has jurisdiction, the matter shall be settled by decision of that court or tribunal."

(b) Article 9 of Annex VII to the Convention provides that:

If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to make its award. Absence of a party or failure of a party to defend its case shall

not constitute a bar to the proceedings. Before making its award, the arbitral tribunal must satisfy itself not only that it has jurisdiction over the dispute but also that the claim is well founded in fact and law.

Throughout these proceedings, the Tribunal has taken a number of steps to fulfil its duty to satisfy itself as to whether it has jurisdiction and whether the Philippines' claims are "well founded in fact and law". With respect to jurisdiction, the Tribunal decided to treat China's informal communications as equivalent to an objection to jurisdiction, convened a Hearing on Jurisdiction and Admissibility on 7 to 13 July 2015, questioned the Philippines both before and during the hearing on matters of jurisdiction, including potential issues not raised in China's informal communications, and issued an Award on Jurisdiction and Admissibility on 29 October 2015 (the "Award on Jurisdiction"), deciding some issues of jurisdiction and deferring others for further consideration in conjunction with the merits of the Philippines' claims. With respect to the merits, the Tribunal sought to test the accuracy of the Philippines' claims by requesting further written submissions from the Philippines, by convening a hearing on the merits from 24 to 30 November 2015, by questioning the Philippines both before and during the hearing with respect to its claims, by appointing independent experts to report to the Tribunal on technical matters, and by obtaining historical records and hydrographic survey data for the South China Sea from the archives of the United Kingdom Hydrographic Office, the National Library of France, and the French National Overseas Archives and providing it to the Parties for comment, along with other relevant materials in the public domain.

2. The Parties' Positions

The Philippines made 15 Submissions in these proceedings, requesting the Tribunal to find that:

- (1) China's maritime entitlements in the South China Sea, like those of the Philippines, may not extend beyond those expressly permitted by the United Nations Convention on the Law of the Sea;
- (2) China's claims to sovereign rights jurisdiction, and to "historic rights", with respect

to the maritime areas of the South China Sea encompassed by the so-called “nine-dash line” are contrary to the Convention and without lawful effect to the extent that they exceed the geographic and substantive limits of China’s maritime entitlements expressly permitted by UNCLOS:

- (3) Scarborough Shoal generates no entitlement to an exclusive economic zone or continental shelf;
- (4) Mischief Reef, Second Thomas Shoal, and Subi Reef are low-tide elevations that do not generate entitlement to a territorial sea, exclusive economic zone or continental shelf, and are not features that are capable of appropriation by occupation or otherwise;
- (5) Mischief Reef and Second Thomas Shoal are part of the exclusive economic zone and continental shelf of the Philippines;
- (6) Gaven Reef and McKennan Reef (including Hughes Reef) are low-tide elevations that do not generate entitlement to a territorial sea, exclusive economic zone or continental shelf, but their low-water line may be used to determine the baseline from which the breadth of the territorial sea of Namyt and Sin Cowe, respectively, is measured;
- (7) Johnson Reef, Cuarteron Reef and Fiery Cross Reef generate no entitlement to an exclusive economic zone or continental shelf;
- (8) China has unlawfully interfered with the enjoyment and exercise of the sovereign rights of the Philippines with respect to the living and non-living resources of its exclusive economic zone and continental shelf;
- (9) China has unlawfully failed to prevent its nationals and vessels from exploiting the living resources in the exclusive economic zone of the Philippines;
- (10) China has unlawfully prevented Philippine fishermen from pursuing their livelihoods by interfering with traditional fishing activities at Scarborough Shoal;
- (11) China has violated its obligations under the Convention to protect and preserve

the marine environment at Scarborough Shoal, Second Thomas Shoal, Cuarteron Reef, Fiery Cross Reef, Gaven Reef, Johnson Reef, Hughes Reef and Subi Reef;

- (12) China's occupation of and construction activities on Mischief Reef
 - (a) violate the provisions of the Convention concerning artificial islands, installations and structures;
 - (b) violate China's duties to protect and preserve the marine environment under the Convention; and
 - (c) constitute unlawful acts of attempted appropriation in violation of the Convention;
- (13) China has breached its obligations under the Convention by operating its law enforcement vessels in a dangerous manner, causing serious risk of collision to Philippine vessels navigating in the vicinity of Scarborough Shoal;
- (14) Since the commencement of this arbitration in January 2013, China has unlawfully aggravated and extended the dispute by, among other things:
 - (a) interfering with the Philippines' rights of navigation in the waters at, and adjacent to, Second Thomas Shoal;
 - (b) preventing the rotation and resupply of Philippine personnel stationed at Second Thomas Shoal;
 - (c) endangering the health and well-being of Philippine personnel stationed at Second Thomas Shoal; and
 - (d) conducting dredging, artificial island-building and construction activities at Mischief Reef, Cuarteron Reef, Fiery Cross Reef, Gaven Reef, Johnson Reef, Hughes Reef and Subi Reef; and
- (15) China shall respect the rights and freedoms of the Philippines under the Convention, shall comply with its duties under the Convention, including those relevant to the protection and preservation of the marine environment in the South China Sea, and shall exercise its rights and freedoms in the South China Sea with due regard to those of the Philippines under the Convention.

With respect to jurisdiction, the Philippines has asked the Tribunal to declare that the Philippines' claims "are entirely within its jurisdiction and are fully admissible."

China does not accept and is not participating in this arbitration but stated its position that the Tribunal "does not have jurisdiction over this case." In its Position Paper, China advanced the following arguments:

- The essence of the subject-matter of the arbitration is the territorial sovereignty over several maritime features in the South China Sea, which is beyond the scope of the Convention and does not concern the interpretation or application of the Convention;
- China and the Philippines have agreed, through bilateral instruments and the Declaration on the Conduct of Parties in the South China Sea, to settle their relevant disputes through negotiations. By unilaterally initiating the present arbitration, the Philippines has breached its obligation under international law;
- Even assuming, *arguendo*, that the subject-matter of the arbitration were concerned with the interpretation or application of the Convention, that subject-matter would constitute an integral part of maritime delimitation between the two countries, thus falling within the scope of the declaration filed by China in 2006 in accordance with the Convention, which excludes, *inter alia*, disputes concerning maritime delimitation from compulsory arbitration and other compulsory dispute settlement procedures;

Although China has not made equivalent public statements with respect to the merits of the majority of the Philippines' claims, the Tribunal has sought throughout the proceedings to ascertain China's position on the basis of its contemporaneous public statements and diplomatic correspondence.

3. The Tribunal's Decisions on the Scope of its Jurisdiction

The Tribunal has addressed the scope of its jurisdiction to consider the Philippines' claims both in its Award on Jurisdiction, to the extent that issues of jurisdiction could be decided as a preliminary matter, and in its Award of 12 July 2016, to the extent that issues of jurisdiction were intertwined with the merits of the Philippines' claims. The Tribunal's Award of 12 July 2016 also incorporates and reaffirms the decisions on jurisdiction taken in the Award on Jurisdiction.

For completeness, the Tribunal's decisions on jurisdiction in both awards are summarized here together.

a. Preliminary Matters

In its Award on Jurisdiction, the Tribunal considered a number of preliminary matters with respect to its jurisdiction. The Tribunal noted that both the Philippines and China are parties to the Convention and that the Convention does not permit a State to except itself generally from the mechanism for the resolution of disputes set out in the Convention. The Tribunal held that China's non-participation does not deprive the Tribunal of jurisdiction and that the Tribunal had been properly constituted pursuant to the provisions of Annex VII to the Convention, which include a procedure to form a tribunal even in the absence of one party. Finally, the Tribunal rejected an argument set out in China's Position Paper and held that the mere act of unilaterally initiating an arbitration cannot constitute an abuse of the Convention.

b. Existence of a Dispute Concerning Interpretation and Application of the Convention

In its Award on Jurisdiction, the Tribunal considered whether the Parties' disputes concerned the interpretation or application of the Convention, which is a requirement for resort to the dispute settlement mechanisms of the Convention.

The Tribunal rejected the argument set out in China's Position Paper that the Parties' dispute is actually about territorial sovereignty and therefore not a matter concerning the Convention. The Tribunal accepted that there is a dispute between the Parties concerning sovereignty over islands in the South China Sea, but held that the matters

submitted to arbitration by the Philippines do not concern sovereignty. The Tribunal considered that it would not need to implicitly decide sovereignty to address the Philippines' Submissions and that doing so would not advance the sovereignty claims of either Party to islands in the South China Sea.

The Tribunal also rejected the argument set out in China's Position Paper that the Parties' dispute is actually about maritime boundary delimitation and therefore excluded from dispute settlement by Article 298 of the Convention and a declaration that China made on 25 August 2006 pursuant to that Article. The Tribunal noted that a dispute concerning whether a State has an entitlement to a maritime zone is a distinct matter from the delimitation of maritime zones in an area in which they overlap. The Tribunal noted that entitlements, together with a wide variety of other issues, are commonly considered in a boundary delimitation, but can also arise in other contexts. The Tribunal held that it does not follow that a dispute over each of these issues is necessarily a dispute over boundary delimitation.

Finally, the Tribunal held that each of the Philippines' Submissions reflected a dispute concerning the Convention. In doing so, the Tribunal emphasized (a) that a dispute concerning the interaction between the Convention and other rights (including any Chinese "historic rights") is a dispute concerning the Convention and (b) that where China has not clearly stated its position, the existence of a dispute may be inferred from the conduct of a State or from silence and is a matter to be determined objectively.

c. Involvement of Indispensable Third-Parties

In its Award on Jurisdiction, the Tribunal considered whether the absence from this arbitration of other States that have made claims to the islands of the South China Sea would be a bar to the Tribunal's jurisdiction. The Tribunal noted that the rights of other States would not form "the very subject-matter of the decision," the standard for a third-party to be indispensable. The Tribunal further noted that in December 2014, Viet Nam had submitted a statement to the Tribunal, in which Viet Nam asserted that it has "no doubt that the Tribunal has jurisdiction in these proceedings." The Tribunal also noted that Viet Nam, Malaysia, and Indonesia had attended the hearing on jurisdiction as observers, without any State raising the argument that its participation

was indispensable.

In its Award of 12 July 2016, the Tribunal noted that it had received a communication from Malaysia on 23 June 2016, recalling Malaysia's claims in the South China Sea. The Tribunal compared its decisions on the merits of the Philippines' Submissions with the rights claimed by Malaysia and reaffirmed its decision that Malaysia is not an indispensable party and that Malaysia's interests in the South China Sea do not prevent the Tribunal from addressing the Philippines' Submissions.

d. Preconditions to Jurisdiction

In its Award on Jurisdiction, the Tribunal considered the applicability of Articles 281 and 282 of the Convention, which may prevent a State from making use of the mechanisms under the Convention if they have already agreed to another means of dispute resolution.

The Tribunal rejected the argument set out in China's Position Paper that the 2002 China-ASEAN Declaration on the Conduct of Parties in the South China Sea prevented the Philippines from initiating arbitration. The Tribunal held that the Declaration is a political agreement and not legally binding, does not provide a mechanism for binding settlement, does not exclude other means of dispute settlement, and therefore does not restrict the Tribunal's jurisdiction under Articles 281 or 282. The Tribunal also considered the Treaty of Amity and Cooperation in Southeast Asia, and the Convention on Biological Diversity, and a series of joint statements issued by the Philippines and China referring to the resolution of disputes through negotiations and concluded that none of these instruments constitute an agreement that would prevent the Philippines from bringing its claims to arbitration.

The Tribunal further held that the Parties had exchanged views regarding the settlement of their disputes, as required by Article 283 of the Convention, before the Philippines initiated the arbitration. The Tribunal concluded that this requirement was met in the record of diplomatic communications between the Philippines and China, in which the Philippines expressed a clear preference for multilateral negotiations involving the other States surrounding the South China Sea, while China insisted that only bilateral talks

could be considered.

e. Exceptions and Limitations to Jurisdiction

In its Award of 12 July 2016, the Tribunal considered whether the Philippines' Submissions concerning Chinese historic rights and the 'nine-dash line' were affected by the exception from jurisdiction for disputes concerning "historic title" in Article 298 of the Convention. The Tribunal reviewed the meaning of "historic title" in the law of the sea and held that this refers to claims of historic sovereignty over bays and other near-shore waters. Reviewing China's claims and conduct in the South China Sea, the Tribunal concluded that China claims historic rights to resources within the 'nine-dash line', but does not claim historic title over the waters of the South China Sea. Accordingly, the Tribunal concluded that it had jurisdiction to consider the Philippines' claims concerning historic rights and, as between the Philippines and China, the 'nine-dash line'.

In its Award of 12 July 2016, the Tribunal also considered whether the Philippines' Submissions were affected by the exception from jurisdiction in Article 298 for disputes concerning sea boundary delimitation. The Tribunal had already found in its Award on Jurisdiction that the Philippines' Submissions do not concern boundary delimitation as such, but noted that several of the Philippines' Submissions were dependent on certain areas forming part of the Philippines' exclusive economic zone. The Tribunal held that it could only address such submissions if there was no possibility that China could have an entitlement to an exclusive economic zone overlapping that of the Philippines and deferred a final decision on its jurisdiction. In its Award of 12 July 2016, the Tribunal reviewed evidence about the reefs and islands claimed by China in the South China Sea and concluded that none is capable of generating an entitlement to an exclusive economic zone. Because China has no possible entitlement to an exclusive economic zone overlapping that of the Philippines in the Spratly Islands, the Tribunal held that the Philippines' submissions were not dependent on a prior delimitation of a boundary.

In its Award of 12 July 2016, the Tribunal also considered whether the Philippines' Submissions were affected by the exception from jurisdiction in Article 298 for disputes concerning law enforcement activities in the exclusive economic zone. The Tribunal

recalled that the exception in Article 298 would apply only if the Philippines' Submissions related to law enforcement activities in China's exclusive economic zone. Because, however, the Philippines' Submissions related to events in the Philippines' own exclusive economic zone or in the territorial sea, the Tribunal concluded that Article 298 did not pose an obstacle to its jurisdiction.

Lastly, in its Award of 12 July 2016, the Tribunal considered whether the Philippines' submissions were affected by the exception from jurisdiction in Article 298 for disputes concerning military activities. The Tribunal considered that the stand-off between Philippine marines on Second Thomas Shoal and Chinese naval and law enforcement vessels constituted military activities and concluded that it lacked jurisdiction over the Philippines' Submission No. 14(a)-(c). The Tribunal also considered whether China's land reclamation and construction of artificial islands at seven features in the Spratly Islands constituted military activities, but noted that China had repeatedly emphasized the non-military nature of its actions and had stated at the highest level that it would not militarize its presence in the Spratlys. The Tribunal decided that it would not deem activities to be military in nature when China itself had repeatedly affirmed the opposite. Accordingly, the Tribunal concluded that Article 298 did not pose an obstacle to its jurisdiction.

4. The Tribunal's Decisions on the Merits of the Philippines' Claims

a. The 'Nine-Dash Line' and China's Claim to Historic Rights in the Maritime Areas of the South China Sea

In its Award of 12 July 2016, the Tribunal considered the implications of China's 'nine-dash line' and whether China has historic rights to resources in the South China Sea beyond the limits of the maritime zones that it is entitled to pursuant to the Convention.

The Tribunal examined the history of the Convention and its provisions concerning maritime zones and concluded that the Convention was intended to comprehensively allocate the rights of States to maritime areas. The Tribunal noted that the question of pre-existing rights to resources (in particular fishing resources) was carefully

considered during the negotiations on the creation of the exclusive economic zone and that a number of States wished to preserve historic fishing rights in the new zone. This position was rejected,

however, and the final text of the Convention gives other States only a limited right of access to fisheries in the exclusive economic zone (in the event the coastal State cannot harvest the full allowable catch) and no rights to petroleum or mineral resources. The Tribunal found that China's claim to historic rights to resources was incompatible with the detailed allocation of rights and maritime zones in the Convention and concluded that, to the extent China had historic rights to resources in the waters of the South China Sea, such rights were extinguished by the entry into force of the Convention to the extent they were incompatible with the Convention's system of maritime zones.

The Tribunal also examined the historical record to determine whether China actually had historic rights to resources in the South China Sea prior to the entry into force of the Convention. The Tribunal noted that there is evidence that Chinese navigators and fishermen, as well as those of other States, had historically made use of the islands in the South China Sea, although the Tribunal emphasized that it was not empowered to decide the question of sovereignty over the islands. However, the Tribunal considered that prior to the Convention, the waters of the South China Sea beyond the territorial sea were legally part of the high seas, in which vessels from any State could freely navigate and fish. Accordingly, the Tribunal concluded that historical navigation and fishing by China in the waters of the South China Sea represented the exercise of high seas freedoms, rather than a historic right, and that there was no evidence that China had historically exercised exclusive control over the waters of the South China Sea or prevented other States from exploiting their resources.

Accordingly, the Tribunal concluded that, as between the Philippines and China, there was no legal basis for China to claim historic rights to resources, in excess of the rights provided for by the Convention, within the sea areas falling within the 'nine-dash line'.

b. The Status of Features in the South China Sea

In its Award of 12 July 2016, the Tribunal considered the status of features in the South China Sea and the entitlements to maritime areas that China could potentially claim pursuant to the Convention.

The Tribunal first undertook a technical evaluation as to whether certain coral reefs claimed by China are or are not above water at high tide. Under Articles 13 and 121 of the Convention, features that are above water at high tide generate an entitlement to at least a 12 nautical mile territorial sea, whereas features that are submerged at high tide generate no entitlement to maritime zones. The Tribunal noted that many of the reefs in the South China Sea have been heavily modified by recent land reclamation and construction and recalled that the Convention classifies features on the basis of their natural condition. The Tribunal appointed an expert hydrographer to assist it in evaluating the Philippines' technical evidence and relied heavily on archival materials and historical hydrographic surveys in evaluating the features. The Tribunal agreed with the Philippines that Scarborough Shoal, Johnson Reef, Cuarteron Reef, and Fiery Cross Reef are high-tide features and that Subi Reef, Hughes Reef, Mischief Reef, and Second Thomas Shoal were submerged at high tide in their natural condition. However, the Tribunal disagreed with the Philippines regarding the status of Gaven Reef (North) and McKennan Reef and concluded that both are high tide features.

