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A Study on SECURITY of Rational Human

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Abstract

No other riddles make human beings as curious as human beings themselves. Among the riddles, security is taken as top priority. Security is directly associated with death which human beings fear the most and furthermore represents the underlying principle behind the thoughts and ideas of human beings. Security is analogous to a double-edged sword that makes human lives more convenient and prosperous and at the same time imperils human. Thus, it is of great importance to look into relationship between human beings and security based on questions with respect to human beings and security. However, human beings are not fully aware of security and have misconception towards security.

The research issues in this study are related to the question, "Are human beings secure?" In fact, we may already know the answer to that question posed in this study. However, we can increase understanding of the relationship between human and security by ceaselessly asking the question "Are human beings secure?" and answering that question which needs to be resolved necessarily albeit difficult for human living in complicated world. The purpose of this study was to answer the question "Are human beings secure?" while presenting new perspectives by making new assertions other than those made by scholars with regard to relationship between human and security.

To answer the question, "Are human beings secure?", we should be aware of human, security, and risk. Human beings tend to take secure course and avert risk or instability based on rational thinking driven by the desire for security. That represents rationality of human. Security generally refers to the situation or state free of concern about potential risks or accidents, and can be classified into real security and sensible security. Risks which encroach upon security tend to be universal, unpredictable, and infinite. Risk can be classified into three different categories, such as latent stage, perceptive stage, and behavioral stage, from the standpoint of epistemology.

First, the insecurity of human stems from the fact that every day's life is biologically a step closer to death, the risk feared the most by human

Second, human would be confronted with unlimited risk if all kinds of risks facing human can be quantified. The finite nature of time, money, and ability that can be leveraged to preclude such risks leads to presence of residual risks. As a result, the biological factor and presence of residual risks make human overshadowed by the feeling of insecurity.

However, human pursues security all the time, driven by the desire for safety and rationality, although security is a tantalizing but remote possibility for human. It is an endless loop. This loop cannot be broken, unless the history of human ends. However, this researcher hopes that the results of this study would provide a useful basis for increasing understanding of human and security and subsequently delving into the long and endless exploration of human security which began in early part of human history.

[Keywords] Security, Human, Rational Human, Risk, Human Security

1. Introduction

Human has taken all things in surrounding environment as riddle or enigma since early human history. Among others, no other riddles make human beings as curious as human beings themselves. Above all, security is one of fundamental issues facing human.

Lee Seong-bok(2001) stated “Routine lives are part of constant journey from feeling towards reality and endless journey away from risks towards security. Now, there is no area that obviates the need to protect ourselves in our lives”[1]. However, we are not fully aware of security. Rather, we have misconception of security.

Various surveys conducted recently suggest that Boston, United States, is a safe city. According to the data published by U.S.-based world-renowned survey organization Gallup and health management company Healthways in 2012, Boston, United States, took the fourth spot in terms of sensible security among 50 major U.S. cities and topped the list of cities in 2011[2]. However, just a year later, there was a bombing attack in Boston, Massachusetts, United States on April 15, 2013, leaving 3 people dead and 183 injured[3]. Boston, which was recognized as a safe city only 1 to 2 years ago, is not considered a safe city at present

The unprecedented explosive growth and development worldwide might have resulted from precariousness of taking risks. The precariousness exists in contemporary society built on commercialization and modernization which have been attained without soul-searching introspection and reflection mentioned by Ulrich Beck. Security is the underlying principle behind human thinking and behaviors. Security has brought convenience and prosperity to human, but at the same time, has imperiled human at peril.

2. Human & Security

2.1. Human

The question “What is human?” has been explored steadily since the beginning of human history. However, no uniform definition of human has been drawn thus far.

Generally, human is also one of animals, but is a higher animal with high intelligence and unique *modus vivendi*(way of living) which sets human apart from animals. Mankiw(2009) presented the conditions for rational human who exerts the best effort systematically and intentionally to achieve goals as part of underlying principles of the economics. Human is a strategic existence that calculates and behaves in such a way so as to maximize self-interest as an economic being, and therefore takes what brings more benefit to himself/herself[4]. Kim Yeong-soo(2008) classified the 5 human desires, such as physiological desire, security desire, social desire, landscape desire, and self-realization desire, based on the theory of desire hierarchy. Among them, security desire was considered to arise from safety, reliance or protection, fear and anxiety, law and order, safeguards, etc., after physiological desire has been fulfilled[5].

The environment surrounding us is fraught with risky objects. Even water, air, and soil can threaten our lives. Many products can jeopardize our lives. Human life per se is the source of constant injury and death[6].

In reality, little study has been carried out which takes fundamental approach to security, and furthermore, no assumption of human relationship has been made, unlike other academic fields. Such assumption lays foundation for study and paves the way for developing systematic theories. Therefore, the assumption for human in this study is that human opts for security and averts potential risk or anxiety based on rationality rooted in human desire for security.

2.2. Security & risk

Lexical meaning of security is the situation or state where there is no concern about potential risk or accident. Security can be classified largely into two categories: real security and sensible security. This concept was postulated by Brice Schneier who remarked in TED(Technology, Entertainment, Design), a

global conference in 2010, "Security can be divided into two types, namely, feeling and reality. In fact, we sometimes feel secure when it is not the case. Or, we can be actually secure even when we feel insecure". The two types of security is real security and sensible security[7].

Ulrich Beck, a German economist, drew a definition in his book "Risky Society" that the risk which referred to the downside of modernization represented an auxiliary problem arising from modernization. The risk can be characterized by 1)its universality, 2)difficulty in prediction, 3)its nature as a factor to be avoided, 4)infinity, and 5)vastness of risk[8]. By drawing such definition of risk, he considered contemporary society as global community of objective risks, spreading with social boomerang effect of efficiency risk without any soul-searching introspection and reflection[9].

Risk is a subjective factor measured by psychological and cognitive yardstick, rather than being an objective factor that can be calculated based on probability. In this context, risk is sometimes classified into controllable risk and uncontrollable risk. Besides, the World Economic Forum(WEF) classified the risk based on the extent of knowledge and perception while International Risk Governance Council(IRGC) divided the types of risk based on the cause of occurrence. In the meantime, World Bank presented the risk category based on risk area[10].

The risks, which are classified into diverse types and accepted by human, can be divided largely into 3 types as below from the perspective of threshold and epistemology which is also applied in biological sector. Those 3 types are the latent stage, perceptive stage, and behavioral stage. Latent stage refers to the peaceful and tranquil state in which we do not perceive any risk in routine lives. Perceptive stage refers to the state in which no response or prevention is attempted although the risks are perceived. Finally, behavioral stage involves prevention of or response to risks. In this stage, there are perceptive threshold for transition from latent stage to perceptive stage, along with behavioral

threshold for transition from perceptive stage to behavioral stage.

Both thresholds vary, depending on the distance, period, and extent of damage. First, it is related to the distance between self and risk that includes psychological distance. Human beings tend to feel threatened more by closer risks even when the risks are identical. That also includes psychological distance. Second, it is related to the frequency of repetition within the same period. Risks that are repeated more often tended to be perceived more threatening even when the risk is identical and present for same duration. Finally, the extent by which risks are accepted may vary, depending on the degree of damage to body and properties. Risks that cause greater physical damage/property damage tend to be perceived more threatening even when the distance, frequency, and controllability remain identical.