The Tribunal then considered whether any of the features claimed by China could generate an entitlement to maritime zones beyond 12 nautical miles. Under Article 121 of the Convention, islands generate an entitlement to an exclusive economic zone of 200 nautical miles and to a continental shelf, but “[r]ocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.” The Tribunal noted that this provision was closely linked to the expansion of coastal State jurisdiction with the creation of the exclusive economic zone and was intended to prevent insignificant features from generating large entitlements to maritime zones that would infringe on the entitlements of inhabited territory or on the high seas and the area of the seabed reserved for the common heritage of mankind. The Tribunal interpreted Article 121 and concluded that the entitlements of a feature

depend on (a) the objective capacity of a feature, (b) in its natural condition, to sustain either (c) a stable community of people or (d) economic activity that is neither dependent on outside resources nor purely extractive in nature.

The Tribunal noted that many of the features in the Spratly Islands are currently controlled by one or another of the littoral States, which have constructed installations and maintain personnel there. The Tribunal considered these modern presences to be dependent on outside resources and support and noted that many of the features have been modified to improve their habitability, including through land reclamation and the construction of infrastructure such as desalination plants. The Tribunal concluded that the current presence of official personnel on many of the features does not establish their capacity, in their natural condition, to sustain a stable community of people and considered that historical evidence of habitation or economic life was more relevant to the objective capacity of the features. Examining the historical record, the Tribunal noted that the Spratly Islands were historically used by small groups of fishermen from China, as well as other States, and that several Japanese fishing and guano mining enterprises were attempted in the 1920s and 1930s. The Tribunal concluded that temporary use of the features by fishermen did not amount to inhabitation by a stable community and that all of the historical economic activity had been extractive in nature. Accordingly, the Tribunal concluded that all of the high-tide features in the Spratly Islands (including, for example, Itu Aba, Thitu, West York Island, Spratly Island, North-East Cay, South-West Cay) are legally “rocks” that do not generate an exclusive economic zone or continental shelf.

The Tribunal also held that the Convention does not provide for a group of islands such as the Spratly Islands to generate maritime zones collectively as a unit.

c. Chinese Activities in the South China Sea

In its Award of 12 July 2016, the Tribunal considered the lawfulness under the Convention of various Chinese actions in the South China Sea.

Having found that Mischief Reef, Second Thomas Shoal and Reed Bank are submerged at high tide, form part of the exclusive economic zone and continental shelf of the

Philippines, and are not overlapped by any possible entitlement of China, the Tribunal concluded that the Convention is clear in allocating sovereign rights to the Philippines with respect to sea areas in its exclusive economic zone. The Tribunal found as a matter of fact that China had (a) interfered with Philippine petroleum exploration at Reed Bank, (b) purported to prohibit fishing by Philippine vessels within the Philippines' exclusive economic zone, (c) protected and failed to prevent Chinese fishermen from fishing within the Philippines' exclusive economic zone at Mischief Reef and Second Thomas Shoal, and (d) constructed installations and artificial islands at Mischief Reef without the authorization of the Philippines. The Tribunal therefore concluded that China had violated the Philippines' sovereign rights with respect to its exclusive economic zone and continental shelf.

The Tribunal next examined traditional fishing at Scarborough Shoal and concluded that fishermen from the Philippines, as well as fishermen from China and other countries, had long fished at the Shoal and had traditional fishing rights in the area. Because Scarborough Shoal is above water at high tide, it generates an entitlement to a territorial sea, its surrounding waters do not form part of the exclusive economic zone, and traditional fishing rights were not extinguished by the Convention. Although the Tribunal emphasized that it was not deciding sovereignty over Scarborough Shoal, it found that China had violated its duty to respect to the traditional fishing rights of Philippine fishermen by halting access to the Shoal after May 2012. The Tribunal noted, however, that it would reach the same conclusion with respect to the traditional fishing rights of Chinese fishermen if the Philippines were to prevent fishing by Chinese nationals at Scarborough Shoal.

The Tribunal also considered the effect of China's actions on the marine environment. In doing so, the Tribunal was assisted by three independent experts on coral reef biology who were appointed to assist it in evaluating the available scientific evidence and the Philippines' expert reports. The Tribunal found that China's recent large scale land reclamation and construction of artificial islands at seven features in the Spratly Islands has caused severe harm to the coral reef environment and that China has violated its obligation under Articles 192 and 194 of the Convention to preserve and protect the marine environment with respect to fragile ecosystems and the habitat of depleted,

threatened, or endangered species. The Tribunal also found that Chinese fishermen have engaged in the harvesting of endangered sea turtles, coral, and giant clams on a substantial scale in the South China Sea, using methods that inflict severe damage on the coral reef environment. The Tribunal found that Chinese authorities were aware of these activities and failed to fulfill their due diligence obligations under the Convention to stop them.

Finally, the Tribunal considered the lawfulness of the conduct of Chinese law enforcement vessels at Scarborough Shoal on two occasions in April and May 2012 when Chinese vessels had sought to physically obstruct Philippine vessels from approaching or gaining entrance to the Shoal. In doing so, the Tribunal was assisted by an independent expert on navigational safety who was appointed to assist it in reviewing the written reports provided by the officers of the Philippine vessels and the expert evidence on navigational safety provided by the Philippines. The Tribunal found that Chinese law enforcement vessels had repeatedly approached the Philippine vessels at high speed and sought to cross ahead of them at close distances, creating serious risk of collision and danger to Philippine ships and personnel. The Tribunal concluded that China had breached its obligations under the Convention on the International Regulations for Preventing Collisions at Sea, 1972, and Article 94 the Convention concerning maritime safety.

d. Aggravation of the Dispute between the Parties

In its Award of 12 July 2016, the Tribunal considered whether China's recent large-scale land reclamation and construction of artificial islands at seven features in the Spratly Islands since the commencement of the arbitration had aggravated the dispute between the Parties. The Tribunal recalled that there exists a duty on parties engaged in a dispute settlement procedure to refrain from aggravating or extending the dispute or disputes at issue during the pendency of the settlement process. The Tribunal noted that China has (a) built a large artificial island on Mischief Reef, a low-tide elevation located in the exclusive economic zone of the Philippines; (b) caused permanent, irreparable harm to the coral reef ecosystem and (c) permanently destroyed evidence of the natural condition of the features in question. The Tribunal concluded that China had violated

its obligations to refrain from aggravating or extending the Parties' disputes during the pendency of the settlement process.

e. Future Conduct of the Parties

Finally, the Tribunal considered the Philippines' request for a declaration that, going forward, China shall respect the rights and freedoms of the Philippines and comply with its duties under the Convention. In this respect, the Tribunal noted that both the Philippines and China have repeatedly accepted that the Convention and general obligations of good faith define and regulate their conduct. The Tribunal considered that the root of the disputes at issue in this arbitration lies not in any intention on the part of China or the Philippines to infringe on the legal rights of the other, but rather in fundamentally different understandings of their respective rights under the Convention in the waters of the South China Sea. The Tribunal recalled that it is a fundamental principle of international law that bad faith is not presumed and noted that Article 11 of Annex VII provides that the "award . . . shall be complied with by the parties to the dispute." The Tribunal therefore considered that no further declaration was necessary. ***

〈APPENDIX–3 Position paper on China's jurisdiction over South China Sea〉

Position Paper of the Government of the People's Republic of China on the Matter of Jurisdiction in the South China Sea Arbitration Initiated by the Republic of the Philippines

7 December 2014

http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1217147.shtml

I. Introduction

1. On 22 January 2013, the Department of Foreign Affairs of the Republic of the Philippines presented a note verbale to the Embassy of the People's Republic of China in the Philippines, stating that the Philippines submitted a Notification and Statement of Claim in order to initiate compulsory arbitration proceedings under Article 287 and Annex VII of the United Nations Convention on the Law of the Sea ("Convention") with respect to the dispute with China over "maritime jurisdiction" in the South China Sea. On 19 February 2013, the Chinese Government rejected and returned the Philippines' note verbale together with the attached Notification and Statement of Claim. The Chinese Government has subsequently reiterated that it will neither accept nor participate in the arbitration thus initiated by the Philippines.

2. This Position Paper is intended to demonstrate that the arbitral tribunal established at the request of the Philippines for the present arbitration ("Arbitral Tribunal") does not have jurisdiction over this case. It does not express any position on the substantive issues related to the subject-matter of the arbitration initiated by the Philippines. No acceptance by China is signified in this Position Paper of the views or claims advanced by the Philippines, whether or not they are referred to herein. Nor shall this Position Paper be regarded as China's acceptance of or participation in this arbitration.

3. This Position Paper will elaborate on the following positions:

- The essence of the subject-matter of the arbitration is the territorial sovereignty over several maritime features in the South China Sea, which

is beyond the

scope of the Convention and does not concern the interpretation or application of the Convention;

- China and the Philippines have agreed, through bilateral instruments and the Declaration on the Conduct of Parties in the South China Sea, to settle their relevant disputes through negotiations. By unilaterally initiating the present arbitration, the Philippines has breached its obligation under international law;
- Even assuming, *arguendo*, that the subject-matter of the arbitration were concerned with the interpretation or application of the Convention, that subject-matter would constitute an integral part of maritime delimitation between the two countries, thus falling within the scope of the declaration filed by China in 2006 in accordance with the Convention, which excludes, *inter alia*, disputes concerning maritime delimitation from compulsory arbitration and other compulsory dispute settlement procedures;
- Consequently, the Arbitral Tribunal manifestly has no jurisdiction over the present arbitration. Based on the foregoing positions and by virtue of the freedom of every State to choose the means of dispute settlement, China's rejection of and non-participation in the present arbitration stand on solid ground in international law.

II. The essence of the subject-matter of the arbitration is the territorial sovereignty over several maritime features in the South China Sea, which does not concern the interpretation or application of the Convention

4. China has indisputable sovereignty over the South China Sea Islands (the Dongsha Islands, the Xisha Islands, the Zhongsha Islands and the Nansha Islands) and the adjacent waters. Chinese activities in the South China Sea date back to over 2,000 years ago. China was the first country to discover, name, explore and exploit the resources of the South China Sea Islands and the first to continuously exercise sovereign powers over them. From the 1930s to 1940s, Japan illegally seized some parts of the South

China Sea Islands during its war of aggression against China. At the end of the Second World War, the Chinese Government resumed exercise of sovereignty over the South China Sea Islands. Military personnel and government officials were sent via naval vessels to hold resumption of authority ceremonies. Commemorative stone markers were erected, garrisons stationed, and geographical surveys conducted. In 1947, China renamed the maritime features of the South China Sea Islands and, in 1948, published an official map which displayed a dotted line in the South China Sea. Since the founding of the People's Republic of China on 1 October 1949, the Chinese Government has been consistently and actively maintaining its sovereignty over the South China Sea Islands. Both the Declaration of the Government of the People's Republic of China on the Territorial Sea of 1958 and the Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone of 1992 expressly provide that the territory of the People's Republic of China includes, among others, the Dongsha Islands, the Xisha Islands, the Zhongsha Islands and the Nansha Islands. All those acts affirm China's territorial sovereignty and relevant maritime rights and interests in the South China Sea.

5. Prior to the 1970s, Philippine law had set clear limits for the territory of the Philippines, which did not involve any of China's maritime features in the South China Sea. Article 1 of the 1935 Constitution of the Republic of the Philippines, entitled "The National Territory", provided that "The Philippines comprises all the territory ceded to the United States by the Treaty of Paris concluded between the United States and Spain on the tenth day of December, eighteen hundred and ninety-eight, the limits which are set forth in Article III of said treaty, together with all the islands embraced in the treaty concluded at Washington between the United States and Spain on the seventh day of November, nineteen hundred, and the treaty concluded between the United States and Great Britain on the second day of January, nineteen hundred and thirty, and all territory over which the present Government of the Philippine Islands exercises jurisdiction." Under this provision, the territory of the Philippines was confined to the Philippine Islands, having nothing to do with any of China's maritime features in the South China Sea. Philippine Republic Act No. 3046, entitled "An Act to Define the Baselines of the Territorial Sea of the Philippines", which was promulgated in 1961,

reaffirmed the territorial scope of the country as laid down in the 1935 Constitution.

6. Since the 1970s, the Philippines has illegally occupied a number of maritime features of China's Nansha Islands, including Mahuan Dao, Feixin Dao, Zhongye Dao, Nanyao Dao, Beizi Dao, Xiyue Dao, Shuanghuang Shazhou and Siling Jiao. Furthermore, it unlawfully designated a so-called "Kalayaan Island Group" to encompass some of the maritime features of China's Nansha Islands and claimed sovereignty over them, together with adjacent but vast maritime areas. Subsequently, it laid unlawful claim to sovereignty over Huangyan Dao of China's Zhongsha Islands. In addition, the Philippines has also illegally explored and exploited the resources on those maritime features and in the adjacent maritime areas.

7. The Philippines' activities mentioned above have violated the Charter of the United Nations and international law, and seriously encroached upon China's territorial sovereignty and maritime rights and interests. They are null and void in law. The Chinese Government has always been firmly opposed to these actions of the Philippines, and consistently and continuously made solemn representations and protests to the Philippines.

8. The Philippines has summarized its claims for arbitration in three categories: First, China's assertion of the "historic rights" to the waters, sea-bed and subsoil within the "nine-dash line" (i.e., China's dotted line in the South China Sea) beyond the limits of its entitlements under the Convention is inconsistent with the Convention.

Second, China's claim to entitlements of 200 nautical miles and more, based on certain rocks, low-tide elevations and submerged features in the South China Sea, is inconsistent with the Convention.

9. The subject-matter of the Philippines' claims is in essence one of territorial sovereignty over several maritime features in the South China Sea, which is beyond the scope of the Convention and does not concern the interpretation or application of the Convention. Consequently, the Arbitral Tribunal has no jurisdiction over the claims of the Philippines for arbitration.

10. With regard to the first category of claims presented by the Philippines for arbitration, it is obvious that the core of those claims is that China's maritime claims in the South China Sea have exceeded the extent allowed under the Convention. However, whatever logic is to be followed, only after the extent of China's territorial sovereignty in the South China Sea is determined can a decision be made on whether China's maritime claims in the South China Sea have exceeded the extent allowed under the Convention.

11. It is a general principle of international law that sovereignty over land territory is the basis for the determination of maritime rights. As the International Court of Justice ("ICJ") stated, "maritime rights derive from the coastal State's sovereignty over the land, a principle which can be summarized as 'the land dominates the sea'" (Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v. Bahrain), Merits, Judgment of 16 March 2001, I.C.J. Reports 2001, p. 97, para. 185; cf. also North Sea Continental Shelf (Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands), Judgment of 20 February 1969, I.C.J. Reports 1969, p. 51, para. 96; Aegean Sea Continental Shelf (Greece v. Turkey), Jurisdiction of the Court, Judgment of 19 December 1978, I.C.J. Reports 1978, p. 36, para. 86). And, "[i]t is thus the terrestrial territorial situation that must be taken as starting point for the determination of the maritime rights of a coastal State" (Qatar v. Bahrain, I.C.J. Reports 2001, para. 185; Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras), Judgment of 8 October 2007, I.C.J. Reports 2007, p. 696, para. 113). Recently the ICJ again emphasized that "[t]he title of a State to the continental shelf and to the exclusive economic zone is based on the principle that the land dominates the sea", and that "the land is the legal source of the power which a State may exercise over territorial extensions to seaward" (Territorial and Maritime Dispute (Nicaragua v. Colombia), Judgment of 19 November 2012, I.C.J. Reports 2012, p. 51, para. 140).

12. The preamble of the Convention proclaims "the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans". It is apparent that "due regard for the sovereignty of all States" is the prerequisite for the application of the Convention to determine maritime rights of the States Parties.

13. As far as the present arbitration is concerned, without first having determined China's territorial sovereignty over the maritime features in the South China Sea, the Arbitral Tribunal will not be in a position to determine the extent to which China may claim maritime rights in the South China Sea pursuant to the Convention, not to mention whether China's claims exceed the extent allowed under the Convention. But the issue of territorial sovereignty falls beyond the purview of the Convention.

14. The Philippines is well aware that a tribunal established under Article 287 and Annex VII of the Convention has no jurisdiction over territorial sovereignty disputes. In an attempt to circumvent this jurisdictional hurdle and fabricate a basis for institution of arbitral proceedings, the Philippines has cunningly packaged its case in the present form. It has repeatedly professed that it does not seek from the Arbitral Tribunal a determination of territorial sovereignty over certain maritime features claimed by both countries, but rather a ruling on the compatibility of China's maritime claims with the provisions of the Convention, so that its claims for arbitration would appear to be concerned with the interpretation or application of the Convention, not with the sovereignty over those maritime features.

This contrived packaging, however, fails to conceal the very essence of the subject-matter of the arbitration, namely, the territorial sovereignty over certain maritime features in the South China Sea.

15. With regard to the second category of claims by the Philippines, China believes that the nature and maritime entitlements of certain maritime features in the South China Sea cannot be considered in isolation from the issue of sovereignty.

16. In the first place, without determining the sovereignty over a maritime feature, it is impossible to decide whether maritime claims based on that feature are consistent with the Convention.

17. The holder of the entitlements to an exclusive economic zone ("EEZ") and a continental shelf under the Convention is the coastal State with sovereignty over relevant land territory. When not subject to State sovereignty, a maritime feature per se possesses no maritime rights or entitlements whatsoever. In other words, only the State having

sovereignty over a maritime feature is entitled under the Convention to claim any maritime rights based on that feature. Only after a State's sovereignty over a maritime feature has been determined and the State has made maritime claims in respect thereof, could there arise a dispute concerning the interpretation or application of the Convention, if another State questions the compatibility of those claims with the Convention or makes overlapping claims. If the sovereignty over a maritime feature is undecided, there cannot be a concrete and real dispute for arbitration as to whether or not the maritime claims of a State based on such a feature are compatible with the Convention.

18. In the present case, the Philippines denies China's sovereignty over the maritime features in question, with a view to completely disqualifying China from making any maritime claims in respect of those features. In light of this, the Philippines is putting the cart before the horse by requesting the Arbitral Tribunal to determine, even before the matter of sovereignty is dealt with, the issue of compatibility of China's maritime claims with the Convention. In relevant cases, no international judicial or arbitral body has ever applied the Convention to determine the maritime rights derived from a maritime feature before sovereignty over that feature is decided.

19. Secondly, in respect of the Nansha Islands, the Philippines selects only a few features and requests the Arbitral Tribunal to decide on their maritime entitlements. This is in essence an attempt at denying China's sovereignty over the Nansha Islands as a whole.

20. The Nansha Islands comprises many maritime features. China has always enjoyed sovereignty over the Nansha Islands in its entirety, not just over some features thereof. In 1935, the Commission of the Chinese Government for the Review of Maps of Land and Waters published the Map of Islands in the South China Sea. In 1948, the Chinese Government published the Map of the Location of the South China Sea Islands. Both maps placed under China's sovereignty what are now known as the Nansha Islands as well as the Dongsha Islands, the Xisha Islands and the Zhongsha Islands. The Declaration of the Government of the People's Republic of China on the Territorial Sea of 1958 declared that the territory of the People's Republic of China includes, inter alia, the Nansha Islands.

In 1983, the National Toponymy Commission of China published standard names for some of the South China Sea Islands, including those of the Nansha Islands. The Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone of 1992 again expressly provides that the Nansha Islands constitutes a part of the land territory of the People's Republic of China.

21. In Note Verbale No. CML/8/2011 of 14 April 2011 addressed to Secretary-General of the United Nations, the Permanent Mission of China to the United Nations stated that "under the relevant provisions of the 1982 United Nations Convention on the Law of the Sea, as well as the Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone (1992) and the Law on the Exclusive Economic Zone and the Continental Shelf of the People's Republic of China (1998), China's Nansha Islands is fully entitled to Territorial Sea, Exclusive Economic Zone (EEZ) and Continental Shelf." It is plain that, in order to determine China's maritime entitlements based on the Nansha Islands under the Convention, all maritime features comprising the Nansha Islands must be taken into account.

22. The Philippines, by requesting the Arbitral Tribunal to determine the maritime entitlements of only what it describes as the maritime features "occupied or controlled by China", has in effect dissected the Nansha Islands. It deliberately makes no mention of the rest of the Nansha Islands, including those illegally seized or claimed by the Philippines. Its real intention is to gainsay China's sovereignty over the whole of the Nansha Islands, deny the fact of its illegal seizure of or claim on several maritime features of the Nansha Islands, and distort the nature and scope of the China-Philippines disputes in the South China Sea. In addition, the Philippines has deliberately excluded from the category of the maritime features "occupied or controlled by China" the largest island in the Nansha Islands, Taiping Dao, which is currently controlled by the Taiwan authorities of China. This is a grave violation of the One-China Principle and an infringement of China's sovereignty and territorial integrity. This further shows that the second category of claims brought by the Philippines essentially pertains to the territorial sovereignty dispute between the two countries.

23. Finally, whether or not low-tide elevations can be appropriated is plainly a question of territorial sovereignty.

24. The Philippines asserts that some of the maritime features, about which it has submitted claims for arbitration, are low-tide elevations, thus being incapable of appropriation as territory. As to whether those features are indeed low-tide elevations, this Position Paper will not comment. It should, however, be pointed out that, whatever nature those features possess, the Philippines itself has persisted in claiming sovereignty over them since the 1970s. By Presidential Decree No. 1596, promulgated on 11 June 1978, the Philippines made known its unlawful claim to sovereignty over some maritime features in the Nansha Islands including the aforementioned features, together with the adjacent but vast areas of waters, sea-bed, subsoil, continental margin and superjacent airspace, and constituted the vast area as a new municipality of the province of Palawan, entitled "Kalayaan". Notwithstanding that Philippine Republic Act No. 9522 of 10 March 2009 stipulates that the maritime zones for the so-called "Kalayaan Island Group" (i.e., some maritime features of China's Nansha Islands) and "Scarborough Shoal" (i.e., China's Huangyan Dao) be determined in a way consistent with Article 121 of the Convention (i.e., the regime of islands), this provision was designed to adjust the Philippines' maritime claims based on those features within the aforementioned area. The Act did not vary the territorial claim of the Philippines to the relevant maritime features, including those it alleged in this arbitration as low-tide elevations. In Note Verbale No. 000228, addressed to Secretary-General of the United Nations on 5 April 2011, the Philippine Permanent Mission to the United Nations stated that, "the Kalayaan Island Group (KIG) constitutes an integral part of the Philippines. The Republic of the Philippines has sovereignty and jurisdiction over the geological features in the KIG." The Philippines has maintained, to date, its claim to sovereignty over 40 maritime features in the Nansha Islands, among which are the very features it now labels as low-tide elevations. It is thus obvious that the only motive behind the Philippines' assertion that low-tide elevations cannot be appropriated is to deny China's sovereignty over these features so as to place them under Philippine sovereignty.

25. Whether low-tide elevations can be appropriated as territory is in itself a question of territorial sovereignty, not a matter concerning the interpretation or application of

the Convention. The Convention is silent on this issue of appropriation. In its 2001 Judgment in *Qatar v. Bahrain*, the ICJ explicitly stated that, "International treaty law is silent on the question whether low-tide elevations can be considered to be 'territory'. Nor is the Court aware of a uniform and widespread State practice which might have given rise to a customary rule which unequivocally permits or excludes appropriation of low-tide elevations" (*Qatar v. Bahrain*, I.C.J. Reports 2001, pp. 101-102, para. 205). "International treaty law" plainly includes the Convention, which entered into force in 1994. In its 2012 Judgment in *Nicaragua v. Colombia*, while the ICJ stated that "low-tide elevations cannot be appropriated" (*Nicaragua v. Colombia*, I.C.J. Reports 2012, p. 641, para. 26), it did not point to any legal basis for this conclusory statement. Nor did it touch upon the legal status of low-tide elevations as components of an archipelago, or sovereignty or claims of sovereignty that may have long existed over such features in a particular maritime area. On all accounts, the ICJ did not apply the Convention in that case. Whether or not low-tide elevations can be appropriated is not a question concerning the interpretation or application of the Convention.

26. As to the third category of the Philippines' claims, China maintains that the legality of China's actions in the waters of the Nansha Islands and Huangyan Dao rests on both its sovereignty over relevant maritime features and the maritime rights derived therefrom.

27. The Philippines alleges that China's claim to and exercise of maritime rights in the South China Sea have unlawfully interfered with the sovereign rights, jurisdiction and rights and freedom of navigation, which the Philippines is entitled to enjoy and exercise under the Convention. The premise for this claim must be that the spatial extent of the Philippines' maritime jurisdiction is defined and undisputed, and that China's actions have encroached upon such defined areas. The fact is, however, to the contrary. China and the Philippines have not delimited the maritime space between them. Until and unless the sovereignty over the relevant maritime features is ascertained and maritime delimitation completed, this category of claims of the Philippines cannot be decided upon.

28. It should be particularly emphasized that China always respects the freedom of navigation and overflight enjoyed by all States in the South China Sea in accordance with international law.

29. To sum up, by requesting the Arbitral Tribunal to apply the Convention to determine the extent of China's maritime rights in the South China Sea, without first having ascertained sovereignty over the relevant maritime features, and by formulating a series of claims for arbitration to that effect, the Philippines contravenes the general principles of international law and international jurisprudence on the settlement of international maritime disputes. To decide upon any of the Philippines' claims, the Arbitral Tribunal would inevitably have to determine, directly or indirectly, the sovereignty over both the maritime features in question and other maritime features in the South China Sea. Besides, such a decision would unavoidably produce, in practical terms, the effect of a maritime delimitation, which will be further discussed below in Part IV of this Position Paper. Therefore, China maintains that the Arbitral Tribunal manifestly has no jurisdiction over the present case.

III. There exists an agreement between China and the Philippines to settle their disputes in the South China Sea through negotiations, and the Philippines is debarred from unilaterally initiating compulsory arbitration

30. With regard to disputes concerning territorial sovereignty and maritime rights, China has always maintained that they should be peacefully resolved through negotiations between the countries directly concerned. In the present case, there has been a long-standing agreement between China and the Philippines on resolving their disputes in the South China Sea through friendly consultations and negotiations.

31. Under the Joint Statement between the People's Republic of China and the Republic of the Philippines concerning Consultations on the South China Sea and on Other Areas of Cooperation, issued on 10 August 1995, both sides "agreed to abide by" the principles that "[d]isputes shall be settled in a peaceful and friendly manner through consultations on the basis of equality and mutual respect" (Point 1); that "a gradual and progressive process of cooperation shall be adopted with a view to eventually negotiating a

settlement of the bilateral disputes" (Point 3); and that "[d]isputes shall be settled by the countries directly concerned without prejudice to the freedom of navigation in the South China Sea" (Point 8).

32. The Joint Statement of the China-Philippines Experts Group Meeting on Confidence-Building Measures, issued on 23 March 1999, states that the two sides reiterated their commitment to "[t]he understanding to continue to work for a settlement of their difference through friendly consultations" (para. 5), and that "the two sides believe that the channels of consultations between China and the Philippines are unobstructed. They have agreed that the dispute should be peacefully settled through consultation" (para. 12).

33. The Joint Statement between the Government of the People's Republic of China and the Government of the Republic of the Philippines on the Framework of Bilateral Cooperation in the Twenty-First Century, issued on 16 May 2000, states in Point 9 that, "The two sides commit themselves to the maintenance of peace and stability in the South China Sea. They agree to promote a peaceful settlement of disputes through bilateral friendly consultations and negotiations in accordance with universally-recognized principles of international law, including the 1982 United Nations Convention on the Law of the Sea. They reaffirm their adherence to the 1995 joint statement between the two countries on the South China Sea ...".

34. The Joint Press Statement of the Third China-Philippines Experts' Group Meeting on Confidence-Building Measures, dated 4 April 2001, states in Point 4 that, "The two sides noted that the bilateral consultation mechanism to explore ways of cooperation in the South China Sea has been effective. The series of understanding and consensus reached by the two sides have played a constructive role in the maintenance of the sound development of China-Philippines relations and peace and stability of the South China Sea area."

35. The mutual understanding between China and the Philippines to settle relevant disputes through negotiations has been reaffirmed in a multilateral instrument. On 4 November 2002, Mr. Wang Yi, the then Vice Foreign Minister and representative of the Chinese Government, together with the representatives of the governments of the

member States of the Association of Southeast Asian Nations ("ASEAN"), including the Philippines, jointly signed the Declaration on the Conduct of Parties in the South China Sea ("DOC"). Paragraph 4 of the DOC explicitly states that, "The Parties concerned undertake to resolve their territorial and jurisdictional disputes by peaceful means ... through friendly consultations and negotiations by sovereign states directly concerned, in accordance with universally recognized principles of international law, including the 1982 UN Convention on the Law of the Sea."

36. Following the signing of the DOC, the leaders of China and the Philippines have repeatedly reiterated their commitment to the settlement of disputes by way of dialogue. Thus, a Joint Press Statement between the Government of the People's Republic of China and the Government of the Republic of the Philippines was issued on 3 September 2004 during the State visit to China by the then Philippine President Gloria Macapagal-Arroyo, which states in paragraph 16 that, "They agreed that the early and vigorous implementation of the 2002 ASEAN-China Declaration on the Conduct of Parties in the South China Sea will pave the way for the transformation of the South China Sea into an area of cooperation."

37. Between 30 August and 3 September 2011, President Benigno S. Aquino III of the Philippines paid a State visit to China. On 1 September 2011, the two sides issued a Joint Statement between the People's Republic of China and the Republic of the Philippines, which, in paragraph 15, "reiterated their commitment to addressing the disputes through peaceful dialogue" and "reaffirmed their commitments to respect and abide by the Declaration on the Conduct of Parties in the South China Sea signed by China and the ASEAN member countries in 2002". The Joint Statement, consequently, reaffirmed Paragraph 4 of the DOC relating to settlement of relevant disputes by negotiations.

38. The bilateral instruments between China and the Philippines repeatedly employ the term "agree" when referring to settlement of their disputes through negotiations. This evinces a clear intention to establish an obligation between the two countries in this regard. Paragraph 4 of the DOC employs the term "undertake", which is also frequently used in international agreements to commit the parties to their obligations. As the ICJ

observed in its Judgment in *Bosnia and Herzegovina v. Serbia and Montenegro*, "[t]he ordinary meaning of the word 'undertake' is to give a formal promise, to bind or engage oneself, to give a pledge or promise, to agree, to accept an obligation. It is a word regularly used in treaties setting out the obligations of the Contracting Parties It is not merely

hortatory or purposive" (*Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment of 26 February 2007, I.C.J. Reports 2007, p. 111, para. 162). Furthermore, under international law, regardless of the designation or form the above-mentioned instruments employ, as long as they intend to create rights and obligations for the parties, these rights and obligations are binding between the parties (Cf. *Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v. Bahrain)*, Jurisdiction and Admissibility, Judgment of 1 July 1994, I.C.J. Reports 1994, pp. 120-121, paras. 22-26; *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria: Equatorial Guinea intervening)*, Judgment of 10 October 2002, I.C.J. Reports 2002, pp. 427, 429, paras. 258, 262-263).

39. The relevant provisions in the aforementioned bilateral instruments and the DOC are mutually reinforcing and form an agreement between China and the Philippines. On that basis, they have undertaken a mutual obligation to settle their relevant disputes through negotiations.

40. By repeatedly reaffirming negotiations as the means for settling relevant disputes, and by emphasizing that negotiations be conducted by sovereign States directly concerned, the above-quoted provisions of the bilateral instruments and Paragraph 4 of the DOC obviously have produced the effect of excluding any means of third-party settlement. In particular, the above-mentioned Joint Statement between the People's Republic of China and the Republic of the Philippines concerning Consultations on the South China Sea and on Other Areas of Cooperation of 10 August 1995 stipulates in Point 3 that "a gradual and progressive process of cooperation shall be adopted with a view to eventually negotiating a settlement of the bilateral disputes". The term "eventually" in this context clearly serves to emphasize that "negotiations" is the only

means the parties have chosen for dispute settlement, to the exclusion of any other means including third party settlement procedures. Although the above-mentioned bilateral instruments and Paragraph 4 of the DOC do not use such an express phrase as "exclude other procedures of dispute settlement", as the arbitral tribunal in the Southern Bluefin Tuna Case stated in its Award, "the absence of an express exclusion of any procedure ... is not decisive" (Australia and New Zealand v. Japan, Award on Jurisdiction and Admissibility, 4 August 2000, p.97, para. 57). As discussed earlier, in respect of disputes relating to territorial sovereignty and maritime rights, China always insists on peaceful settlement of disputes by means of negotiations between the countries directly concerned. China's position on negotiations was made clear and well known to the Philippines and other relevant parties during the drafting and adoption of the aforementioned bilateral instruments and the DOC.

41. Consequently, with regard to all the disputes between China and the Philippines in the South China Sea, including the Philippines' claims in this arbitration, the only means of settlement as agreed by the two sides is negotiations, to the exclusion of any other means.

42. Even supposing that the Philippines' claims were concerned with the interpretation or application of the Convention, the compulsory procedures laid down in section 2 of Part XV of the Convention still could not be applied, given the agreement between China and the Philippines on settling their relevant disputes through negotiations.

43. Article 280 of the Convention states that, "Nothing in this Part impairs the right of any States Parties to agree at any time to settle a dispute between them concerning the interpretation or application of this Convention by any peaceful means of their own choice." Article 281 (1) provides that, "If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed to seek settlement of the dispute by a peaceful means of their own choice, the procedures provided for in this Part apply only where no settlement has been reached by recourse to such means and the agreement between the parties does not exclude any further procedure."

44. As analysed above, through bilateral and multilateral instruments, China and the Philippines have agreed to settle their relevant disputes by negotiations, without setting

any time limit for the negotiations, and have excluded any other means of settlement. In these circumstances, it is evident that, under the above quoted provisions of the Convention, the relevant disputes between the two States shall be resolved through negotiations and there shall be no recourse to arbitration or other compulsory procedures.

45. The Philippines claims that, the two countries have been involved in exchanges of views since 1995 with regard to the subject-matter of the Philippines' claims for arbitration, without however reaching settlement, and that in its view, the Philippines is justified in believing that it is meaningless to continue the negotiations, and therefore the Philippines has the right to initiate arbitration. But the truth is that the two countries have never engaged in negotiations with regard to the subject-matter of the arbitration.

46. Under international law, general exchanges of views, without having the purpose of settling a given dispute, do not constitute negotiations. In *Georgia v. Russian Federation*, the ICJ held that, "Negotiations entail more than the plain opposition of legal views or interests between two parties, or the existence of a series of accusations and rebuttals, or even the exchange of claims and directly opposed counter-claims. As such, the concept of 'negotiations' ... requires - at the very least - a genuine attempt by one of the disputing parties to engage in discussions with the other disputing party, with a view to resolving the dispute" (*Application of the International Convention on the Elimination of All Forms of Racial Discrimination (Georgia v. Russian Federation)*, Preliminary Objections, Judgment of 1 April 2011, I.C.J. Reports 2011, p. 132, para. 157). In addition, the ICJ considered that "the subject-matter of the negotiations must relate to the subject-matter of the dispute which, in turn, must concern the substantive obligations contained in the treaty in question" (*Ibid.*, p. 133, para. 161).

47. The South China Sea issue involves a number of countries, and it is no easy task to solve it. Up to the present, the countries concerned are still working together to create conditions conducive to its final settlement by negotiations. Against this background, the exchanges of views between China and the Philippines in relation to their disputes have so far pertained to responding to incidents at sea in the disputed areas and promoting measures to prevent conflicts, reduce frictions, maintain stability

in the region, and promote measures of cooperation. They are far from constituting negotiations even on the evidence presented by the Philippines.