3. Are Rational Human Beings Secure?

Security is the underlying principle behind human thinking and behavior. Human is not secure for following reasons:

First, human is not secure from death. Human beings die. No one can be free from death. However, we forget such fate of human and just wish for good health and longevity. Human beings forget about death that will find us someday in the future and naturally in their ordinary lives[11]. The most noticeable characteristics of death is absolute equality and irreversibility to pre-death state[12].

Security and risk are contradictory concepts that cannot coexist with each other. For human, death is the greatest risk. The stress arising from death is the most severe. The stress rating scale of TH Holmes, RH Rahe. (1967) suggested that intensity of stress from death of spouse and family members was ranked the top and fifth, respectively, on the stress scale although the stress was related to death of others. If we lived another day, another week, and another month, then we will be closer to death by one day, one week, and one month. Risk cannot coexist with security.

After all, human will not be secure, unless they become completely free from death.

Second, nothing is absolutely secure. If we assume that there may be absolute security, that is perfect security, then we will have perfect security when we can prevent and preclude any and all risks presenting in this world. If this perfect security is expressed numerically as '1', the following formula can be used.

$$\frac{\text{Time} \cdot \text{Money} \cdot \text{Ability}}{\text{all Risk}} = X < 1(\text{Perfect security})$$

If all risks can be expressed numerically, they will be infinite(∞). Risks are results of mass production enabled by industrialization and disaster brought by scientific and technological advancement. Those risks will be clear if we consider the universality of risks, difficulty in risk prediction, and infinity of risks in terms of the characteristics of risks, along with various natural disasters, crimes, wars, nuclear weapons, genetic engineering, new diseases, etc. Then, how can we preclude and respond to risks? For that, we can tap into resources such as time, money, and ability. However, the time, for example, is finite, as we can spend only limited amount of time. In addition, we cannot print and use money for ever. It is same case with force and power. There is physical limit. If aforesaid formula is revised to accommodate the reality, it can be presented as below.

We may think that perfect security can be brought about by investment to a self-satisfactory extent to mitigate or avoid risks, although such perfect security cannot be attained no matter how much time, money, and ability are invested. That is the zero-risk bias meaning that all risks can be eliminated perfectly. Security is enhanced rapidly at initial stage where money, time, and ability are combined to preclude and respond to risks. However, the security enhancing effect becomes diminished with the elapse of time, and perfect security will not be attained eventually.

Furthermore, human beings strive to achieve security ceaselessly although human is an existence that cannot be secure. Such relentless effort is driven by the desire to pursue security as rational human in the face of

risk. Risk and security are intermingled in human life. However, they eventually return to their original place as time passes by. That is the 'homeostasis of security'. Each human being has personal psychological and cognitive criteria for security. When they deviate from such criteria, they attempt to return to the range of security criteria.

4. Conclusion

No other riddles make human beings as curious as human beings themselves. Moreover, security is the most important concern among those riddles. Security is directly associated with death which human beings fear the most and furthermore represents the underlying principle behind the thoughts and ideas of human beings. Security is analogous to a double-edged sword that makes human lives more convenient and prosperous and at the same jeopardizes human. Thus, it is deemed important to examine and understand the relationship between human beings and security based on questions with respect to human beings and security. Such understanding starts with the question "Are human beings secure?".

Human beings have their own criteria for rationality based on desire for security. However, the risks that jeopardize security are characterized by their universality, difficulty in prediction, and infinity. The time, money, and ability that can be leveraged by human beings to preclude risks are constrained for their finite nature.

Human is not secure. Biologically, another day is another step towards death feared the most by human. Therefore, human can never be secure. Human cannot escape from the death which is the second most important risk factor for human. They can never reach perfect security although they are able to come close to it, due to finite nature of what they can invest to achieve security against the infinite risks.

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A Study on Problems & Countermeasures Related to Illegal Fishing by CHINESE Boats in Neutral Zone of Han River of KOREA

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Abstract

CHINESS boats operating in the West Coast of EEZ(Exclusive Economic Zone) have perpetrated illegal fishing near NLL (Northern Limit Line) where the crackdown is relatively difficult, shutting between the SOUTH KOREA and NORTH KOREA. Since 2015, they advanced even into neutral zone of the western and northern Han River estuary off Gyodong Island adjacent to Ganghwa Island.

Several dozen of CHINESS boats have been fishing in group, causing tension between the SOUTH KOREA and NORTH KOREA. They advanced 500m into the coast, which raises concern about infiltration of espionage agents disguised as CHINESS fishers.

Furthermore, reckless fishing activities of CHINESS boats are blamed for devastation of fishing ground and disruption of fishing order.

However, this region is a neutral region and falls under the jurisdiction of the Military Armistice Commission. Therefore, KOREAN government cannot clamp down on illegal fishing activities on its own discretion in this region. In addition, this region is off-limits to vessels other than private ships, limiting any access by the coast guard or military for the purpose of crackdown on illegal fishing.

To resolve such problems, this study presented measures for relaxation of tension between the two KOREAS, prevention of devastation of fishing ground, restoration of fishing order based on multi-faceted approaches such as multilateral diplomatic activities with involvement of international community including CHINA and U.N., promotion of activities of the Military Armistice Commission existing in name only, and peaceful use of the fishing ground with joint management by the SOUTH KOREA and NORTH KOREA, and furthermore, proposed the measures such as permanent military police activities that could increase efficiency of clampdown on CHINESS fishing boats.

[Keywords] Policing, EEZ, Han River Esruary of Korea, UNCLOS, DMZ

1. Introduction

Fishing boats of South Korea and China have been able to fish in waters within EEZ of the other country since both countries became signatories to the UNCLOS(United Nations Convention on the Law of the Sea) in 1996 that recognized EEZ extending 200 nautical miles from the coastline of each country.

However, Chinese boats have been often fishing within the EEZ of Korea without approval or breached the requirements for approval. They even entered even the waters of NLL where the two Koreas are confronting each other, thus escalating the tension on the Korean Peninsula and disrupting the fishing order.

Recently, Chinese boats, the perpetrator of illegal fishing, advanced even into neutral

zone of the Han River estuary amid more rigorous crackdown by the South Korean government in waters of NLL.

In response to that, the UNCMAC(United Nations Command Military Armistice Commission) dispatched the military police comprised of 24 persons, including the Korean navy and coast guard officer, on June 10, 2016, to the Han River estuary to strengthen crackdown on Chinese boats perpetrating illegal fishing.

However, the North Korea lambasted continuously through Chosun Central News(Chosun Jungang Tongshin) and Rodong Sinmun newspaper, the mouthpiece of the Workers' Party, stressing that the South Korean crackdown on illegal fishing would constitute infringement on the sovereignty of the North Korea and breach of the Armistice Agreement, and even threatened that the second Yeonpyeong artillery duel may occur.

Amid ever higher tension between the two Koreas, there has been an increasing need to map out countermeasures designed to better clamp down on illegal fishing activities of Chinese boats and to preserve stability of neutral zone of the Han River.

Based on recognition of such problems, this study was intended to examine the background for designation of neutral zone of Han River estuary and its legal status through related literatures and analyzed the consequences of illegal fishing perpetrated by Chinese boats from the perspective of the military standoff between the two Koreas and from the angle of environmental preservation, and at the same time, focused on crafting measures for stable status of neutral zone of the Han River estuary in parallel with relaxation of tension on the Korean Peninsula.