48. In recent years, China has on a number of occasions proposed to the Philippines the establishment of a China-Philippines regular consultation mechanism on maritime issues. To date, there has never been any response from the Philippines. On 1 September 2011, the two countries issued a Joint Statement between the People's Republic of China and the Republic of Philippines, reiterating the commitment to settling their disputes in the South China Sea through negotiations. But, before negotiations could formally begin, the Philippines sent on 10 April 2012 a naval vessel to the waters of China's Huangyan Dao to seize Chinese fishing boats together with the Chinese fishermen on board. In the face of such provocations, China was forced to take response measures to safeguard its sovereignty. Thereafter, China once again proposed to the Philippine Government that the two sides restart the China-Philippines consultation mechanism for confidence-building measures. That proposal again fell on deaf ears. On 26 April 2012, the Philippine Department of Foreign Affairs delivered a note verbale to the Chinese Embassy in the Philippines, proposing that the issue of Huangyan Dao be referred to a third-party adjudication body for resolution and indicating no willingness to negotiate. On 22 January 2013, the Philippines unilaterally initiated the present compulsory arbitration proceedings.

49. The previous exchanges of views regarding the South China Sea issue between the two countries did not concern the subject-matter of the Philippines' claims for arbitration. For instance, the Philippines cited a statement released by the Chinese Foreign Ministry on 22 May 1997 regarding Huangyan Dao, in order to show that there exists between the two countries a dispute concerning the maritime rights of Huangyan Dao and that the two countries had exchanged views with regard to that dispute. However, the Philippines deliberately omitted a passage from that statement, which reads: "The issue of Huangyandao is an issue of territorial sovereignty; the development and exploitation of the EEZ is a question of maritime jurisdiction, the nature of the two issues are different and hence the laws and regulations governing them are also different, and they should not be discussed together. The attempt of the Philippine side to use maritime jurisdictional rights to violate the territorial sovereignty of China is

untenable." This passage makes clear the thrust of the statement: the Philippines shall not negate China's sovereignty over Huangyan Dao on the pretext that it is situated within the EEZ of the Philippines. This shows that the exchange of views in question was centred on the issue of sovereignty.

50. It should be further noted that, the Philippines has attempted to show that the subject-matter of the exchanges of views between China and the Philippines since 1995 concerns the interpretation or application of the Convention, but nothing could be farther from the truth than this. Historically, the Philippines, by Republic Act No. 3046 of 17 June 1961, proclaimed as part of its territorial sea the vast areas of sea between the most outlying islands in the Philippine archipelago and the treaty limits established in the Treaty of Paris concluded between the United States and Spain in 1898, among other international treaties, thus claiming a belt of territorial sea far beyond 12 nautical miles. By Presidential Decree No. 1596 promulgated on 11 June 1978, the Philippines made its claim for sovereignty over the so-called "Kalayaan Island Group" (i.e., some maritime features of China's Nansha Islands), together with the adjacent but vast areas of waters, sea-bed, subsoil, continental margin, and superjacent airspace. As conceded by the Philippines itself, only with the adoption on 10 March 2009 of Republic Act No. 9522 did it begin the ongoing process to harmonize its domestic law with the Convention, with a view to eventually relinquishing all its maritime claims incompatible with the Convention. That Act provided, for the first time, that the maritime areas of the so-called "Kalayaan Island Group" (i.e., some maritime features of China's Nansha Islands) and "Scarborough Shoal" (i.e., China's Huangyan Dao) "shall be determined" so as to be "consistent with Article 121" of the Convention (i.e., the regime of islands). Therefore, given that the Philippines itself considers that only in 2009 did it start to abandon its former maritime claims in conflict with the Convention, how could it have started in 1995 to exchange views with China on matters concerning the interpretation or application of the Convention that are related to the present arbitration?

51. The Philippines claims that China cannot invoke Paragraph 4 of the DOC to exclude the jurisdiction of the Arbitral Tribunal, given its own grave breach of the terms of the DOC. This is groundless. In support of its allegations against China, the Philippines claims that China has taken measures including the threat of force to drive away

Philippine fishermen from the waters of Huangyan Dao in spite of their long-standing and continuous fishing activities in those waters, and

that China has blocked the Philippines from resupplying a naval ship which ran and has stayed aground at Ren'ai Jiao and certain navy personnel on board. But the fact is that, regarding the situation at Huangyan Dao, it was the Philippines that first resorted to the threat of force by dispatching on 10 April 2012 a naval vessel to detain and arrest Chinese fishing boats and fishermen in the waters of Huangyan Dao. Regarding the situation at Ren'ai Jiao, which is a constituent part of China's Nansha Islands, the Philippines illegally ran a naval ship aground in May 1999 at that feature on the pretext of "technical difficulties". China has made repeated representations to the Philippines, demanding that the latter immediately tow away the vessel. The Philippines, for its part, had on numerous occasions made explicit undertaking to China to tow away the vessel grounded due to "technical difficulties". However, for over 15 years, instead of fulfilling that undertaking, the Philippines has attempted to construct permanent installations on Ren'ai Jiao. On 14 March 2014, the Philippines even openly declared that the vessel was deployed as a permanent installation on Ren'ai Jiao in 1999. China has been forced to take necessary measures in response to such provocative conduct. In light of these facts, the Philippines' accusations against China are baseless.

52. While it denies the effect of Paragraph 4 of the DOC for the purpose of supporting its institution of the present arbitration, the Philippines recently called on the parties to the DOC to comply with Paragraph 5 of the DOC and to provide "the full and effective implementation of the DOC", in a proposal made in its Department of Foreign Affairs statement dated 1 August 2014. This selective and self-contradictory tactic clearly violates the principle of good faith in international law.

53. The principle of good faith requires all States to honestly interpret agreements they enter into with others, not to misinterpret them in disregard of their authentic meaning in order to obtain an unfair advantage. This principle is of overriding importance and is incorporated in Article 2(2) of the Charter of the United Nations. It touches every aspect of international law (Cf. Sir Robert Jennings and Sir Arthur Watts (eds.), *Oppenheim's International Law*, 9th ed., 1992, vol. 1, p. 38). In the Nuclear Tests Case,

the ICJ held that, "One of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation" (Nuclear Tests Case (Australia v. France), Judgment of 20 December 1974, I.C.J. Reports 1974, p. 268, para. 46).

54. On this occasion, China wishes to emphasize that the DOC is an important instrument, adopted by China and the ASEAN member States following many years of arduous negotiations on the basis of mutual respect, mutual understanding and mutual accommodation. Under the DOC, the parties concerned undertake to resolve their territorial and jurisdictional disputes through friendly consultations and negotiations by sovereign States directly concerned. In addition, the parties reaffirm their commitment to the purposes and principles of the Charter of the United Nations, the 1982 Convention, the Treaty of Amity and Cooperation in Southeast Asia, the Five Principles of Peaceful Coexistence, and other universally recognized principles of international law which shall serve as the basic norms governing state-to-state relations. The Parties commit themselves to exploring ways for building trust and confidence in accordance with the above-mentioned principles and on the basis of equality and mutual respect; reaffirm their respect for and commitment to the freedom of navigation in, and overflight above, the South China Sea as provided for by universally recognized principles of international law, including the 1982 Convention; and undertake to exercise self-restraint in the conduct of activities that would complicate or escalate disputes and affect peace and stability including, among others, refraining from action of inhabiting on the presently uninhabited islands, reefs, shoals, cays, and other features, and to handle their differences in a constructive manner.

The DOC also lists a number of ways to build trust and areas of cooperation for the Parties concerned to seek and explore pending the peaceful settlement of territorial and jurisdictional disputes. As a follow-up to the DOC, the parties have undertaken to negotiate a "Code of Conduct in the South China Sea".

55. The DOC has played a positive role in maintaining stability in the South China Sea, and in enhancing maritime cooperation, building trust and reducing misgivings between China and the ASEAN member States. Every provision of the DOC constitutes

an integral part of the document. To deny the significance of the DOC will lead to a serious retrogression from the current relationship of cooperation between China and the ASEAN member States in the South China Sea.

56. As a member of the ASEAN and having been involved throughout the consultations on the DOC, the Philippines should have fully appreciated the significance of the DOC for the peaceful settlement of the disputes in the South China Sea through negotiations. At present, in order to maintain stability in the region and create conditions for peaceful settlement of the South China Sea issue, China and the ASEAN member States have established working mechanisms to effectively implement the DOC, and have been engaged in consultations regarding the "Code of Conduct in the South China Sea". By initiating compulsory arbitration at this juncture, the Philippines is running counter to the common wish and joint efforts of China and the ASEAN member States. Its underlying goal is not, as the Philippines has proclaimed, to seek peaceful resolution of the South China Sea issue, but rather, by resorting to arbitration, to put political pressure on China, so as to deny China's lawful rights in the South China Sea through the so-called "interpretation or application" of the Convention, and to pursue a resolution of the South China Sea issue on its own terms. This is certainly unacceptable to China.

IV. Even assuming, arguendo, that the subject-matter of the arbitration were concerned with the interpretation or application of the Convention, that subject-matter would still be an integral part of maritime delimitation and, having been excluded by the 2006 Declaration filed by China, could not be submitted for arbitration

57. Part XV of the Convention establishes the right for the States Parties to file a written declaration to exclude specified categories of disputes from the compulsory dispute settlement procedures as laid down in section 2 of that Part. In 2006 China filed such a declaration in full compliance with the Convention.

58. On 25 August 2006, China deposited, pursuant to Article 298 of the Convention, with Secretary-General of the United Nations a written declaration, stating that, "The

Government of the People's Republic of China does not accept any of the procedures provided for in section 2 of Part XV of the Convention with respect to all the categories of disputes referred to in paragraph 1 (a), (b) and (c) of Article 298 of the Convention". In other words, as regards disputes concerning maritime delimitation, historic bays or titles, military and law enforcement activities, and disputes in respect of which the Security Council of the United Nations is exercising the functions assigned to it by the Charter of the United Nations, the Chinese Government does not accept any of the compulsory dispute settlement procedures laid down in section 2 of Part XV of the Convention, including compulsory arbitration. China firmly believes that the most effective means for settlement of maritime disputes between China and its neighbouring States is that of friendly consultations and negotiations between the sovereign States directly concerned.

59. China and the Philippines are maritime neighbours and "States with opposite or adjacent coasts" in the sense of Articles 74 and 83 of the Convention. There exists an issue of maritime delimitation between the two States. Given that disputes between China and the Philippines relating to territorial sovereignty over relevant maritime features remain unresolved, the two States have yet to start negotiations on maritime delimitation. They have, however, commenced cooperation to pave the way for an eventual delimitation.

60. On 3 September 2004, the two sides issued a Joint Press Statement of the Government of the People's Republic of China and the Government of the Republic of the Philippines, stating that "[t]he two sides reaffirmed their commitment to the peace and stability in the South China Sea and their readiness to continue discussions to study cooperative activities like joint development pending the comprehensive and final settlement of territorial disputes and overlapping maritime claims in the area" (para. 16).

61. Two days before the issuance of the Joint Press Statement, upon approval by both governments and in the presence of the Heads of State of the two countries, China National Offshore Oil Corporation and Philippine National Oil Company signed the "Agreement for Joint Marine Seismic Undertaking in Certain Areas in the South China Sea". On 14 March 2005, the agreement was expanded to a tripartite agreement, with

the participation of Vietnam Oil and Gas Corporation. This is a good example of the constructive efforts made by the States concerned to enhance cooperation and create conditions for a negotiated settlement of the disputes in the South China Sea. The maritime area covered by that agreement is within that covered in the present arbitration initiated by the Philippines.

62. On 28 April 2005, during a State visit to the Philippines by the then Chinese President Hu Jintao, China and the Philippines issued a Joint Statement of the People's Republic of China and the Republic of the Philippines, in which the two sides "agreed to continue efforts to maintain peace and stability in the South China Sea and ... welcomed the signing of the Tripartite Agreement for Joint Marine Seismic Undertaking in the Agreement Area in the South China Sea by China National Offshore Oil Corporation, Vietnam Oil and Gas Corporation and Philippine National Oil Company" (para. 16).

63. On 16 January 2007, during the official visit to the Philippines by the then Chinese Premier Wen Jiabao, China and the Philippines issued a Joint Statement of the People's Republic of China and the Republic of the Philippines, which stated that "the Tripartite Joint Marine Seismic Undertaking in the South China Sea serves as a model for cooperation in the region. They agreed that possible next steps for cooperation among the three parties should be explored to bring collaboration to a higher level and increase the momentum of trust and confidence in the region" (para. 12).

64. In light of the above, it is plain that China and the Philippines have reached mutual understanding to advance final resolution of the issue of maritime delimitation through cooperation. In any event, given China's 2006 declaration, the Philippines should not and cannot unilaterally initiate compulsory arbitration on the issue of maritime delimitation.

65. To cover up the maritime delimitation nature of the China-Philippines dispute and to sidestep China's 2006 declaration, the Philippines has split up the dispute of maritime delimitation into discrete issues and selected a few of them for arbitration, requesting the Arbitral Tribunal to render the so-called "legal interpretation" on each of them.

66. It is not difficult to see that such legal issues as those presented by the Philippines in the present arbitration, including maritime claims, the legal nature of maritime features, the extent of relevant maritime rights, and law enforcement activities at sea, are all fundamental issues dealt with in past cases of maritime delimitation decided by international judicial or arbitral bodies and in State practice concerning maritime delimitation. In short, those issues are part and parcel of maritime delimitation.

67. Maritime delimitation is an integral, systematic process. Articles 74 and 83 of the Convention stipulate that maritime delimitation between States with opposite or adjacent coasts "shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution". Both international jurisprudence and State practice have recognized that all relevant factors must be taken into account

to achieve an equitable solution. In this light, the international law applicable to maritime delimitation includes both the Convention and general international law. Under this body of law, maritime delimitation involves a consideration of not only entitlements, effect of maritime features, and principles and methods of delimitation, but also all relevant factors that must be taken into account, in order to attain an equitable solution.

68. The issues presented by the Philippines for arbitration constitute an integral part of maritime delimitation between China and the Philippines, and, as such, can only be considered under the overarching framework of maritime delimitation between China and the Philippines, and in conjunction with all the relevant rights and interests the parties concerned enjoy in accordance with the Convention, general international law, and historical or long-standing practice in the region for overall consideration. The Philippines' approach of splitting its maritime delimitation dispute with China and selecting some of the issues for arbitration, if permitted, will inevitably destroy the integrity and indivisibility of maritime delimitation and contravene the principle that maritime delimitation must be based on international law as referred to in Article 38 of the ICJ Statute and that "all relevant factors must be taken into account". This will adversely affect the future equitable solution of the dispute of maritime delimitation between China and the Philippines.

69. Ostensibly, the Philippines is not seeking from the Arbitral Tribunal a ruling regarding maritime delimitation, but instead a decision, *inter alia*, that certain maritime features are part of the Philippines' EEZ and continental shelf, and that China has unlawfully interfered with the enjoyment and exercise by the Philippines of sovereign rights in its EEZ and continental shelf. But that obviously is an attempt to seek a recognition by the Arbitral Tribunal that the relevant maritime areas are part of the Philippines' EEZ and continental shelf, in respect of which the Philippines is entitled to exercise sovereign rights and jurisdiction. This is actually a request for maritime delimitation by the Arbitral Tribunal in disguise. The Philippines' claims have in effect covered the main aspects and steps in maritime delimitation. Should the Arbitral Tribunal address substantively the Philippines' claims, it would amount to a *de facto* maritime delimitation.

70. The exclusionary declarations filed by the States Parties to the Convention under Article 298 of the Convention must be respected. By initiating the present compulsory arbitration as an attempt to circumvent China's 2006 declaration, the Philippines is abusing the dispute settlement procedures under the Convention.

71. China's 2006 declaration, once filed, automatically comes into effect. Its effect, as prescribed under Article 299 of the Convention, is that, without the consent of China, no State Party can unilaterally invoke any of the compulsory procedures specified in section 2 of Part XV against China in respect of the disputes covered by that declaration. In return, China simultaneously gives up the right to unilaterally initiate compulsory procedures against other States Parties in respect of the same disputes. The rights and obligations are reciprocal in this regard.

72. The Philippines claims that, having chosen none of the four compulsory dispute settlement procedures listed under Article 287 of the Convention, China as a State Party shall therefore be deemed to have accepted compulsory arbitration. This is a deliberately misleading argument. The purpose and the effect of China's 2006 declaration is such that the disputes listed therein are fully excluded from the compulsory settlement procedures under the Convention. Whether or not China has selected any of the four compulsory procedures under Article 287, as long as a dispute falls within the scope

of China's 2006 declaration, China has already explicitly excluded it from the applicability of any compulsory procedures under section 2 of Part XV of the Convention, including compulsory arbitration.

73. Although the Philippines professes that the subject-matter of the arbitration does not involve any dispute covered by China's 2006 declaration, since China holds a different view in this regard, the Philippines should first take up this issue with China, before a decision can be taken on whether or not it can be submitted for arbitration. Should the Philippines' logic in its present form be followed, any State Party may unilaterally initiate compulsory arbitration against another State Party in respect of a dispute covered by the latter's declaration in force simply by asserting that the dispute is not excluded from arbitration by that declaration. This would render the provisions of Article 299 meaningless.

74. Since the entry into force of the Convention, the present arbitration is the first case in which a State Party has unilaterally initiated compulsory arbitration in respect of a dispute covered by a declaration of another State Party under Article 298. If this twisted approach of the Philippines could be accepted as fulfilling the conditions for invoking compulsory arbitration, it could be well imagined that any of the disputes listed in Article 298 may be submitted to the compulsory procedures under section 2 of Part XV simply by connecting them, using the Philippines' approach, with the question of interpretation or application of certain provisions of the Convention. Should the above approach be deemed acceptable, the question would then arise as to whether the provisions of Article 298 could still retain any value, and whether there is any practical meaning left of the declarations so far filed by 35 States Parties under Article 298. In light of the foregoing reasons, China can only conclude that, the unilateral initiation by the Philippines of the present arbitration constitutes an abuse of the compulsory procedures provided in the Convention and a grave challenge to the solemnity of the dispute settlement mechanism under the Convention.

75. To sum up, even assuming that the subject-matter of the arbitration were concerned with the interpretation or application of the Convention, it would still be an integral part of the dispute of maritime delimitation between the two States. Having been

excluded by China's 2006 declaration, it could not be submitted to compulsory arbitration under the Convention.

VI. Conclusions

86. It is the view of China that the Arbitral Tribunal manifestly has no jurisdiction over this arbitration, unilaterally initiated by the Philippines, with regard to disputes between China and the Philippines in the South China Sea.

Firstly, the essence of the subject-matter of the arbitration is the territorial sovereignty over the relevant maritime features in the South China Sea, which is beyond the scope of the Convention and is consequently not concerned with the interpretation or application of the Convention.

Secondly, there is an agreement between China and the Philippines to settle their disputes in the South China Sea by negotiations, as embodied in bilateral instruments and the DOC. Thus the unilateral initiation of the present arbitration by the Philippines has clearly violated international law.

Thirdly, even assuming that the subject-matter of the arbitration did concern the interpretation or application of the Convention, it has been excluded by the 2006 declaration filed by China under Article 298 of the Convention, due to its being an integral part of the dispute of maritime delimitation between the two States.

Fourthly, China has never accepted any compulsory procedures of the Convention with regard to the Philippines' claims for arbitration. The Arbitral Tribunal shall fully respect the right of the States Parties to the Convention to choose the means of dispute settlement of their own accord, and exercise its competence to decide on its jurisdiction within the confines of the Convention. The initiation of the present arbitration by the Philippines is an abuse of the compulsory dispute settlement procedures under the Convention. There is a solid basis in international law for China's rejection of and non-participation in the present arbitration.

87. China consistently adheres to the policy of friendly relations with its neighbouring States, and strives for fair and equitable solution in respect of disputes of territorial sovereignty and maritime delimitation by way of negotiations on the basis of equality and the Five Principles of Peaceful Co-existence. China holds that negotiations is always the most direct, effective, and universally used means for peaceful settlement of international disputes.

88. After years of diplomatic efforts and negotiations, China has successfully resolved land boundary disputes with twelve out of its fourteen neighbours, delimiting and demarcating some 20,000 kilometres in length of land boundary in the process, which accounts for over 90% of the total length of China's land boundary. On 25 December 2000, China and Vietnam concluded, following negotiations, the Agreement between the People's Republic of China and the Socialist Republic of Viet Nam on the Delimitation of the Territorial Seas, the Exclusive Economic Zones and Continental Shelves in Beibu Bay, establishing a maritime boundary between the two States in Beibu Bay. On 11 November 1997, the Agreement on Fisheries between the People's Republic of China and Japan

was signed. On 3 August 2000, the Agreement on Fisheries between the Government of the People's Republic of China and the Government of the Republic of Korea was signed. On 24 December 2005, the Agreement between the Government of the People's Republic of China and the Government of the Democratic People's Republic of Korea for Joint Development of Oil Resources at Sea was signed. All these are provisional arrangements pending the maritime delimitation between China and those States.

89. The facts show that, as long as States concerned negotiate in good faith and on the basis of equality and mutual benefit, territorial and maritime delimitation disputes can be resolved properly between them. This principle and position of China equally apply to its disputes with the Philippines in the South China Sea.

90. China does not consider submission by agreement of a dispute to arbitration as an unfriendly act. In respect of disputes of territorial sovereignty and maritime rights, unilateral resort to compulsory arbitration against another State, however, cannot be taken as a friendly act, when the initiating State is fully aware of the opposition of

the other State to the action and the existing agreement between them on dispute settlement through negotiations. Furthermore, such action cannot be regarded as in conformity with the rule of law, as it runs counter to the basic rules and principles of international law. It will not in any way facilitate a proper settlement of the dispute between the two countries. Instead it will undermine mutual trust and further complicate the bilateral relations.

91. In recent years, the Philippines has repeatedly taken new provocative actions in respect of Huangyan Dao and Ren'ai Jiao. Such actions have gravely hindered mutual political trust between China and the Philippines, and undermined the amicable atmosphere for China and ASEAN member States to implement the DOC and consult on the proposed Code of Conduct in the South China Sea. In fact, in the region of Southeast Asia, it is not China that has become "increasingly assertive"; it is the Philippines that has become increasingly provocative.

92. The issue of the South China Sea involves a number of States, and is compounded by complex historical background and sensitive political factors. Its final resolution demands patience and political wisdom from all parties concerned. China always maintains that the parties concerned shall seek proper ways and means of settlement through consultations and negotiations on the basis of respect for historical facts and international law. Pending final settlement, all parties concerned should engage in dialogue and cooperation to preserve peace and stability in the South China Sea, enhance mutual trust, clear up doubts, and create conditions for the eventual resolution of the issue.

93. The unilateral initiation of the present arbitration by the Philippines will not change the history and fact of China's sovereignty over the South China Sea Islands and the adjacent waters; nor will it shake China's resolve and determination to safeguard its sovereignty and maritime rights and interests; nor will it affect the policy and position of China to resolve the relevant disputes by direct negotiations and work together with other States in the region to maintain peace and stability in the South China Sea.



Review on PHM (Prognostics and Health Management) and Its Military Applications

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Review on PHM (Prognostics and Health Management) and Its Military Applications

⟨Abstract⟩

Today's complex manufacturing systems such as on-shore and off-shore plants require highly sophisticated and costly maintenance policies. Therefore, it becomes more important to maintain the high-valued physical asset in an effective way. To this end, effective maintenance policy is required. In general, the maintenance policy could be classified into three types: breakdown maintenance, preventive maintenance, and condition-based maintenance (in other words, Prognostics and Health Management denoted as PHM). In this study, we focus on PHM. It is similar with the condition-based approach of preventive maintenance. Unlike breakdown maintenance and time-based preventive maintenance, the PHM focuses on not only fault detection and diagnostics of components but also degradation monitoring and failure prediction.

PHM enables us to identify and solve problems in advance before system damage occurs. In industry systems, any damage can lead to serious results. In this respect, the PHM is a very attractive method for the industry operating high-valued physical assets, e.g., onshore or offshore plant, manufacturing facilities, and military weapon systems.

Until now it has been difficult to achieve the effectiveness of maintenance operations because there is no information visibility during system (or product) usage period. However, recently, with emerging technologies such as IoT (Internet of Things), RFID (Radio Frequency IDentification), various sensors, MEMS (Micro-Electro-Mechanical System), and wireless tele-communication, SCADA (Supervisory Control And Data Acquisition), PEIDs (Product Embedded Information Devices) are expected to be rapidly used for gathering and monitoring the status data of products during their usage period.

With recent advances in modern technology, industrials and researchers are progressing

toward enhanced maintenance support systems that aim at improving reliability and availability of critical engineering assets while reducing overall costs. PHM is the best solution for this purpose.

In this vein, recently the importance of PHM has been highlighted and tried to be implemented in various domains. In order to apply the concept of PHM into current maintenance policy and implement the PHM system, it is prerequisite to understand what PHM is in terms of concept, definition, procedure, approach, main component, related research works, applications including military domain, and so on. This report will deal with them.

This report is organized as follows: Section 1 introduces the overview of PHM. Section 2 addresses concept and definition of PHM. Various terminologies similar with PHM are described in section 3. Furthermore, section 4 and section 5 deal with purpose and benefits of PHM, and its importance, respectively. In section 6, lost of previous works related PHM have been introduced. And, major research institutes and international standards related to PHM are addressed in section 7 and section 8, respectively. In addition, procedure for PHM implementation and its approaches are described in section 9 and section 10, respectively. Section 11 deals with applications of PHM military applications. Lastly, discussion on PHM implementation is mentioned in conclusion section 12.

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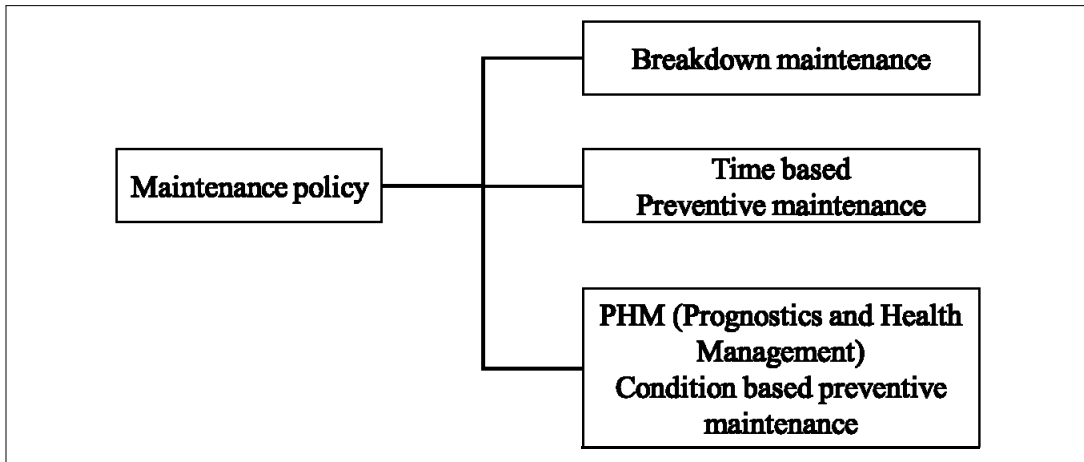
I. Introduction

Today's complex manufacturing systems such as on-shore and off-shore plants require highly sophisticated and costly maintenance policies. Domestic plants in the US spent more than \$600 billion to maintain their critical plant systems in 1981 and this figure doubled within 20 years (Heng et al. 2009). Furthermore, according to statistics, every year the United States Air Force spends almost \$20 billion on maintenance, of which is used for repairing aircraft (Zhang and Cui 2013). Therefore, it becomes more important to maintain the high-valued physical asset in an effective way. To this end, effective maintenance policy is required.

Generally, maintenance can be defined as, "the combination of all technical and associated administrative actions intended to retain a system in a state at which it can perform the required function". Note that here a system can indicate equipment, machine, product, facility, any physical asset, and so on. There have been various classifications of maintenance policies: corrective maintenance, breakdown maintenance, regular maintenance such as time-based preventive maintenance, etc. For more details on maintenance types, please refer to Erbe et al. (2005).

In general, the maintenance policy could be classified into three types as shown in Figure 1: breakdown maintenance (corrective maintenance), preventive maintenance, and condition-based maintenance (in other words, predictive maintenance or Prognostics and Health Management; hereafter we call it as PHM). In the breakdown maintenance, the maintenance action is taken after some problems such as breakdowns in a product are found while the preventive maintenance periodically checks a system with a certain interval in order to prevent the abnormality of the system. In the preventive maintenance, the maintenance action is taken based on specific basis, e.g., regular time. In that case, the preventive maintenance is called time-based preventive maintenance.

[Figure 1] Classification of maintenance policy



The PHM may be similar to the preventive maintenance in the sense that its goal is to prevent system abnormality in advance before abnormality occurs. However, the PHM approach is different from the time-oriented approach of preventive maintenance. It is similar to the condition-based approach of preventive maintenance. It focuses on the prediction of degradation process of the system, which is based on the assumption that most abnormalities do not occur instantaneously, and usually there are some kinds of degradation process from normal states to abnormalities (Fu et al. 2004). Hence, unlike breakdown maintenance and time-based preventive maintenance, the PHM focuses on not only fault detection and diagnostics of components but also degradation monitoring and failure prediction. Generally, PHM can be treated as a method used to reduce the uncertainty of maintenance activities and is carried out according to the requirements indicated by the system condition (Peng et al. 2010). Thus, the PHM enables us to identify and solve problems in advance before system damage occurs. In industry systems, any damage can lead to serious results. In this respect, the PHM is a very attractive method for the industry operating high-valued physical assets. Note that there are several similar terms with PHM, e.g., predictive maintenance or CBM (Condition Based Maintenance) regarded as one branch of preventive maintenance policy in the previous literature.

Until now it has been difficult to achieve the effectiveness of maintenance operations

because there is no information visibility during system (or product) usage period. However, recently, with emerging technologies such as IoT (Internet of Things), RFID (Radio Frequency IDentification), various sensors, MEMS (Micro-Electro-Mechanical System), and wireless tele-communication, SCADA (Supervisory Control And Data Acquisition), PEIDs (Product Embedded Information Devices) are expected to be rapidly used for gathering and monitoring the status data of products during their usage period. Advancements in information technology have added accelerated growth in the PHM technology area by enabling network bandwidth, data collection and retrieval, data analysis, and decision support capabilities for large data sets of time series data (Prajapati et al. 2012).

With recent advances in modern technology, industrials and researchers are progressing toward enhanced maintenance support systems that aim at improving reliability and availability of critical engineering assets while reducing overall costs. Therefore, the role of maintenance has changed from a “necessary evil” to a “profit contributor” (Javed 2014).

Under the new environment, we can gather the product status and usage data related to distributing route, usage conditions, failure, maintenance or service events, and so on. These data enable us to diagnose the degradation status of the product in a more exact way. Using gathered data gives us new challenging issues for improving the efficiency of product maintenance operations. We can make a diagnosis of product status, predict products abnormality, and execute proactive maintenance

In this vein, recently the importance of PHM has been highlighted and tried to be implemented in various domains. In order to apply the concept of PHM into current maintenance policy and implement the PHM system, it is prerequisite to understand what PHM is in terms of concept, definition, procedure, approach, main component, related research works, applications including military domain, and so on. This report will deal with them.

This report is organized as follows: In the next section we introduce the concept and definition of PHM. Various terminologies similar with PHM are described in section 3. Furthermore, section 4 and section 5 deal with purpose and benefits of PHM, and

its importance, respectively. In section 6, lost of previous works related PHM have been introduced. And, major research institutes and international standards related to PHM are addressed in section 7 and section 8, respectively. In addition, procedure for PHM implementation and its approaches are described in section 9 and section 10, respectively. Section 11 deals with applications of PHM military applications. Lastly, discussion on PHM implementation is mentioned in conclusion section 12.

II. Concept and definition of PHM

PHM is an emerging engineering discipline which links studies of failure mechanisms (corrosion, fatigue, overload, etc.) and life cycle management (Javed 2014). In this vein, Chen et al. (2012) mentioned it as an approach for system life-cycle support. It seeks to reduce unnecessary maintenance actions throughout real-time monitoring, eventually extend the service cycle of an engineering asset.

Mainly, acronym PHM consists of two elements (Javed 2014):

1. Prognostics refers to a prediction / forecasting / extrapolation process by modeling fault progression, based on current state assessment and future operating conditions;
2. Health management refers to a decision-making capability to intelligently perform maintenance and logistics activities based on diagnostics / prognostics information.

In general, the PHM system should has the capability of anomaly detection, fault diagnostics, fault prognostics, and health management.

There are several definitions of PHM in previous works. For example, the IEEE Reliability Society (www.phmconf.org) defines PHM as “a system engineering discipline focusing on detection, prediction, and management of the health and status of complex engineered systems”. Furthermore, according to Sheppard et al. (2009), PHM could be defined as “a maintenance and asset management approach utilizing signals, measurements, models, and algorithms to detect, assess, and track degraded health, and to predict failure

progression”. In addition, the SNL (Sandia National Laboratories) defined it as “the capability to estimate the likelihood of a system failure over some future time interval so that appropriate actions can be taken” (Chen et al. 2012).

III. Various terminologies similar with PHM

According to Chen et al. (2012), PHM comes from the US DoE (Department of Energy) and the US DoD (Department of Defense). In the JSF (Joint Strike Fighter) program of US DoD, the name PHM was adopted. Since then, prognostics technology has become an area of flourishing international research (Sun et al. 2012).

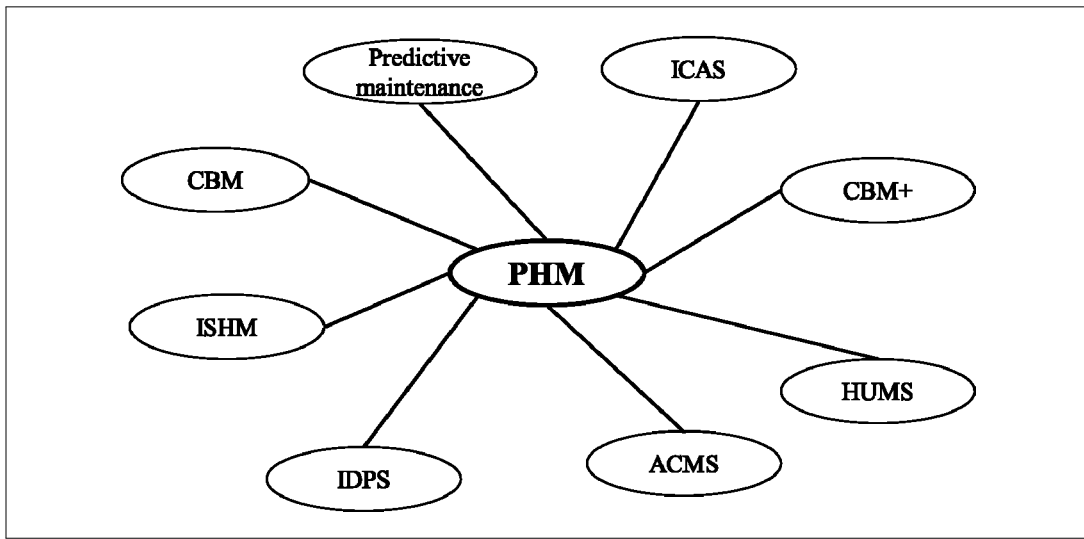
Regarding PHM term, there are some similar terms used interchangeably in the previous literature as shown in Figure 2: e.g., predictive maintenance, prognostics, and CBM. Among them, the most well-known terminology is CBM. Over the last decade, CBM has evolved into the concept of PHM, due to its broader scope (Javed 2014). In November 2002, the US deputy under secretary of defense for logistics and materiel readiness released a policy called CBM+ (Condition-Based Maintenance plus) (Vichare and Pecht 2006). CBM+ represents an effort to shift unscheduled corrective equipment maintenance of new and legacy systems to preventive and predictive approaches that schedule maintenance based upon the evidence of need, which is similar with the concept of PHM.

Furthermore, there are several terms similar with PHM depending on applications. For example, the prognostics technology used in US Army rotorcraft was called the HUMS (Health and Usage Monitoring System). In aerospace, IVHM (Integrated Vehicle Health Management) was the term given for prognostics of reusable rockets, and later for various space applications used by NASA. In other fields of the military, several prognostics labels have been defined, including ACMS (Aircraft Condition Monitoring System), EMS (Engine Monitoring System), IDPS (Integrated Diagnostics and Prognostics System), and ICAS (Integrated Condition Assessment System) (Sun et al. 2012).