2. Background for Designation of Neutral Zone of the Han River Estuary & Its Legal Status

2.1. Background for designation of neutral zone of the Han River estuary & scope

Korean Armistice Agreement that ended the Korean War was signed by the U.S. Army

Lieutenant General William Harrison and North Korean General Nam Il representing the Korean People's Army on behalf of the United Nations Forces Commander and North Korean/Chinese Army Commander, respectively, at Panmunjeon on July 27, 1953. Under this Armistice Agreement, onshore demarcation line was drawn between the South Korean and North Korea, thus determining the MDL(Military Demarcation Line). To prevent armed collision, respective forces were pulling back 2 km along each side of the line, the demilitarized zone(DMZ), under the control and supervision of the Military Armistice Commission and NNSC (Neutral Nations Supervisory Commission)[1].

In addition, this Armistice Agreement, the natural waters of the Han River estuary straddled from the end point of onshore demarcation line to the start point of the West Coast, which is a 67km-long strap of land covering the area from Manu-ri, Tanhyeon-myeon, Paju-si, Gyeonggi-do to Buleumdo, Seodomyeon, Ganghwado, Gyeonggi-do.

In the meantime, negotiation on maritime demarcation line broke down due to disagreement between the U.N. Forces and North Korean communist troops, unlike the onshore demarcation line. To preclude accidental armed clash between the two Koreas in the sea of the Korean Peninsula, General Mark W. Clark, Commander-in-Chief, U.N. Command, set the NLL(Northern Limit Line), the line of limitation of South Korean naval and air force patrol activities in waters off the Eastern and Western Coasts, on August 30, 1953.

As a result, the Korean Peninsula became divided by 3 types of demarcation lines, i.e., the NLL, Neutral Zone(HAN Estuary), and DMZ, as shown in <Figure 1>.

2.2 Legal status of neutral zone of the Han River estuary

International river refers to the rivers passing through international borders and rivers that flow through many countries. Coastal states have obligations towards those international rivers under certain common laws, which are considered to encompass freedom of navigation.

Moreover, the ruling by the Permanent Court of International Justice over the incident of Oder River in 1929 explicitly shows that the freedom of navigation is guaranteed[2].

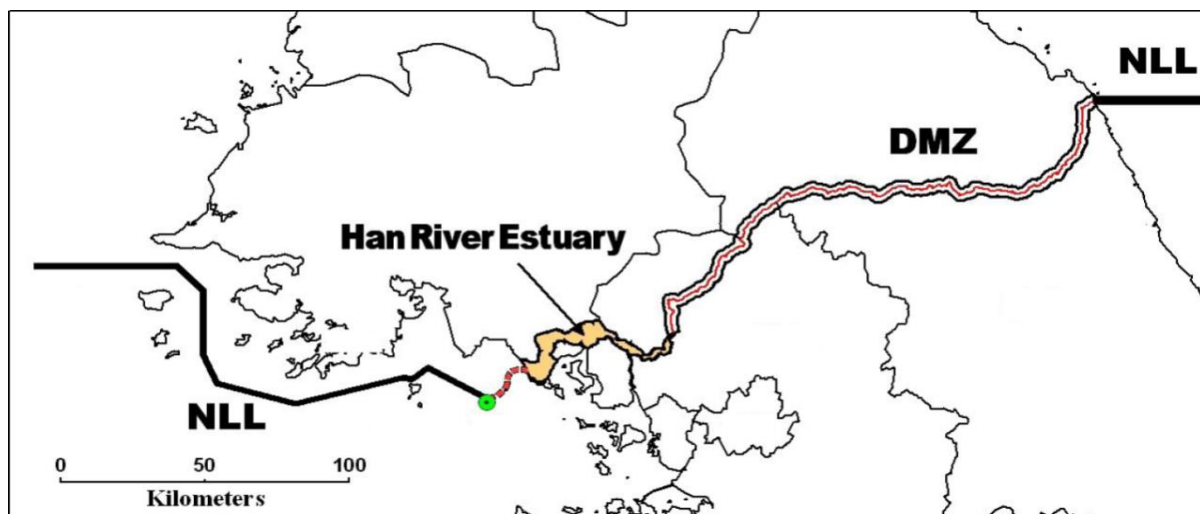
However, the freedom of navigation is recognized individually pursuant to agreements signed among coastal states, rather than general international laws, in reality[3]. Regulations and related requirements pertaining to navigation of private vessels in Han River estuary were adopted as a follow-up agreement pursuant to Clause 5 of Article 1 of the Armistice Agreement on October 3, 1953 during the 22nd session of the Military Armistice Commission which had jurisdiction over neutral zone of Han River estuary, and came into full force a week later.

Under those rules, 1)provisions applicable to onshore territorial DMZ applied to neutral

zone, prohibiting entry of military vessels and vessels carrying troops, weapons and ammunitions without approval of the Military Armistice Commission, 2)respective troops of the two Koreas were not allowed to enter up to 100m from neutral zone, except for vessels registered with the Military Armistice Commission, and 3)military police personnel not exceeding 24 persons and up to 4 vessels carrying military police personnel may be operated for the purpose of patrol.

Thus, the neutral zone of the Han River estuary was placed under jurisdiction of the Military Armistice Commission. This neutral zone was open only to private shipping while military police force comprised of up to 24 persons could be operated for the purpose of patrol.

Figure 1. NLL, HAN neutral zone, DMZ.



3. Illegal Fishing by Chinese Boats in Neutral Zone of the Han River Estuary

3.1. Illegal fishing perpetrated by Chinese boats

Illegal fishing by Chinese boats in Han River estuary occurred sporadically with 2 to 3 incidents each year until 2014. Number of incidents stood at 95 with 129 vessels in 2015, 6

with 6 vessels in February 2016, 101 with 71 vessels in March 2016, 119 with 99 vessels in April 2016, and 129 with 103 vessels in May, which suggests that incidents of illegal fishing by Chinese boats have increased drastically this year. Chinese fishers have went beyond illegal fishing to commit infringement upon border as they install drum net fish traps or fishing nets to catch fish or even disembark their vessels to collect fish, shellfish, and seafood. The neutral zone of the Han River estuary is controlled by the United Nations Command and a place with high tension between

the two Koreas. In addition, it is a marine resource conservation area. Illegal fishing activities of Chinese boats in this area are expected even to expedite depletion of maritime resources, devastation of fishing ground and armed clash between the South Korea and North Korea.

3.2 Ground for illegality of fishing by Chinese boats

The United Nations Command and Korean government have considered that Chinese fishing boats broke into the neutral zone of the Han River estuary, given that they 1) did not observe the rules requiring ship registration with the Military Armistice Commission for entry into neutral zone, 2) did not raise national flags in most cases, and 3) breached the provision banning nighttime activities.

3.3. Problems with illegal fishing by Chinese boats

3.3.1 Concern over armed collision between the two Koreas

The neutral zone of the Han River estuary, managed by the United Nations Command pursuant to the Armistice Agreement and is adjacent to the territory of the North Korea. This neutral zone is military hot spot with high tension between South Korea and North Korea. The area adjacent to Inhwa-ri, Yangsamyeon, Ganghwa-gun has the maximum width of 10km while the area adjacent to Yonggang-ri, Wolgot-myeon, Gimpo-si has the minimum width of about 900m[4].

In fact, Korean government organized military police consisting of 24 persons, including navy soldiers, Korea coast guard officer, agents from the Armistice Committee of the United Nations Command, etc., and 4 high-speed boats on June 10, 2016 to round up the crews on board of Chinese fishing boats amid persistent illegal fishing activities by Chinese boats.

Korean government announced, “We will operate military police through consultation with the United Nations Command, given the limitation of diplomatic efforts, in the midst

of persistent illegal fishing activities by Chinese boats in the waters of Han River estuary despite our efforts.”

Before proceeding ahead, a telephone notice was sent to the North Korea under the name of the U.N. Armistice Committee, along with the notice to China in respect of the eviction operation to be conducted on June 8, 2016[5].

However, the North Korea made a threat on June 20, 2016, which was 10 days later, via Chosun Central News(Chosun Jungang Tongshin), saying that they won't tolerate foolhardy maritime infiltration and military provocation and that warmongers should ruminate on the lesson of horrible blood spilled during artillery duel in Yeonpyeongdo, in a report titled ‘Foolhardy military provocation aggravating the standoff and risk of armed collision’.

And it heightened tension by stressing, “We have warned thousand times that our military knows how to subjugate provokers invading our sacred land, territorial waters and airspace where our right of independence is exercised. Our military is keeping a close eye on the rash behaviors of American imperialist invaders and South Korean puppet government's war-lovers”,

On June 27, 2016, it demanded, saying “The American imperialist invaders and South Korean puppet government should stop provocation by realizing that their foolhardy military provocative scheme in Han River estuary and NLL will trigger retaliatory response and second Yeonpyeong artillery duel[6]”.

On the same day, Rodong Sinmun newspaper, the mouthpiece of the Workers' Party, mentioned “very grave situation” and claimed that the puppet government's warmongers are actually pressing ahead with Hangang Operation to expedite armed collision against us[6]”.

In that way, the North Korea is heightening tension between the two Koreas under the pretext of fair response to South Korean crackdown on illegal fishing activities perpetrated by Chinese boats, which raise concern

over armed clash between the South Korea and North Korea.

3.3.2. Concern over infiltration of espionage agents disguised as fishers

Han River estuary, infiltrated by Chinese boats engaged in illegal fishing, is formed by long and narrow waterways. The narrow area has a width of only 900m, the distance that human can swim. The West Coast of Korea has ebb and flow of tide twice a day, providing a path into the land during ebb tide if small vessel is used.

Chinese boats fishing in Han River estuary sometimes install drum net fish traps or fishing nets to catch fish. However, Chinese crew occasionally disembark their vessels and collect fish, shellfish, and seafood, which raises concern over infiltration by North Korean espionage agents disguised as Chinese fishermen.

According to the 2014 Defense White Paper published by the Ministry of National Defense, number of incidents of maritime infiltration after 1950 stood at 1,001 while number of incidents of infiltration through riversides reached 230[7].

Infiltration of espionage agents in the neutral zone of Han River estuary raises even more serious concern that the infiltrators may obtain information related to security posture and military/police deployment in South Korean military camps and use such information for massive infiltration of spies or provocation.

3.3.3. Inadequate control of neutral zone

The neutral zone of the Han River estuary was established at the declaration of armistice on July 27, 1953 out of the need for buffer zone to prevent armed collision of two Koreas confronting each other militarily with the river flowing between them

An agreement was reached to open this neutral zone to civil shipping of both sides and to establish the Military Armistice Commission and NNSC(Neutral Nations Supervisory Commission) for management and supervision of the neutral zone.

Under the Armistice Agreement, the neutral zone would be open to civil shipping. Due to complex procedures requiring prior report and military confrontation, the neutral zone was strictly managed to such an extent that vessels were deployed only 5 times:

1)8 dredging vessels and tug boats(28 persons) were deployed to collect aggregates necessary for construction of free pathway from November 1990 to November 1991, 2)4 rub boats(28 persons) of marine corps were used to carry a bull adrift in water due to flood on January 17, 1997, 3)34 marines were deployed to recover 10 goats owned by residents of Sageomdo(island) after the animals were taken into Namseom(island) in Han River estuary on February 18, 1999, 4)2 tug boats(18 persons) were deployed to tow a dredging vessel that ran aground at the location adjacent to Imjin River, Dupo-ri, Papyeong-myeon, Paju due to torrential downpours on August 28, 1999, and 5)2 waterway survey vessels(22 persons) were deployed from November 7 to 11, 2005 to carry Geobukseon(Tuttle Ship) towards Hansandaecheop(Great Battle of Hansan) loading port from the location where the ship was moored and displayed in case that the vessel was in neutral zone of Han River estuary.

The neutral zone of the Han River estuary, established to prevent accidental armed collision of troops of South Korea and North Korea, has been strictly managed and supervised. Entry of scores of Chinese fishing boats at a time raises concern over disruption to the control of the neutral zone.

3.3.4. Reasons behind disruption of fishing order & devastation of fishing ground

Fishing order has been seriously disrupted as Chinese boats are entering even the neutral zone of River estuary, taking advantage of the fact that the neutral zone is managed jointly by South Korea and North Korea. Chinese fishing boats are not only engaged in unauthorized and illegal fishing in EEZ(Exclusive Economic Zone) of the West Coast but also perpetrating illegal fishing in NLL(northern

limit line), the area of highest tension between the two Koreas and not allowed for any fishing activities.

Average daily number of Chinese boats engaged in illegal fishing within NLL stood at 92 units in 2013, 123 units in 2014, and 152 units in 2015, jumping 65% over the last 3 years[9]. Chinese boats perpetrating illegal fishing within NLL are entering even neutral zone of Han River to avoid ever more rigorous crackdown by KCG(Korea Coast Guard), causing disruption to fishing order.

Han River estuary is the confluence of Han River, Imjin River, and West Sea and forms wetland and mud flats due to slowdown of flow as a result of exchange between tides and river water. With the difference between the rise and fall of the tide being as high as over 9m, this area has optimal conditions for vast mud flats.

Along with that, this area boasts a wide diversity of habitats of various fish species with well-preserved natural environment due to restriction on ship navigation. However, scores of Chinese boats that enter the neutral zone at a time and engage themselves in illegal fishing with various methods such as drum net fish traps raise concern over devastation fishing ground.

4. Countermeasures against Chinese Boats Fishing Illegally in Neutral Zone of Han River Estuary

4.1. Multilateral diplomatic efforts

As illegal fishing activities by Chinese boats increased in the neutral zone of the Han River estuary during the first half of 2016, the Ministry of Foreign Affairs of Korea Republic summoned Qiu Guohong, Chinese Ambassador Chinese Ambassador to South Korea, twice on June 10 and 17 and protested against illegal fishing activities of Chinese boats and demanded countermeasures to be taken[8].

Furthermore, Chinese government made it clear, “China takes very seriously the issue of illegal fishing in Han River estuary and has made much effort to educate fishermen in tandem with practically rigorous actions at

central and local government level” when South Korean government pressed China for crackdown on illegal fishing activities during the 18th South Korea-China Director General Consular Meeting held in Beijing, China in June 15[9].

The United Nations Command notified the U.S. government that Chinese boats entered the neutral zone without authorization in breach of the Armistice Agreement in late May 2016. In response to that, the U.S. government is said to have made official request to Chinese government to pull the Chinese boats out of the neutral zone of Han River estuary where there were fishing illegally[10].

However, such effort alone brought about limited results. Thus, countermeasures need to be mapped out to prevent entry of Chinese boats into the neutral zone through multilateral negotiation, including mediation of the United States, along with Korea-China bilateral meetings on fishery, while making formal request to Chinese government through the U.N.