In addition, according to Ma (2009), the following similar terms also exist: Model-based assessment; UK MoD (Military of Defense)’s HUMS (Health and Usage Monitoring

Systems); Boeing's Phantom Works' HMEE (health management engineering environment); and ISHM (Integrated Systems Health Management).

[Figure 2] Various terminologies similar with PHM



IV. Purpose and benefits of PHM

The purpose of PHM is to maximize the operational availability and safety of the engineering asset. Eventually the PHM can improve security, reliability, availability and mission success, and support a better ability to plan for maintenance events, which leads to reduce the operation and maintenance cost (Jinyu et al. 2009; Sheppard et al. 2009; Das et al. 2011).

The technology of PHM has a good prediction ability which other method of diagnosis do not have. It is an emerging engineering direction and can automatically do the fault detection, prediction, isolation and monitoring in the operation of the system and timely evaluate and manage the system (Zhang and Cui 2013). As the result, it can assess and quantify the extent of deviation or degradation from an expected normal operating condition (i.e. health) by integrating sensor data and prediction models that enable in-situ assessment of the extent of deviation or degradation of the system from

an expected normal operating condition (i.e. the system's "health" or reliability) (Vichare et al. 2006).

PHM could provide us with several benefits in all product lifecycle activities including design and development, production and construction, operations, logistics support on maintenance, phase out, and disposal. In particular, when coupled with autonomic logistics, PHM can improve mission-critical system reliability & availability, and reduce logistics delay time, on-demand repair actions and sparing, and life-cycle costs (Chen et al. 2012).

According to Zhang et al. (2009), implementation of PHM can address the following three problems, (1) what is healthy condition of the observed product, (2) if the product is not healthy, where does the degradation or anomaly happen, and (3) when the observed product is going to fail or degrade to the point which its performance becomes unacceptable and maintenance action should be taken.

Using PHM technologies, the companies can capture unforeseen performance variations during the asset's lifetime. This is particularly useful in high-tech sectors, e.g., aerospace, military, etc., where operational costs have become a significant source of revenue generation (Teixeira et al. 2012). According to preliminary estimates of the Boeing Company, using the technology of PHM can save 25% fee caused by flight delays and cancellations (Zhang and Cui 2013).

According to Vichare et al. (2006), Luna (2009), Zhang et al. (2009), Sun et al. (2012), and Javed (2014)'s works, the following are the benefits of PHM:

Domain	Benefits
Quality	<ul style="list-style-type: none"> • Maintain effectiveness through timely repair actions • Improved system safety, • Increased system operations reliability and mission availability, • Increase availability • Avoid consequences of failure by advance warning of failures, • Extend life/Reduce maintenance frequency, • Optimize resource use, • Decreased unnecessary maintenance actions, • Improve system safety (predict to prevent negative outcomes), • Improve qualification and assisting in the design and logistical support of fielded and future systems, • Improve decision making to prolong life time of a machinery.
Cost	<ul style="list-style-type: none"> • Reduced system LCC (Life-Cycle Costs) by decreasing inspection costs, downtime, and inventory, • Reduce operational costs to optimized maintenance
Delivery	<ul style="list-style-type: none"> • Reduce lead time, • Minimize unscheduled maintenance • Extend maintenance cycles

[Table 1] Benefits of PHM

V. Importance of PHM

In recent years, PHM has emerged as one of the key enablers for achieving efficient system-level maintenance and lowering life-cycle costs need (Vichare and Pecht 2006; Zhang et al. 2009). As a result, it could be a key enabler for improving availability of critical engineering assets while reducing inopportune spending and security risks (Javed 2014). Furthermore, it is a key enabler to facilitate different industries to meet their desired goals, e.g., process industry, power energy, manufacturing, aviation, automotive, defense, and so on (Javed 2014).

Thus, the PHM system is becoming an important component of system design and operation of a new generation of aircraft, ships and vehicles in the United States and Europe (Zhang and Cui 2013). For example, US Air Force F-22, Navy attack submarine SSN-21, and the Army's main battle tanks MIA2, they all adopted PHM system (Jinyu et al. 2009).

The importance of PHM has been explicitly stated in the US DoD 5000.2 policy document

on defense acquisition, which states that “program managers shall optimize operational readiness through affordable, integrated, embedded diagnostics and prognostics, embedded training and testing, serialized item management, automatic identification technology, and iterative technology refreshment”. Thus, a prognostics capability has become a requirement for any system sold to the DoD (Vichare and Pecht 2006; Cheng et al. 2010; Sun et al. 2012).

VI. Previous works of PHM

So far there have been lots of research works related to PHM (or CBM). In this study, we introduce previous works with regard to CBM and PHM.

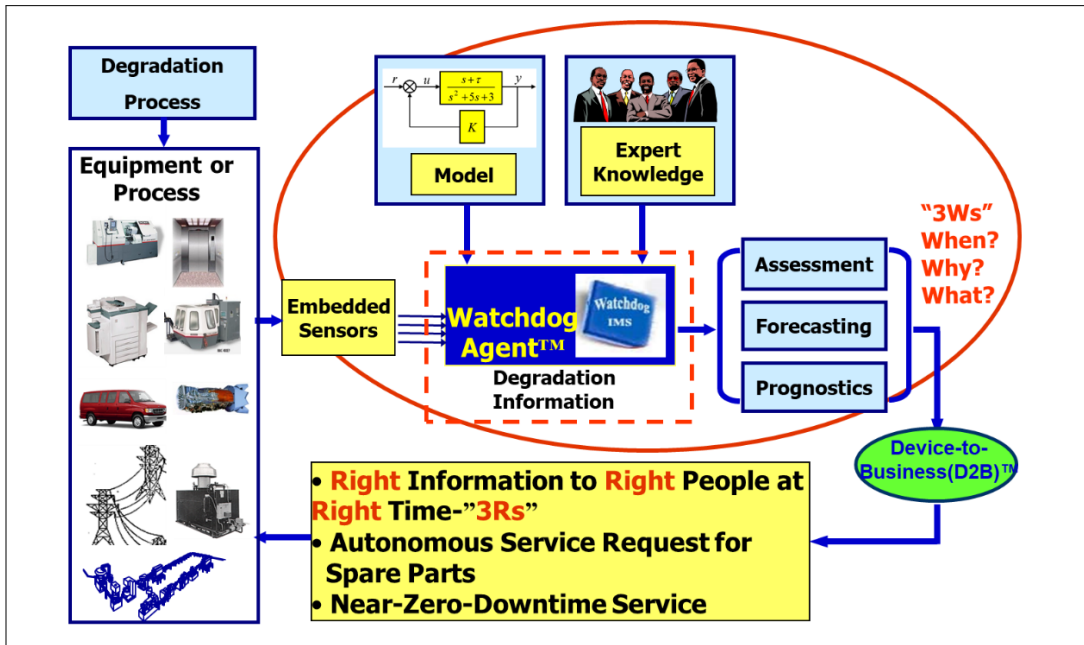
There have been several previous works related to the review of CBM. For example, Bengtsson (2004) investigated standards and standardization proposals related to CBM and described several organizational aspects considered when deciding to implement CBM. Kothamasu et al. (2006) reviewed the philosophies and techniques of system health monitoring and prognostics. They surveyed health monitoring paradigms and looked into the details of health monitoring tools. In addition, they introduced previous case studies in system monitoring and control. Furthermore, Grobal et al. (2007) introduced the initial architecture for CBM framework, which was being realized in a joint project with SAP research. They mentioned several aspects of CBM: identification of indicators, measurement of indicators, modeling of indicators, forecasting of indicators, and decision making. The MIMOSA (Machinery Information Management Open Systems Alliance) proposed and facilitated conventions, guidelines and recommendations that promote cost-effective unification of machine information, condition assessment and control technology (Laakso et al. 2002). In addition, Dragomir et al. (2009) analyzed and discussed the prognostic process from different points of view: the concept, the measures and the tools. They defined a frame to perform (and develop) real prognostic systems, and also described the concept of prognostic in detail and did analysis of the tools used in prognostic and prediction. Prajapati et al. (2012) have provided a brief overview of CBM with definitions of various terms, overview of some history, recent developments, applications, and research challenges in the CBM

domain. They also introduced how CBM can be used to optimize maintenance strategies and increase the feasibility and practicality of a CBM system.

On the other hand, there have been lots of previous works about detailed CBM algorithms. For example, Patel and Kamrani (1996) introduced a diagnosis and maintenance consultant for industrial robots, called ROBODOC. They introduced the concepts of maintenance, artificial intelligence, and expert systems with a state-of-the-art review of the diagnostic expert systems. They also provided the specifications and structure of ROBODOC, and explained the approaches taken in the construction of ROBODOC. Lee (1998) introduced a new methodology of predictive maintenance, called machinery dynamics and data fusion through remote machinery monitoring. They also presented an example of a remote wireless application currently in use for monitoring machinery in industrial plants. Dieulle et al. (2001) proposed a mathematical model for determining a CBM policy efficiently using renewal processes theory. In their model, they regarded preventive replacement threshold and inspection schedule as decision variables. Koc and Lee (2001) addressed the concept of web-enabled predictive maintenance in an intelligent e-maintenance system which is implemented via Internet and showed its system elements.

Furthermore, Djurdjanovic et al. (2003) proposed the framework of watchdog agent (please refer to Figure 3) for predictive condition-based maintenance by realizing multi-sensor assessment and prediction of machine or process performance. The concept of watchdog agent based its degradation assessment on the readings from multiple sensors that measure critical properties of the process or machinery under a networked and tether-free environment. The watchdog agent is an embedded system that has algorithms to autonomously assess and predict the performance degradation and remaining life of machines and components. Yan et al. (2004) presented a prognostic method for machine degradation detection, which can both assess machine performance and predict the remaining useful life. In their model, real-time performance is evaluated by inputting features of online data to the logistic model. And the remaining life is estimated using an ARMA model based on machine performance history.

[Figure 3] Concept of watchdog agent



In addition, Fu et al. (2004) proposed a predictive maintenance framework for hydroelectric generating unit. They presented three key elements for the predictive maintenance such as monitoring and forecasting, diagnosis and prognosis, and decision-making. In addition, Bansal et al. (2004) described a real-time predictive maintenance system for machine systems. The aim of the proposed system is to localize and detect abnormal electrical conditions in order to predict mechanical abnormalities that indicate, or may lead to the failure of a motor. They used a neural network approach to predict parameters of a machine. Recently, Lee et al. (2006) introduced the emerging field of e-maintenance and its critical elements. They also introduced performance assessment and prediction tools such as neural networks, fuzzy logic, logistic regression, hidden mark models, and Bayesian belief networks for continuous assessment and prediction of a particular products performance.

Regarding PHM, there have been lots of research works from anomaly detection to diagnostic or prognostic maintenance methods in various application domains. For example, Brotherton and Johnson (2001) developed a neural net approach for performing anomaly detection. They introduced the neural net anomaly detector and

the application to advanced military aircraft. They have successfully applied the anomaly detector to a variety of problems that include applications where up to 50 different sensor measurements were monitored simultaneously. Vichare and Pecht (2006) presented the state-of-practice and the current state-of-research in the area of electronics PHM. In their work, examples for four approaches such as BIT (Built-In-Test), use of fuse and canary devices, monitoring and reasoning of failure precursors, and modeling accumulated damage based on measured life-cycle loads were provided. Ginart et al. (2006) presented diagnostic and prognostic approaches for specific components of the power electronic drives and electric machines, especially for the new AC/DC, DC/DC and DC/AC systems. They also presented an approach that addresses the concept of self-healing as a contingency management approach framed in the PHM perspective. In power controllers and electrical machines, a reduced performance strategy is proposed that isolates the failing part and reconfigures the control in order to accomplish the mission with some reduced performance.

Furthermore, Camci et al. (2007) presented multi-agent technology that integrates maintenance and PHM data to provide more effective maintenance identification and scheduling. They presented an intelligent software agents tool to analyze, negotiate and optimize decisions regarding database adaptation, maintenance, and logistics actions in a self-learning environment. Millar (2007) approached PHM from the system engineering perspective by applying the DoD TLCSM (Total Life Cycle Systems Management) principles to PHM for propulsion system (Ma, 2009). Miller et al. (2007) introduced a simulation model of a PHM system employed as part of an ALS (Autonomic Logistics System) for a JSF (Joint Strike Fighter)-type aircraft. In their work, the multivariate statistical analysis was used as a means to assess the impact of a PHM system on aircraft productivity. Ma (2009) proposed a new architecture for PHM which is characterized by life-system approach. In their approach, three main mathematical tools: survival analysis (including competing risks analysis and multivariate survival analysis), dynamic hybrid fault models and EGT (Evolutionary Game Theory) are applied for PHM modeling and analysis. Dragomir et al. (2009) analyzed and discussed the prognostic process from different points of view: the concept, the measures and the tools. Luna (2009) provided a framework for organizing themes of PHM benefits by

identifying overall categories for understanding the different types of impacts and benefits a PHM system can have from a logistics support perspective. They mentioned the benefits of PHM from the logistics support perspective: 1) Reduce lead time, 2) Avoid consequences of failure, 3) Extend Life/Reduce Maintenance Frequency, and 4) Optimize resource use. Zhang et al. (2009) overviewed methodology of PoF (Physics-of-Failure) approach and categorizes data-driven approach for the PHM application, summarized their advantages and disadvantages respectively, and presented a hybrid prognostics approach which incorporates both the advantages of PoF and data driven approaches for PHM.

In addition, Cheng et al. (2010) introduced the state-of-the-art sensor systems for PHM and the emerging trends in technologies of sensor systems for PHM. They discussed the considerations for sensor system selection for PHM applications, including the parameters to be measured, the performance needs, the electrical and physical attributes, reliability, and cost of the sensor system. Das et al. (2011) discussed the essential steps for an effective PHM system. In their work, they described time and frequency domain features that can be extracted from raw sensor data. They also described a case study of implementing a PHM system for a high-speed face milling CNC cutter. He and Ma (2012) reviewed the history of PHM and analyzed the main elements of general PHM system. Based on them, they proposed the PHM system architecture for electronic equipment. Sun et al. (2012) discussed the benefits of prognostics in terms of system life-cycle processes, such as design and development, production, operations, logistics support, and maintenance. Chen et al. (2012) presented a technical framework of ED/EP (Embedded Diagnostics and Prognostics) for complex mechanical systems, and underlying opportunities & challenges. They also presented an example to demonstrate the implementation of ED/EP. Pecht (2012) presented an assessment of the state of practice in PHM of information and electronics rich systems. He presented a fusion prognostics approach, which combines or “fuses together” the model-based and data-driven approaches, to enable markedly better prognosis of remaining useful life. In order to illustrate the implementation of the fusion approach to prognostics, he carried out a case study of a printed circuit card assembly.

Recently, Jun et al. (2014) proposed a PHM system architecture to storage and life

extension which can be applied entirely in early design and latest design type tactical missile in order to maintain the performance and prolonged service life of tactical missile during long-term storage. Lee et al. (2014) carried out a comprehensive review of the PHM field. They introduced a systematic PHM design methodology, 5S methodology, for converting data to prognostics information. They also presented a systematic methodology for conducting PHM as applied to machinery maintenance. Vogl et al. (2014) mentioned the general PHM system development process and associated standards.

VII. Major research institutes of PHM

There have been main research institutes and organizations over the world for PHM as follows:

- Applied Research Laboratory at Pennsylvania State University, USA
- CALCE (Center for Advanced Life Cycle Engineering) of Maryland university, USA: conducting many valuable studies on PHM, and proposed a PHM roadmap for information and electronics-rich systems (Chen et al. 2012)
- IMS (Intelligent Maintenance System) of Cincinnati university, USA
- IVHM (Integrated Vehicle Health Management) of Cranfield university, England
- Impact Technologies, Inc.: developing engineering tools and generic customized software modules for mechanical component diagnostics and prognostics over a broad range of applications (Chen et al. 2012).
- PCoE (Prognostics Center of Excellence) of NASA Ames, USA
- MIMOSA (Machinery Information Management Open Systems Alliance): development and support of the OSA-CBM (Open System Architecture Condition based Maintenance) standard that purports to provide a standard architecture for PHM systems (Chen et al. 2012).
- Society for MFPT (Machinery Failure Prevention Technology) (Chen et al. 2012).

- IEEE reliability society (www.phmconf.org)
- Laboratory for system health & management, Seoul National University, Korea
- Laboratory for product lifecycle and health management, Hongik University, Korea

VIII. PHM related standards

There have been several international standards related to PHM. Mainly electronics and machinery research groups lead to make the international standards. Table 2 shows the PHM related standards.