4.2. Promotion of activities of the military armistice commission

The Military Armistice Commission was established in 1953 on the basis of the Armistice Agreement, playing the rule of joint organizations that supervised performance of Armistice Agreement and conducted negotiations and processing of breaches. However, the Military Armistice Commission has been actually defunct since the North Korea announced boycott of the meeting upon replacement of senior delegate of UNC (United Nations Command) with Major General Hwang Won-tak of South Korea, instead of U.S. general, in 1991.

The North Korean delegate withdrew from Panmunjeom in April 1994 and organized People's Army Panmunjeom Representative Office under the command of the General Political Bureau of the People's Army in the following month, substituting the functions of Military Armistice Commission as general-level talk was held between the United Nations Command and North Korean army in 1998.

However, the general-level talk between UNC(United Nations Command) and North Korean army has not been held anymore since the discussion on the issue of opening some part of the DMZ for Gyeongui and Donghae railway connection during the 14th meeting in 2002.

Furthermore, the framework itself has been jeopardized since the North Korea announced nullification of Armistice Agreement in March 2013. There might be no way for accidental confrontations to be resolved by concerned parties, the South Korea and North Korea, given that the channel of communication between the two Koreas was closed.

Even now, it would be necessary to promote activities of the Military Armistice Commission' so as to ensure that accidental confrontations can be resolved by concerned parties, the South Korea and North Korea, and that joint response can be made to Chinese boats engaged in illegal fishing activities.

4.3. Exploration of measures for joint use by the south and north

The environment surrounding the neutral zone of the Han River estuary can be analyzed from 3 aspects below.

1)From military perspective, this neutral zone is subject to all regulations applicable to the DMZ pursuant to the follow-up documents adopted by the Military Armistice Commission although Han River estuary is open to civil shipping under the Korean Armistice Agreement.

2)From the perspective of natural environmental preservation, this neutral zone, the habitat for migratory birds and features vast mud flats, is a natural environment preservation area that should be managed systematically.

3)From environmental perspective, this region covers the sphere of influence formed around the Bay of Gyeonggi off the West Sea, which is extended to the coastal regions straddling from Haeju Port to Nampo Port of the North Korea, and hosts large number of troops and major military facilities concentrated in the sea adjoining the South and North.

Therefore, to relax military tension and accidental confrontations between the South and North and prevent reckless infringement by coastal states including China, the third country, the following measures would need to be taken:

1)Establishing regulations on passage through the waters near NLL where navigation of vessels from the South and North are prohibited altogether, thereby pushing forward maritime cooperation based on direct sea route,

2)Establishing detailed sailing/navigation order for cooperation with 5 island regions of the West Sea and coastal regions of the North Korea, thus promoting free movement; and furthermore establishing South-North fishery cooperation zone in the sea of the South and North in the vicinity of NLL.

3)Exploring measures for joint use of the region, like developing ports in estuary waters of Han River and processing logistics from surrounding regions, including Nampo, etc., of the North Korea, with logistics from northwestern part of Seoul, ultimately leading to relaxation of tension between the two Koreas and crafting countermeasures that can deal directly with illegal fishing activities of Chinese boats.

4.4. Permanent crackdown activities

Response to illegal fishing activities of Chinese boats has become ineffective for reason that the Armistice Agreement restricts not only independent activities of coast guard officer attempting to clamp down on illegal fishing activities by Chinese boats but also independent crackdown by South Korean government on such illegal fishing activities.

A group of 30 to 40 Chinese fishing boats are sailing near NLL, avoiding the crackdown of Korea coast guard, and are entering even neutral zone of the Han River estuary without authorization. Thus, their attempt to enter the neutral zone should be frustrated by expeditious early crackdown.

For that, military police team comprised of maritime police, navy soldiers, etc., should be organized and drilled to clamp down on and evict illegal fishing boats. By dispatching the

United Nations Command to Korea coast guard, a systematic revamp can be pushed forward to ensure effective crackdown under the cover and swift approval through contact official of the United Nations Command when Chinese fishing boats appear.

5. Conclusion

Scores of China-flagged fishing boats are shuttling between the South Korea and North Korea in waters adjacent to 5 islands, such as Baekryeongdo, Yeonpyeongdo, etc., in the West Sea, as well as the West Sea and EEZ, perpetrating illegal fishing. Recently, they infiltrated even Han River estuary, the neutral zone, continuing illegal fishing activities.

However, this neutral zone was designated pursuant to the Armistice Agreement signed in 1953, and at the same time, is a military zone off-limits in principle to coast guard, making any crackdown on illegal fishing impracticable.

Furthermore, this neutral zone is the hot spot of the South Korea and North Korea confronting each other militarily and is endowed with beautiful natural environment, and as a result, devastation of fishing ground has occurred, along with damage to natural environment.

To resolve those problems, the Republic of Korea organized the military police comprised of coast guard officer, navy soldiers, and marines with the approval of the United Nations Command. The military policy clamped down on Chinese boats engaged in illegal fishing on June 10, 2016.

However, the North Korea lambasted at such crackdown, accusing the South Korea of military provocation, thereby heightening tension on the Korean Peninsula.

To relax tension and accidental confrontation between the South Korea and North Korea and prevent devastation of fishing ground, the following measures were proposed: 1)Multilateral diplomatic efforts through international community including the U.N., as well as China, the party to this issue of illegal fishing, 2)Promotion of activities of the Military Armistice Commission that exists only in

name, 3)Joint use of common fishing ground, etc., by the South Korea and North Korea, and 4)Establishment of permanent crackdown system for greater efficiency of clamping down on illegal fishing.

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A Study on Cooperative Policing in KOREA and Management of PRIVATE SECURITY Manpower through Application of CPTED

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Abstract

We are living in a dangerous society. Crimes become more intelligent, violent and expansive, which increases anxiety of the citizens. The states are responsible for suggesting effective alternatives to prevent crimes. In Korea, the police has taken the lead in making plenty of efforts to eliminate possibility of crimes based on Situational Crime Prevention Theory and especially, monitoring of CCTVs applying Crime Prevention through Environmental Design(CPTED), urban development and purification of harmful environment have been implemented in mutual cooperation between local municipalities and the police.

The surveillance system intended by the police in the past has become ineffective and thus, convergent approach needs to be made with natural surveillance through CPTED and, to run this system, cooperative policing between local residents and the police. Crime prevention has inherent limitation that it cannot be accomplished with public security alone, which requires proper operation of crime-monitoring in the private sector.

Academic circles have highlighted the importance of private security as a partner for cooperative policing and active discussions have been made to realize it. Nonetheless, although various forms of cooperative policing have been implemented in Korea to make up for shortage of police force, actual outcome seems still marginal. In order to strengthen the efficiency of crime surveillance by CPTED, cooperative policing is deemed to be vital and, for this, active participation from local residents is essential. That is, in order to minimize the possibility of crime outbreak, active participation of local residents is crucial based in improvement of physical environments.

Many nations are experiencing restrictions in budget and manpower for the prevention of crimes, and efforts are continuously being made by the police and academic circles to apply more effective crime prevention techniques.

Crime prevention involves limitation that it cannot be perfectly accomplished with public security alone, which necessitates active anti-crime workings of the private sector. The surveillance system intended by the police in the past has become ineffective and, hence, convergent approach needs to be made with natural surveillance through CPTED and, to run this system, cooperative policing between local residents and the police.

In line with this trend, it is necessary to change methods of manpower management to maximize participation of private sector out of crime-suppressing attitude centering on existing public security and to suggest a new paradigm for private security to enhance participation of local residents.

For this purpose, systematic grounds need to be made to secure private security manpower through participation of local residents and it is also required to actively increase the number of professional local security guards with the appropriate status and authority of legal safeguards.

[Keywords] Private Security, Criminal, Crime Prevention, CPTED, Republic of Korea

1. Introduction

We are living in a dangerous society.
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expansive, which increases anxiety of the citizens. The states are responsible for suggesting effective alternatives to prevent crimes. In Korea, the police has taken the lead in making plenty of efforts to eliminate possibility of crimes based on Situational Crime Prevention Theory and especially, monitoring of CCTVs applying Crime Prevention through Environmental Design(CPTED), urban development and purification of harmful environment have been implemented in mutual cooperation between local municipalities and the police.

The surveillance system intended by the police in the past has become ineffective and thus, convergent approach needs to be made with natural surveillance through CPTED and, to run this system, cooperative policing between local residents and the police. Crime prevention has inherent limitation that it cannot be accomplished with public security alone, which requires proper operation of crime-monitoring in the private sector.

Academic circles have highlighted the importance of private security as a partner for cooperative policing and active discussions have been made to realize it. Nonetheless, although various forms of cooperative policing have been implemented in Korea to make up for shortage of police force, actual outcome seems still marginal. Especially, while private security which first appeared in the 1960s has grown rapidly recently, little cooperation is actually practiced between the police and private security[1].

In order to strengthen the efficiency of crime surveillance by CPTED, cooperative policing is deemed to be vital and, for this, active participation from local residents is essential. That is, in order to minimize the possibility of crime outbreak, active participation of local residents is crucial based in improvement of physical environments.

Therefore, this study aims to seek out a plan for manpower management of private sector in order to vitalize cooperative policing and maximize crime prevention effect of CPTED in Korea and, through this, provide basic theoretical material to suggest new direction for private security.

2. Theoretical Background

2.1. Cooperative policing

Policing service means citizens' voluntary participation in the prevention of, and counteraction against, crime as a main agent of policing service. That is, it means utilization of citizens as co-producers of policing service, which requires them to actively participate in crime prevention activities such as patrolling and policing and to be equipped with expertise and awareness to prevent crimes as the performers of cooperative policing activities in line with the police[2].

Seen from the concept of cooperative organization, the concept of cooperative policing is composed of 'cooperative production' and policing philosophy of 'policing activities of local society' and it emphasizes the importance of joint production of security by the police and local residents with policing activities which enhances problem-solving abilities through police's partnership relationship with local residents[3].

2.2. Situational crime prevention theory and CPTED

Situational Crime Prevention is composed of measures to manage, design and adjust the environments in which specific types of crimes are committed relatively systematically and permanently and it is a crime prevention technology to decrease the possibility of crimes and increase the risk of getting caught perceived by potential criminals over a wide range[4]. Crime Prevention through Environmental Design(CPTED) is an integrated crime prevention strategy to ultimately enhance quality of life by reducing the possibility of crime outbreak, relieving citizens' fear of crimes and keeping their sense of security based on situation crime prevention techniques[5].

CPTED strategy is largely classified into 'approach control' and 'surveillance' and it emphasizes balanced harmony with existing approaches through conversion from previous mechanical and organizational crime prevention concept to natural surveillance, natural approach control, territoriality and support of activities[6].

In police-led CPTED projects, participation of residents in local community is so crucial that it can decide the success or failure of the projects[7], and many scholars argue that problem-solving crime reduction strategies centering on CPTED technique have actually resulted in the reduction in the number of crimes[8].

3. Use of Manpower through the Application of CPTED

3.1. Voluntary crime prevention corps as a part of private security

CPTED policy in Korea began with 'Guideline for Security Design' released by the Ministry of Construction and Transportation in 1992. It was practically implemented in terms of environmental criminology and public policy according to 'Crime Prevention Plan through Environmental Design' stipulated by National Police Agency in March 2005 which mainly presented design standards for detached housing sites, apartment complexes, parks, parking lots, schools and commercial facilities[9]. Like this, early CPTED policy focused on the improvement of physical environments and thus more or less overlooked participation of local residents to maximize natural surveillance but it still alleviated its problem with 'Voluntary Crime Prevention Corps' which was an existing organized cooperative policing program to a certain degree.

Voluntary Crime Prevention Corps in Korea was formed by reorganizing local residents' anti-crime organizations in line with the necessity of voluntary crime prevention organizations at the government's proclamation of 'War against Crimes' in the 1990s. In 1996, National Police Agency announced Management Guideline for Voluntary Crime Prevention Corps according to which local volunteers autonomously organized voluntary anti-crime groups and local municipalities provided them with operational expenses and equipment necessary for crime prevention activities[10].

Although there are some differences depending on jurisdiction of local police agency, Voluntary Crime Prevention Corps is mainly in charge, based on management regulations, of crime prevention activities such as patrolling vulnerable areas and capturing criminals in the act, reporting criminal scenes and suspects, arriving at the crime scenes with the police force, guiding citizens away from disorderly behaviors, maintaining order in major events and cooperation with, and support for, the police.

3.2. Plan to vitalize participation of local residents

As there is lack of laws and regulations on the support for Voluntary Crime Prevention Corps, which leads to limited authority and unstable budget problem for corps, structural fault for corps' cooperation with the police arises due to the dual system for support and management of operational expenses. Hence, lack of joint patrol and information exchange makes collection of residents' opinions difficult. In addition, risk involved and time restraint give the corps the nature of informal social gatherings, which involves exclusiveness and lack of professionalism[11].

Thus, it is necessary to improve the system with professional education, balance with major jobs, granting of status and authority of quasi-police to a certain extent and payment of actual expenses based on proper legal ground demonstrated in such systems as Security and Surveillance System of Bayern State in Germany[12], and it is vital to reinforce manpower for natural surveillance of CPTED with cooperative policing plan through clear legislation of payment system, range of jobs and authorities and responsibilities.

4. Conclusion

Many nations are experiencing restrictions in budget and manpower for the prevention of crimes, and efforts are continuously being made by the police and academic circles to apply more effective crime prevention techniques.

Crime prevention involves limitation that it cannot be perfectly accomplished with public security alone, which necessitates active anti-crime workings of the private sector. The surveillance system intended by the police in the past has become ineffective and, hence, convergent approach needs to be made with natural surveillance through CPTED and, to run this system, cooperative policing between local residents and the police.

In line with this trend, it is necessary to change methods of manpower management to maximize participation of private sector out of crime-suppressing attitude centering on existing public security and to suggest a new paradigm for private security to enhance participation of local residents.

For this purpose, systematic grounds need to be made to secure private security manpower through participation of local residents and it is also required to actively increase the number of professional local security guards with the appropriate status and authority of legal safeguards.

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Tasks of Making the Community Safe Based on CPTED in KOREA

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Abstract

The purposes of this study were to activate crime prevention through environmental design and investigate its effects on community safety, thus establishing devices to prevent crimes in advance and contributing to the reduction of crime rates in crime-ridden districts. The study introduced the domestic application cases of Seoul and Busan and proposed legislative and policy improvement tasks as plans to activate crime prevention through security governance-centric environmental design.

The plans to activate CPTED focusing on crime prevention governance are as follows. First, it is to increase the efficiency of preventing crime by expanding and improving a natural monitoring strategy. Second, it is needed to cope with crime efficiently by supplementing access restriction facility. Third, it is secure territoriality so that crime can be prevented beforehand. These guidelines are expected to contribute to improving the safety of local society.