International standard	Subject	Area
IEEE 1451	Smart transducer interface for sensors and actuators	Electronics
IEEE 1232	Artificial intelligence exchange and service tie to all test environment	Electronics
ISO 13372	Condition monitoring and diagnostics of machines–Vocabulary	Machinery
ISO 13372–part 1	Condition monitoring and diagnostics of machines–Vibration condition monitoring–Part 1. General procedures	Machinery
ISO 13372–part 2	Condition monitoring and diagnostics of machines–Vibration condition monitoring–Part 2. Processing, analysis, and presentation of vibration data	Machinery
ISO 13374	MIMOSA OSA–CBM formats and methods for communicating, presenting and displaying relevant information and data	Machinery
ISO 13374–1:2003	Condition monitoring and diagnostics of machines–Data processing, communication and presentation–Part 1: General guidelines	Machinery
ISO 13374–2:2007	Condition monitoring and diagnostics of machines–Data processing, communication and presentation–Part 2: Data processing	
ISO 13379–1:2012	Condition monitoring and diagnostics of machines–Data interpretation and diagnostics techniques–Part 1: General guidelines	
ISO 13381–part 1	Condition monitoring and diagnostics of machines–prognostics, general guidelines	Machinery
ISO 14224	Petroleum, petrochemical and natural gas industries–collecting and exchange of reliability and maintenance data for equipment	Onshore/ Offshore plant

International standard	Subject	Area
ISO 17359:2011	Condition monitoring and diagnostics of machines–General guidelines	Machinery
ISO/DIS 18129	Condition monitoring and diagnostics of machines–Approaches for performance diagnosis	
ISO 18435	MIMOSA OSA–EAI diagnostic and maintenance applications integration	Machinery
ISO 18435-1:2009	Industrial automation systems and integration–Diagnostics, capability assessment and maintenance applications integration–Part 1: Overview and general requirements	
ISO 18435-2:2012	Industrial automation systems and integration–Diagnostics, capability assessment and maintenance applications integration–Part 2: Descriptions and definitions of application domain matrix elements	
ISO 55000	Asset management	General
US ARMY ADS-79C–HDBK	Aeronautical Design Standard Handbook for Condition Based Maintenance Systems for US Army Aircraft	Aircraft

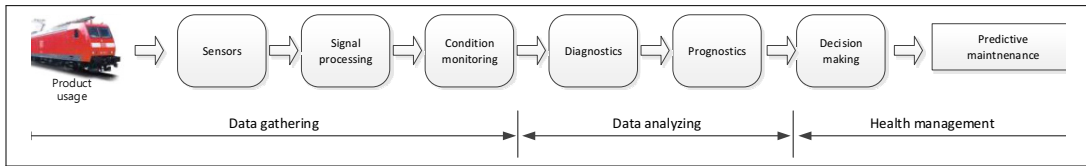
[Table 2] PHM related standards

IX. Procedure for PHM

PHM is an enabling discipline that assesses the reliability of a product in its actual life cycle. PHM is a long-term effort that requires monitoring the product by continuous or periodic measuring, sensing, recording, and analyzing of different parameters in its life cycle to assess the health status of the product, identify abnormal conditions, and predict the remaining life of the product (Cheng et al. 2010). In other words, the PHM system generally combines sensing and interpretation of environmental, operational, and performance-related parameters to assess the health of a product, and predict its remaining useful life (Chen et al. 2012).

To this end, PHM usually has several procedures. Figure 4 briefly shows the overall procedure for PHM from sensing to doing predictive maintenance, which consists of data gathering part including sensing, signal processing, and condition monitoring, data analyzing part containing diagnosis and prognosis, and health management part including decision making and predictive maintenance action.

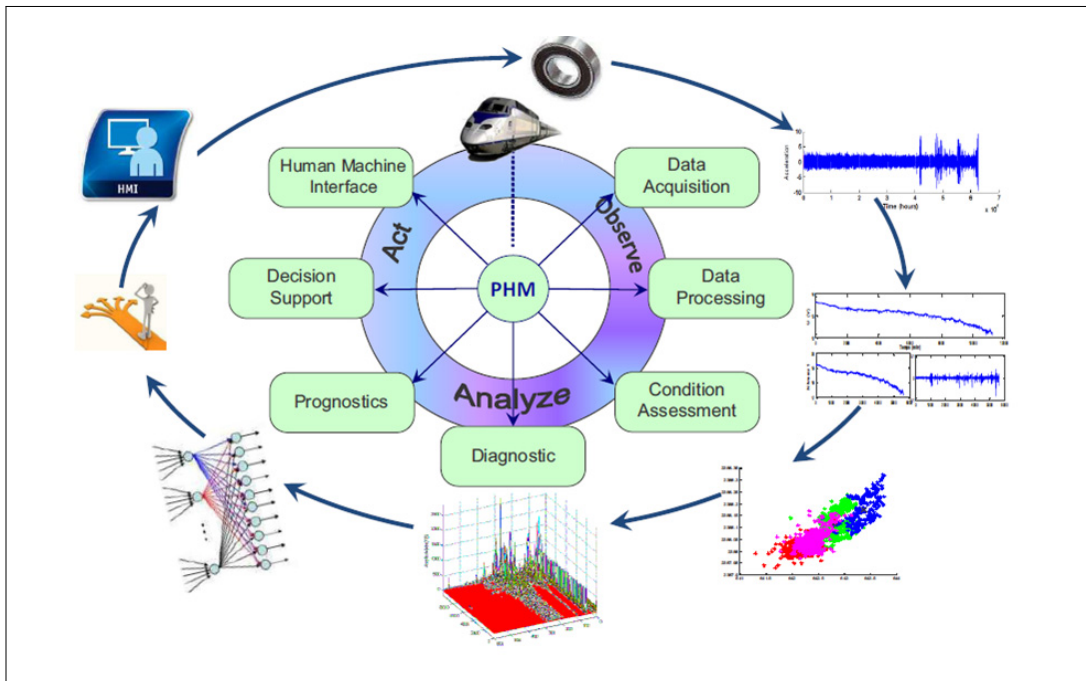
[Figure 4] Overall procedure of PHM



The PHM can be done by (1) gathering product status data and monitoring; (2) making a diagnosis of a product status in a real-time way; (3) estimating the deterioration level of the product, its repairing cost which depends on the deterioration level, or its replacement cost, and so on; (4) predicting the time of products abnormality; and (5) executing appropriate actions such as repair, replace, and disposal based on reasonable decision making. Hence, to implement the PHM approach, it is required to resolve several research issues related to data gathering, analyzing, decision, and actions.

So far there have been lots of research works for CBM/PHM procedure. Figure 5 depicts the PHM cycle of Javed (2014). Table 3 shows various procedures for CBM/PHM in previous literature.

[Figure 5] PHM cycle (Source: Javed 2014)



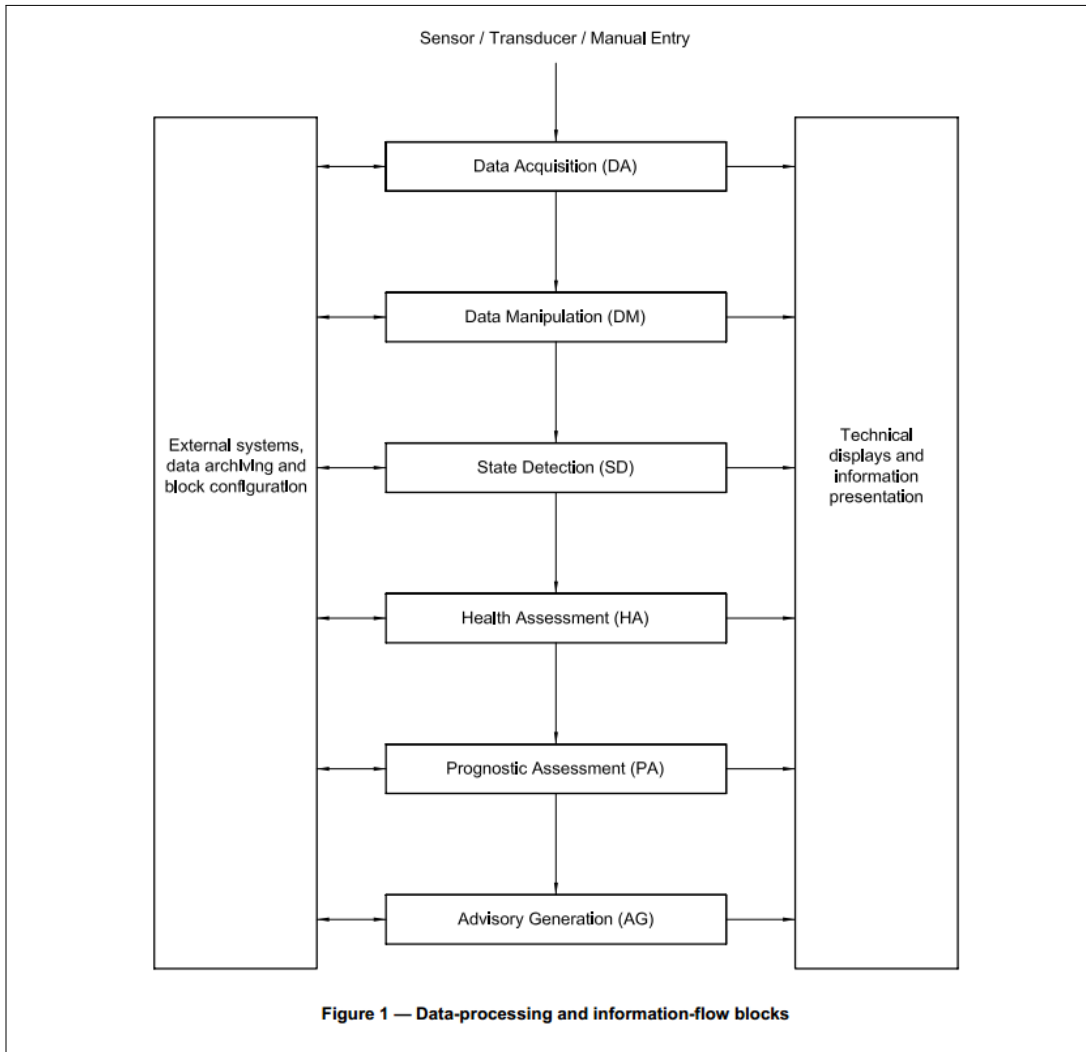
Phase	Liang et al. (2015)	Das et al. (2011)	Sheppard et al. (2009)	Heng et al. (2009)
1	data collecting,	collection of raw data from sensors	condition monitoring	data acquisition (i.e. the collection and storage of machine health information)
2	data preprocessing,	data characterization	state assessment	data processing (i.e. the conditioning and feature extraction/selection of acquired data)
3	feature extraction,	digital signal processing	fault or failure diagnostics	decision making (i.e. the recommendation of maintenance actions through diagnosis and/or prognosis)
4	data fusion,	extraction of condition indicators		
5	status detection,	intelligent processing engine for performing diagnosis and prognosis.	failure progression analysis	
6	fault diagnosis,		predictive diagnostics (i.e., prognostics)	
7	fault prediction		maintenance or operational decision support	
8	maintenance support decision-making			

[Table 3] Comparison on procedures for CBM/PHM

Furthermore, there was the OSA-CBM (Open Standard Architecture Condition Based Maintenance) architecture for CBM. OSA-CBM is designed by MIMOSA (Machinery Information Management Open System Alliance) which is an organization involved in the development of the standards for CBM. MIMOSA is a not-for-profit trade association dedicated to developing and encouraging the adoption of open information standards for Operations and Maintenance in manufacturing, fleet, and facility environments. OSA-CBM is a standard for information flow to help realize an end-to-end CBM system. According to MIMOSA OSA-CBM, there are six layers needed to implement the concept

of CBM: Data Acquisition, Data Manipulation, State Detection, Health Assessment, Prognostics Assessment, and Advisory Generation. Figure 6 shows the six layers for OSA-CBM.

[Figure 6] Six layers for OSA-CBM (ISO 13374-1: 2003)



[Table 4] shows the comparison on various procedures for CBM in previous works.

ISO 13374	ISO 13374-1	OSA-CBM (Thurston, 2001)	Jardine et al. (2006)	Chen et al. (2012)
Data Acquisition	Data Acquisition	Sensor Module	Data Acquisition	Sensors & Data Acquisition
	Data Manipulation	Signal Processing	Data Processing	
Diagnostics	State Detection	Condition Monitor		Condition Monitoring
	Health Assessment	Health Assessment		Fault Diagnostics
Prognostics	Prognostics Assessment	Prognostics		Predicting RUL (Remaining Useful Life)
Presentation, actions	Advisory Generation	Decision Support	Maintenance Decision Making	Health Management
		Presentation		
Postmortems				

[Table 4] Comparison on various procedures for CBM

In this study, we classify PHM processes into three main parts such as data gathering, data analysis, and health management:

1. Data gathering

In general, it is important to obtain real-time condition information of a given subsystem accurately, which is the basis of fault detection, and predicting its future health status (Chen et al. 2012). To this end, first and foremost, before data gathering, it is also necessary to identify which data should be gathered during asset usage period for PHM. In PHM system, large amount of product status, performance, and environment data are wired or wireless collected by various sensors, and sent to database for storage and further detailed analysis

Sensor systems used in PHM system are essential devices for conducting in situ monitoring of the actual life cycle of a product. According to Cheng et al. (2010)'s work, PHM requires that sensor systems should be highly integrated with multiple sensing abilities, low power consumption, low cost, long-range and high-rate data transmission (wireless or wired), large onboard memory capacity, fast onboard data processing

abilities, miniature weight and size, and high reliability.

During the data acquisition, several sensors capture one or more performance conditions (e.g., temperature, vibration, shock, pressure, etc.) to evaluate the health of a product. Complex systems often require a large number of product parameters to be monitored in the whole product's lifetime to provide the information entailed by PHM. These parameters include operational and environmental loads as well as the performance conditions of the product, for example, temperature, vibration, shock, pressure, acoustic levels, strain, stress, voltage, current, humidity levels, contaminant concentration, usage frequency, usage severity, usage time, power, and heat dissipation. In each case, a variety of monitoring features such as magnitude, variation, peak level, and rate of change may be required in order to obtain characteristics of parameters (Cheng et al .2010).

The gathered data can be classified into several types depending on the gathered data format. Table 5 shows several types of gathered product data in previous works. Golmakani (2011) distinguishes gathered data as direct or indirect depending on how the usage data affects product status degradation. On the other way, gathered data can be divided into value type, waveform type, or multi-dimensional type according to Jardine et al. (2006). Regardless of classification ways, most of gathered data has dynamic characteristics since they are traced over time.

Previous works	Type of gathered data
Golmakani (2011)	Direct, Indirect
Jardine et al. (2006)	Value type, waveform type, and multi-dimensional type; Event Data and Condition Monitoring Data
Cheng et al. (2010)	Operational and environmental loads, performance conditions; magnitude, variation, peak level, and rate of change

[Table 5] Classification of gathered product data

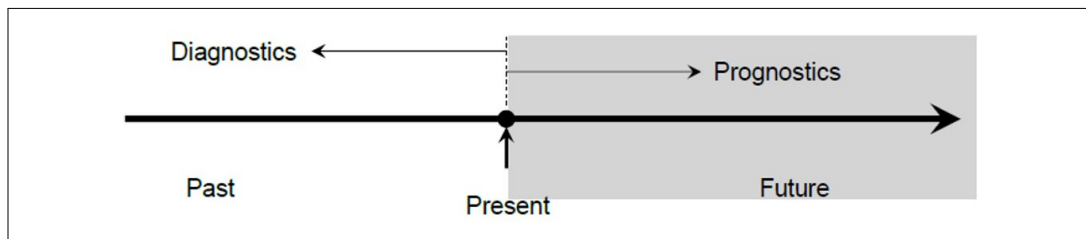
After data collecting, a pre-processing stage is also needed to clean and to filter the data for further data analysis. There have been several methods or techniques for the data pre-processing related to noise cleaning or handling of omitted values. After

pre-processing is finished, simple condition monitoring could be done with predefined threshold value for each sensor signal.

2. Data analyzing

In the next stage, the preprocessing data could be transformed and manipulated for further analysis if there is any abnormal situation in condition monitoring. For the analyzing, it is required to develop an algorithm that assesses the behavior and degrading level of an asset, and predicts its remaining life time. To this end, diagnostics and prognostics are required. Numerous models, algorithms and tools for diagnostics and prognostics (e.g. time domain analysis, frequency domain analysis, time-frequency domain analysis, etc.) exist in the current literature. According to SAE International (2008), diagnostics is the determination of the current condition of a component or system, and prognostics is the predictive ability of future performance degradation and expected failures. Figure 7 shows the difference between diagnostics and prognostics well.

[Figure 7] Diagnostics vs. prognostics (Tobon-Mejia et al. 2012)



(1) Diagnostics

Diagnostics consists of fault detection, fault isolation determining the location of the fault, and fault identification determining the fault mode (Poongodai and Reader, 2013; Javed 2014). Diagnostics can be summarized as the process of identifying and determining the relationship between cause and effect in that its function is to isolate faults and find the source of a fault (Jeong et al. 2007; Lee et al. 2014).

The main aim of diagnostics is to provide early warning signs to engineers while the monitored equipment is operating in abnormal conditions (deterioration state) (Ahmad and Kamaruddin 2012). To this end, multiple parameters should be considered to assess the health state, detect and isolate faults.

(2) Prognostics

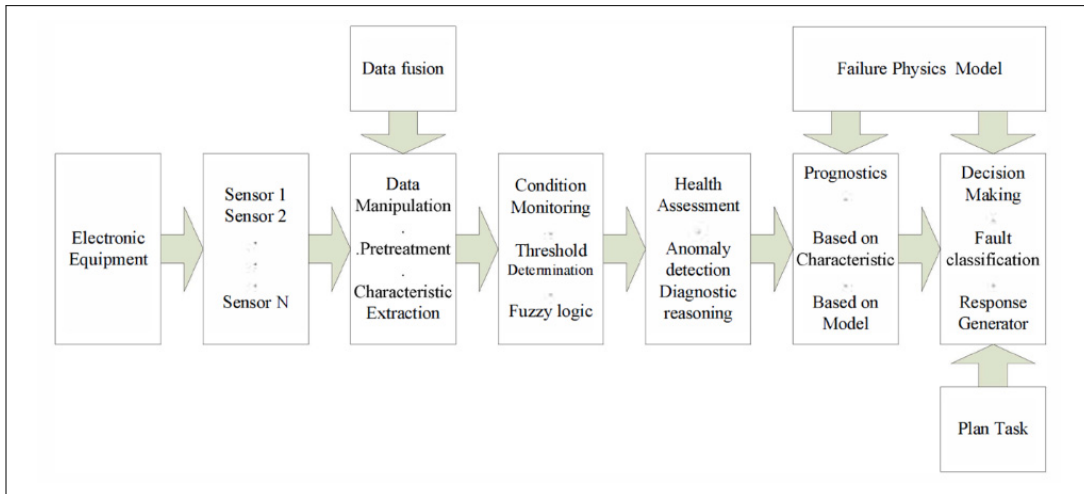
On the other hand, prognostics corresponds to the estimation of the time to failure and the risk for one or more existing and future failure modes based on current conditions, historic operation profile, and anticipated future usage (Vichare and Pecht 2006; Dragomir et al. 2009; Tobon-Mejia et al. 2012; Poongodai and Reader, 2013). To this end, prognostics deals with estimation of system health index and predictions of RUL (Remaining Useful Life) before a failure occurs, given the current machine condition and its past operation profile (Chen et al. 2012; Javed 2014).

The ISO (International Organization for Standardization) defines the prognostics as “prognostic is the estimation of time to failure and risk for one or more existing and future failure modes”.