In addition, it suggested that citizens' voluntary participation should be critical to the activation of crime prevention through environmental design in the communities at the local government level and make huge contributions to the reduction of budgets and safety of community.

[Keywords] Crime Prevention, Local Government, Community Safety, Element of Budget Reduction, Reduction of Crime Rate

1. Introduction

When crimes occur in the community, they not only cause damage to the bodies or property of victims, but also make residents in the neighborhood considerably anxious. Places of high crime occurrence frequency include streets and residential areas. The crime analysis data of Public Prosecutors' Office in 2015 show that robbery(20.1%), theft(12.7%), and assault and injury(10.9%) took place in residential areas where sex crimes occurred in 2014.

Driven by the recognition that crimes happen in neighborhoods, more and more people demand to identify environmental factors of high crime possibility in advance and improve

them. Reflecting the demand, researchers define crime prevention through environmental design(CPTED) as a technique to reduce the anxiety and scope of crimes and increase quality of life through the proper design and effective use of architectural environment. More and more local governments apply the technique and take the policy of making the community safe as a major task. The present study set out to examine the current operation and cases of CPTED and propose its future legislative and policy tasks.

2. Current Introduction of CPTED Related Systems

CPTED represents a total crime prevention measure to improve physical and social environments that can trigger crimes in advance and provide systematic support for their maintenance. The application principles of CPTED are supervision, access control, and community reinforcement. Those three elements help to make the occurrence of criminal acts difficult and residents feel that their community is safe[1].

There is no single law for crime prevention through environmental design today. The Ordinance on Building and Urban Maintenance of Ministry of Land, Infrastructure and Transport includes some provisions concerning the creation of crime prevention environment. Following the addition of Article 53 Clause 2 to Building Act in May, 2014, Minister of Land, Infrastructure and Transport announced that crime prevention criteria could be set and notified for buildings, building equipments, and land to prevent crimes and create a safe living environment. Based on it, "Notification for Crime Prevention Building Criteria" was established in 2015. It is thus needed to apply the CPTED guidelines to the construction of new apartment houses, studio apartments, and goshitels with 500 households or more. More and more areas set up crime prevention-related ordinances in Act on Planning and Use of National Territory and its enforcement ordinances and introduce its related concepts to policies.

In South Korea, Bucheon City first applied CPTED and was appointed as a model area for CPTED in 2005. The Korea CPTED Association began a "CPTED certification business" for apartment housing complexes in the nation in September, 2010. The certification covers public facilities including schools and streets(at the district level) and general facilities including apartment houses, commercial facilities, and work facilities. There are two types of certification for design and facility. The Certification Committee(comprised of evaluation and consultation members for certification) of Korea CPTED Association assesses and screens buildings and facilities according to the "rules and manuals for CPTED certification." There were 95 local governments that enacted an ordinance related to

crime prevention environmental design as of August 1, 2016[2]. Those ordinances usually cover the basic plans for urban design for crime prevention, criteria of urban design, projects to push forward, and formation of committees with similar content among most of the local governments.

3. Application Cases and Limitations of CPTED in the Nation

A good case of pushing a community safety policy forward by applying CPTED is found in Seoul, which has partially applied CPTED to its new town projects and urban renewal promotions since 2002. It took on the "Crime Prevention Design Project" in Yeomri-dong, Mapo-gu in full scale in 2012, has implemented the project at total 24 areas by 2015, and is planning to continue the project at total 50 areas by 2018.

Yeomri-dong, Mapo-gu suffered the postponement of development after its appointment as an urban renewable district and introduced a CPTED policy to deal with the fast ghettoization process. One of its representative projects is "Salt Path," which turns streets vulnerable to crimes into favorite venues for residents by arranging the exercise and community spaces and attaches numbers to the utility poles along the streets so that citizens can locate themselves accurately[3]. It has also set up a convenience store at major points and installed alarm bells and bright lights to ease the crime anxiety of residents.

After the project, the supervision function of Yeomri-dong has made an overall improvement around the "Salt Paths." The survey results of its residents show that their fear for crime decreased by 9.1% and increased their attachment to the neighborhood by 13.8% after the project[4].

Busan Metropolitan City began a pilot CPTED project in four areas(Gupo 2-dong, Mora 1-dong, Gamcheon 2-dong, and Nambumin 2-dong) in 2013, has implemented the project at total 11 areas by 2015, aims to increase the total number to 20 by 2018[5]. The project was implemented actively in Gupo 2-dong, Buk-gu as the surrounding areas of

Gupo Station were high in crime risks. In those areas, they promoted a fast course of action, made "safety lines" in bright yellowish green to secure a view and make the streets bright, and replaced the signs with pilot lamps. In addition, they installed safety bells to request for help in emergency and safety windows to light up at an attempt of opening so that the residents would have less anxiety.

It is very encouraging that local governments have applied the CPTED concept and pushed forward community safety policies, but it is still at the burgeoning stage with most of concerned ordinances and policies concentrated on physical environmental design[6]. It has also been pointed out that safety policies were temporary events and made it difficult to ensure the continuity of projects except in a few areas.

Secondly, there are not many differentiating policies to reflect local characteristics in CPTED-related projects, which is partially because it is hard to obtain accurate crime information by the areas. The police and local governments have a difficult time sharing crime statistics between them and are subjected to legal obligation of providing data, thus depending only on discretionary cooperation[7].

Finally, there is no solid certification system to guarantee the reliability of buildings and facilities to which CPTED has been applied. Today, there are certification systems run by the private sector and those run by local governments such as Seoul, but both the types lack in public confidence.

4. Future Tasks for Improvement

4.1. Legislative tasks for improvement

It is needed to consider the enactment of a single act to ensure the effectiveness of CPTED system. It can help to set criteria for CPTED that require unity around the nation and institutionalize collaboration for crime prevention among the police, local governments, and concerned agencies.

In the United Kingdom, CPTED was institutionalized by the Crime and Disorder Act enacted in 1998 and has been used in urban planning and design. Its Article 17 stipulates that the local government and police should consider community safety including the prevention of crime and disorder when setting all of detailed strategies including budget, policy, and strategy.

In South Korea, the 19th National Assembly is assessing the bill for "Basic Act on Crime Prevention" to which the CPTED principles are applied. The bill, however, contains many declaratory regulations, needs supplementation for effectiveness in many parts, and requires in-depth discussions about future projects among the concerned departments[8].

It is also possible to establish provisions of evidence in CPTED-related acts to enact CPTED-related ordinances by taking the local characteristics into account at the local government level. Concerned projects can increase the effectiveness of budget and manpower inputs according to the legal grounds of CPTED ordinances. Crime prevention is a part of national affair from the viewpoint of national police system, and a project of crime prevention environment in the community is a part of local affair.

4.2. Policy tasks for improvement

Local areas need to conduct close analysis of concerned crime occurrence characteristics including places and elements vulnerable to crime and make and implement differentiating policies in order to build a safe town by applying CPTED. Those efforts require a crime risk evaluation by the areas, which in turn requires the sharing of crime statistics of National Police Agency. Crime risk evaluation involves the statistics of crime occurrence possibilities and their results and is one of the basic procedures in the self-diagnosis process at the CPTED planning stage[9].