Although the equipment is running in an abnormal state, it does not mean that the equipment has failed. It can probably still be used for a certain amount of time before a failure occurs. To address this situation, prognostics must be done. The main aim of prognostics is to provide further warning by estimating/predicting when the equipment will fail. As such, the equipment can be fully utilized and the appropriate time to carry out PM (Preventive Maintenance) just before it fails can be determined (Ahmad and Kamaruddin 2012).

[Figure 8] shows the diagnostic and prognostics process in detail.

[Figure 8] Diagnostics and prognostics process (He and Ma 2012)



3. Health management

Health management is the process of taking timely, appropriate maintenance actions and making accurate logistics decisions based on outputs from diagnostics and prognostics, available resources and operational demand. It focuses on assessing impact of failures, and minimizing impact and loss with maintenance management (Lee et al. 2014).

In the health management, first, there are some decision issues to be made (Tsang 1995): selecting the parameters to be monitored; determining the inspection frequency; and establishing the warning limits. Furthermore, it is also necessary to develop a decision method that selects the best cost-effective maintenance operation telling us which maintenance option is the best under a given situation in terms of maintenance costs. Depending on cases, there are several maintenance options related to what, when, and how. For each option, we build up maintenance cost models. Comparing cost models will allow us to select the best cost-effective maintenance schedule. And then, it is requisite to design action plans for all possible scenarios.

X. Approach for PHM

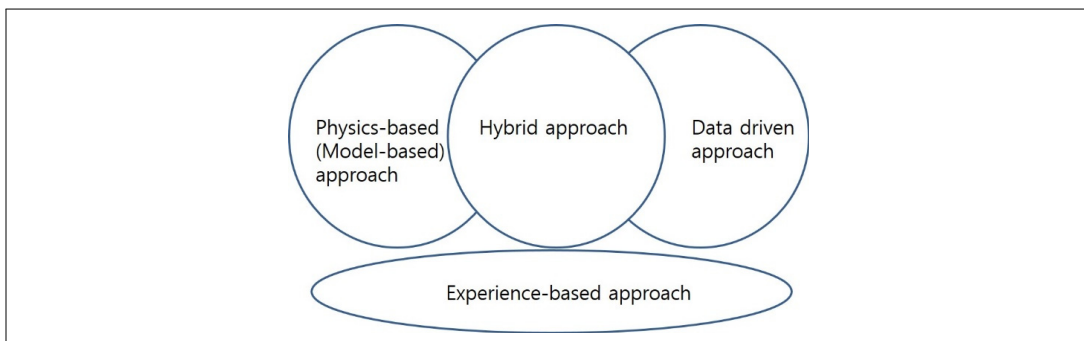
So far various methods have been applied to support for each PHM phase: diagnostics, prognostics and health management. Lee et al. (2014) classified them into physical models, reliability models, machine learning models and dependency models. Teixeira et al. (2012) mentioned statistical, artificial intelligence and model-based approaches as the most common methods for fault diagnostic purposes.

Dragomir et al. (2009) classified the PHM approaches as follows:

- Experience-Based Prognostics. Use statistical reliability to predict probability of failure at any time.
- Evolutionary/Statistical Trending Prognostics. Multivariable analysis of system response and error patterns compared to known fault patterns.
- Artificial Intelligence Based Prognostics. Mechanical failure prediction using reasoners trained with failure data.
- State Estimator Prognostics. System degradation or diagnostic feature tracking using Kalman filters and other predictor-corrector schemes.
- Model-Based or Physics of Failure Based Prognostics. Fully developed functional and physics-of-failure models to predict degradation rates given loads and conditions.

In general, PHM approach can be grouped into physics-based, data-driven, hybrid, and experience-based approaches as shown in Figure 9.

[Figure 9] PHM approaches



1. Physics-based approach

The physics-based approach uses the governance model (mathematical functions or mappings, such as differential equations) dependent on a specific equipment to calculate the damage of the critical component based on operating conditions and to assess the cumulative effects in terms of component life usage. It is also called model-based approach.

It is based on an understanding of the physical processes and interrelationships among the different components or subsystems of a product, including system modeling and PoF (Physics-of-Failure) modeling approaches. To this end, it uses several detailed information on the target engineering product such as environmental & operating loading conditions, geometry, material properties, and failure mechanisms.

PoF-based prognostics permit the assessment and prediction of a product's reliability under its actual application conditions. It integrates in situ monitored data from sensor systems with models that enable identification of the deviation or degradation of a product from an expected normal condition and the prediction of the future state of reliability (Cheng et al. 2010).

Strength of this approach is to give the most accurate prediction result among all approaches for PHM since it is based on the product-specific governance model. However, development of the models requires detailed knowledge of the underlying physical processes that lead to system failure, and in complex systems, it is often difficult to create dynamic models representing the multiple physical processes occurring in the system (Pecht 2012). Furthermore, the product-specific knowledge, such as geometry and material composition, is necessary which may not always be available (Pecht 2012).

2. Data driven approach

A data-driven model uses a learning mechanism procedure (e.g., supervised or unsupervised training) to empirically understand the relationship between inputs and outputs without considering an explicit mathematical relationship. Neural networks and fuzzy logics are the most popular data-driven techniques to estimate the RUL in

the literature (Teixeira et al. 2012).

The data-driven approach uses statistical pattern recognition and machine learning to detect changes in parameter data, isolate faults, and estimate the RUL of a product. Unlike physics-based approach, data-driven methods do not require product-specific knowledge of such things as material properties, constructions, and failure mechanisms. In data-driven approaches, in-situ monitoring of environmental and operational parameters of the product is carried out, and the complex relationships and trends available in the data can be captured by data-driven methods without the need for specific failure models. There are many data-driven approaches, such as NNs (Neural Networks), SVMs (Support Vector Machines), decision tree classifiers, PCA (Principle Component Analysis), PF (Particle Filtering), and fuzzy logic (Cheng et al. 2010).

Pecht (2012) emphasized the usefulness of ML (machine learning) based on statistical methods for PHM because of the following reasons: first, it is capable of actively learning about the system and its dynamics, faults, and failures. Second, ML techniques can handle the increasing complexity of system information. Finally, ML is useful for real time analysis.

Recent advances show that data-driven approaches (mainly based on machine learning methods) are increasingly applied for fault prognostics. They can be seen as black-box models that learn system behavior directly from CM (Condition Monitoring) data, use that knowledge to infer its current state and predict future progression of failure (Javed 2014).

Data-driven methods are very useful for complex systems where the knowledge of the underlying physics are absent and the health of systems is to be assessed. They can be used as black-box models as they learn the behavior of the system-based on monitored data, and hence, do not require system-specific knowledge. Further, data-driven approaches could be applied to complex multivariate systems (Pecht 2012).

3. Hybrid approach

Considering pros of both physics-based approach and data-driven approach, there is a hybrid approach. Hybrid approaches take advantages from both data-driven and

model-based approaches, and many PHM systems fall into this category since pure model-based or data-driven approach is often not very practical (Ma 2009).

4. Experience-based approach

Sometimes, there is not enough information to apply the physics-based model, especially when the critical components are not monitored by sensors or when the failure is intermittent. In this case, the failure information can be obtained from the manufacturer's component data sheet. And the maintenance decision is made based on the failure information. Teixeira et al. (2012) called this approach as experience-based approach. In the experience-based approach, historical data is collected to fit the probability distribution and MTBF information. Although it is the simplest approach, it can be used to drive preventive maintenance practices that can then be updated at regular intervals (Teixeira et al. 2012).

XI. Applications of PHM

PHM has been extensively studied and practiced in major engineering disciplines, particularly, in aerospace, mechanical, and structural engineering, electronic engineering in recent years (Ma 2009). Also, it has been conducted in various engineering applications, such as in the defense and military industry, the aerospace industry, wind power systems, civil infrastructure, batteries, mechanical manufacturing, consumer electronics, and computers (Sun et al. 2012). Typical applications include the US Air Force JSF-35 aircraft autonomous health management system, NASA's deep space probes IVHM systems, rocket testing and integrated system health management. There are also a series of academic reports in China (Jun et al. 2014).

PHM has by and large been accepted by the engineering systems community in general, and the aerospace industry in particular, as the future direction (Javed 2014). In aerospace engineering, the well-recognized as the most advanced and comprehensive PHM project was developed for the JSF program directed by Andrew Hess (e.g., Hess and Fila 2002a; Brown et al. 2007) (Ma, 2009). Among lots of PHM application domain,

in this study we are going into details for the military applications.

1. Military applications

Today's military weapon systems are being asked to meet new mission readiness and availability targets, insure highly reliable performance, reduce maintenance/support costs, and ultimately improve the longevity of the system.

To this end, a critical component of the military sector strategy to meet these objectives is to implement automated health state awareness and prediction tools that can accurately anticipate failures, predict the remaining useful life and in many cases accommodate (or self-heal) for the identified faults (Ginart et al. 2006).

Thus, in the military domain, it is necessary to apply PHM technology that could take the best corrective action for the weapon system. PHM can improve the combat capability of military weapon systems, e.g., military aircraft, the capability of independent repair and the ability of the logistics support and so on.

As the importance of PHM applications in military domain has been increased, military leading countries such as US and UK have applied its concept into the maintenance policies of their own military weapon systems. For example, the US army has abandoned the traditional maintenance method which relies on averaged accumulated historical field data such as Mil-Hdbk-217, Telcordia SR-332 (formerly Bellcore), and CNET/RDF (FIDES) (European) (Pecht 2012). Instead, the US army includes prognostics technology in their weapons platforms, support vehicles, and even munitions (Sun et al. 2012). According to Uckun et al. (2008), in US military two significant weapon platforms were designed with a prognostics capability: Joint Strike Fighter Program, and the Future Combat Systems Program. According to Liang et al. (2015), the PHM technology has been widespread used in the weapon product maintenance support field of not only US but also UK military power, such as A-7E Aircraft, JSF Aircraft, Spacecraft and wheeled armored vehicles and getting the good application result.

The brief history on PHM related applications of military weapon systems in US and UK have been well summarized in He and Ma (2012)'s work as follows: In the

1970s-1980s, there are many problems rush out with the use of complex equipment in the military of US and UK. These problems include poor testing, long defect diagnosis time, high false alarm rate, high operation and maintenance support cost, and the lack of maintenance manpower. So the US military and industry have taken actions on various diagnostic elements, such as ATE (Automatic Test Equipment), technical data, BIT (Build In Test) and testability analysis, but these actions haven't received good results. Former US Security Industry Association (now the National Defense Industrial Association NDIA) first proposed an "integrated diagnosis" in 1983, integrating elements that constitute weapons and equipment's diagnosis ability, and is approved and advocated by the US military. Since the late 90s of 20th century, integrated diagnostic system is developed to test, monitoring, diagnosis, prediction and maintenance management integration, i.e. PHM, and switch its focus from the initial expansion of the electron system to taking into consideration all the major subsystems such as electronic, mechanical, structural and power. The time of forming comprehensive diagnosis, failure prediction and health management system has come. Overall, the failure prediction and health management is created with the traction in demand, technology driven, and with the JSF project development opportunities. In the late 20th century, the US military introduced CBM in civilian areas as a strategic and logistical support strategy, which aims to monitor the equipment in real time or near real-time, determine the best maintenance time according to the actual state of equipment, improve equipment availability and mission reliability, which is to be achieved with the help of PHM technology. The JSF project started in the 90s of mid-20th century proposed the four pillar goals including economic affordability, lethality, survivability and security, thus providing autonomous security programs, and giving birth to the more perfected PHM system (He and Ma 2012).

There have been some research works on military application of PHM. For example, in the domain of military aircraft propulsion systems, Millar (2007) approached PHM from the system engineering perspective by applying the DoD TLCSM (total life cycle systems management) principles to PHM for propulsion system (Ma 2009). Wang et al. (2008) proposed a PHM model for fighter planes based on flight data. In their work, they introduced some key technologies such as data pretreatment, tendency analysis,

fault forecasting, state monitoring and decision consulting. Sheppard et al. (2009) have explored how standards currently under development within the IEEE can be used to support PHM applications. Recently, Liang et al. (2015) have proposed 4 information collecting methods of fault diagnosis and prediction for all levels warship product with the PHM technology. They proposed a task-based test modeling method for warship product. They introduced a modeling example based on the typical task of surface warship's diesel generator set supply power. In addition, Impact Technologies and the Georgia Institute of Technology have developed a web-based software application that will provide JSF (F-35) system suppliers with a comprehensive set of PHM V&V (Verification and Validation) resources which will include: standards and definitions, V&V metrics for detection, diagnosis, and prognosis, access to costly seeded fault data sets and example implementations, a collaborative user forum for the exchange of information, and an automated tool for impartially evaluating the performance and effectiveness of PHM technologies (Roemer et al. 2005).

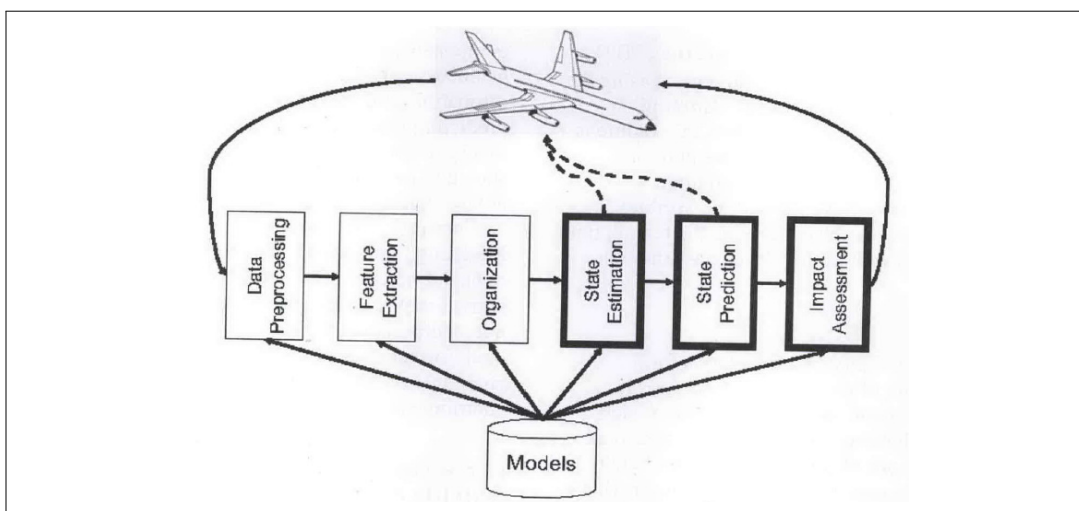
Hess and Fila (2002b) listed up current prognostics efforts in military area as follows: 1) IMD HUMS (Integrated Mechanical Diagnostics Health Usage Monitoring System) intermediate gear box gear crack prognostics, 2) Advanced sensor development in the US navy, 3) DARPA (Defense Advanced Research Projects Agency) prognostics program, 4) DUS&T (Dual Use Science & Technology program) efforts of the US navy with General Electric Aircraft Engines for an IEPHM (Integrated Engine Prognostics and Health Management) system, and 4) JSF PHM (Joint Strike Fighter Prognostics and Health Management) program.

According to Miller et al. (2007)'s work, PHM could also aid the logistic policy change of military weapon system. In the late 1990s the project of US F-35 JSF takes PHM technology. The traditional US air force logistics process for unscheduled maintenance does not start until the aircraft detects a fault. Depending on the severity of the fault, the mission can continue and the information is saved for review and discussion (debrief) with a maintenance team after landing. At this point in time actions are taken to repair or replace the part, which may or may not include ordering of a replacement item from base supply. The JSF programme and other such acquisition programmes, such as the Army/Navy HUMS (helicopter health usage monitoring system) and the UCAV-N

(Navy Unmanned Combat AirVehicle) programmes, have been pursuing an ALS (Autonomic Logistics System) concept that changes this reactive process into a proactive one, with the employment of technologies such as prognostics and a distributed information network. This new approach to the logistics process shows the potential of PHM for cost savings, increased aircraft operational availability and better system performance (Miller et al. 2007).

Figure 10 shows the concept of CBM/PHM system in military application, which is very similar with the general concept of PHM.

[Figure 10] Notional CBM/PHM system (Source: Sheppard et al. 2009)



XII. Discussion and Conclusion

So far we have looked into various aspects of PHM: concept, definition, similar terminologies, pros and cons, procedure, approach, previous research works, related research institutes, standards, and applications of PHM. With emerging information and communication technologies, recently the concept of PHM has been highlighted into various domains. As you know, PHM is not a single technique and requires very complex and various interdisciplinary research techniques, which leads to take much time and efforts for PHM implementation.

There are some discussion points in implementing PHM approach. First, the PHM is not always effective in all cases. Depending on the type of system and its lifecycle, economic benefits will be different since the process of maintenance operation will be different, which requires detailed analysis on maintenance strategy. There are various system types such as large-scaled plant, manufacturing facilities, military weapon systems or consumer products with high value or low value. For the large-scale plant or high valued product or high reliability & availability required systems, e.g., military weapon systems, the PHM could be a good solution because the system failure causes great loss.

Another discussion point is that, as Mobley (2002) mentioned, most PHM approaches treat target system as isolated unit system and not as part of an integrated system. As a result, no effort is made to determine the influence of system variables (Process parameters, e.g., flow rate, temperature, load, speed, etc.) on the individual component. PHM is not just a box you can buy to integrate onto your platform or system, but is a set of integrated technologies, processes, and capabilities that together enable PHM to be realized (Prajapati et al. 2012). PHM methods and practices have been continuously improved for the last decades: however, PHM is conducted at equipment level-one piece of equipment at a time, and the developed prognostics approaches are application or equipment specific (Kobbacy and Murthy 2008). However, to get the practical benefit of PHM approach, it is necessary to consider applying PHM into not only one piece of equipment but also an integrated system level (Shin and Jun 2015).

As you have already looked through, the last point what we want to discuss about is PHM application on military weapon system. Since it is very important to have robust mission reliability in the military weapon system, in the future military weapon system, it is prerequisite to take the PHM concept into its system. To this end, it is necessary to develop the standard architecture and framework for PHM applied to Korean military systems. Furthermore, to get the synergy of PHM application, it is necessary to consider the integration between maintenance system and logistics system for maintenance.

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