It is needed to discuss a certification system for crime prevention designs in order to apply the CPTED principles. In the future, the implementation of CPTED policies will demand a certification system for all kinds of crime prevention equipments and facilities as

well as buildings. It is time to discuss the establishment of certification criteria and selection of certification agencies that people can put trust in.

5. Conclusions

In the early days of applying the CPTED concept for crime prevention, they focused on physical environment improvement according to the principles of supervision and access control. Nowadays community reinforcement is emerging as an important element. In the future, it will be needed to push forward community-centric safety culture movements and various safety activities by taking the conditions of safety environment into consideration by the areas. It will be also needed to develop a range of community programs based on the voluntary participation of residents to build and maintain a safe town.

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Search of SECURITY Level of National Industrial Complex in Republic of KOREA: Focusing on Gumi Area

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Abstract

The Republic of Korea is now a global economic power and reached worldwide level in IT, shipbuilding, steel and automobile industries and is investing huge money in research and development of cutting-edge technologies every year and is requesting a high level security on the company's core technologies accordingly.

However, in spite of the request of a high level security of companies, the cases of core technology leakage in domestic companies are increasing every year. 73% of the technology leakage occur in small and medium companies.

In addition, though the technology leakage crime is on the increase, the level of legal punishment is low, so the problem is pointed out that the punishment has little efficiency in crime prevention.

The purpose of this study is to look at the security level of the National Industrial Complex in Gumi where majority of typical IT companies are located and to search for the security level difference between the large companies and the small & medium companies.

To meet the purpose of this research, technology statistics of quantitative research and narrative research of qualitative research were carried out according to the link model of Mixed Methods by Creswell(2003).

The result showed high difference between the large and small & medium companies in security level of Gumi National Industrial Complex.

In case of the large companies, the answers to the security level of the large companies showed 63 people(43.1%) of 'Very high', 52 people(35.6%) of 'High', 23 people(15.7%) of 'Normal', 5 people(3.4%) of 'Low' and 3 people(2.0%) of 'Very low' out of 146 respondents, which showed that the large companies have built up generally satisfactory level of security systems.

Meanwhile, the answers to the security level of the small & medium companies showed 1 person(0.6%) of 'Very high', 4 people(2.7%) of 'High', 33 people(22.6%) of 'Normal', 61 people(41.7%) of 'Low' and 47 people(32.1%) of 'Very low' out of 146 respondents, which showed that the small & medium companies have built up generally poor level of security systems.

[Keywords] Industrial Security, Industrial Spy, Company Security, Security Management, Security Recognition

1. Introduction

The world is the age of economic war. Protection of cutting-edge technology and creative knowledge is becoming national competitiveness. This means that competition is in fierce progress due to the industrial technology leakage between countries and companies

Moreover, since the leakage of company's core technology gives bad influence to national economy and competitiveness as well as to companies, the core technology protection is being issued as a national level problem

According to the current statistics from the Industrial Secret Protection Center of National Intelligence Service of Korea(2015), the detection of the secret leakage overseas in the domestic companies was 375 cases from 2003 to 2013 and the damaged amount was exceeding KRW50trillion annually. Furthermore, the frequency is on the increase year by year. 73% out of the technology leakage cases was made in the small & medium companies[1].

Among them, as a typical technology leakage example of Gumi National Industrial Complex, there was a case that in 2008, an employee stole the core components and secret drawings and files where he was working since he had complaints of the low wage and established similar company but was arrested. The stolen technology at that time was known worth of KRW10billion.

As seen above, the technology leakage crime is occurring continuously which is giving huge damage to the company, in reality, issues are being raised that the low punishment level of the judicial authorities to the technology leakage crime has little effect to prevent the crimes. In addition, although such technology leakage is occurring frequently, the actual punishment was shown less than 10% out of the criminal penalty cases through trial.

However, as the technology competitiveness of the domestic companies is getting higher, the core technology leakage by rival countries and companies is on the gradual increase.

As preceding researches related with company security level, which is the subject of this study, Yook(2008) suggested a direction on the renewal of relative domestic laws through the introduction of corresponding laws of the US[2], Shin and Park(2009) proposed strengthening plan of company security activities via utilization of private investigators[3]. Also, Cho(2014) claimed the legislation of industrial security management system and qualification system on industrial security manager[4], and Song(2014) suggested specific measure to protect the business secrets of the small & medium companies[5].

As a result of the preceding research analysis, the industrial security research performed locally was dealing with legislation, operation, theory and policy field separately.

However, no research has been made on the actual study of the security level difference between the large companies and the small & medium companies, so the issue on the necessity of this study was raised and the study was carried out accordingly.

Currently, with reference to the physical security in domestic companies, general guard is arranged in the site according to the 「Security Laws」, and special guard is playing the role for the national key facilities.

In this study, to achieve the goal of this study, the survey target was limited to general guards belonging to security companies registered in the National Police Agency who are providing the security service to the companies in Gumi National Industrial Complex and the quantitative questionnaire to the above research questions was carried out to 146 people working in two large companies and eight small and medium-size companies from August, 2014 till October, 2014. And since then, narrative research was accomplished in one large company and one small and medium-size company for around one year from November, 2014 to end of August, 2015.

2. Analysis of Preceding Researches

The study on the domestic industrial security up to now has been started in earnest as the number of cases of core technology leakage in domestic companies was on the increase. Many studies have been carried out focusing on the field of industrial security legislation, operation, theory and policy in the previous studies.

However, no exploratory study has been made yet on the difference of security level between the large and the small & medium companies. The following <Table 1> is a summary of relative preceding studies with objections by type in Korea.

Table1. Preceding research.

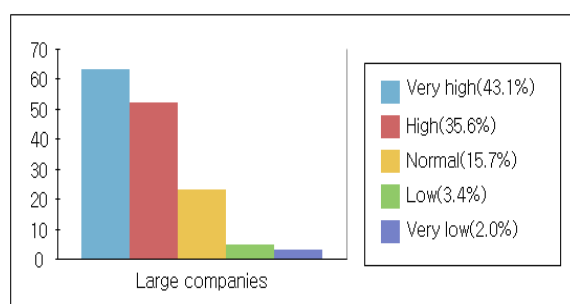
Category	Researcher	Main contents
Legislation	Cho (2014)	Claim of legislation of national qualification on industrial security manager[4].
	Yook (2008)	Suggestion of direction on legislation of prevention and protection of domestic industrial technology leakage through introduction of relevant laws of USA[2].
Operation	Chae, Jeong (2013)	Arrangement of evaluation criteria on the industrial security management operation result[6].
	Shin, Park (2009)	Suggestion of industrial security activities using private investigators[3].
Theory	Hwang (2013)	Claim of academic ground on industrial security management[7].
	Lee (2011)	Attempt to build a concept on definition of industrial security[8].
Policy	Song (2014)	Suggestion of arrangement of industrial security system measure in small & medium companies[5].
	Shin, Lee (2014)	Suggestion of policy direction on management security of industrial security[9].
	Noh, Lee (2010)	Suggestion of political improvement on small & medium companies' security capability[10].
	Choi (2010)	Suggestion of recognition enhancement method on industrial security[11].
	Ha (2009)	Claim of necessity of convergence security of industrial security[12].

3. Result of Analysis

3.1. Security level of large companies

The following <Figure 1> is a result of Closed-Ended Question regarding the security level of the large companies recognized by the physical security staffs working in Gumi National Industrial Complex in graphic chart.

Figure 1. Security level of large companies.



As shown on the above chart, the answers to the security level of the large companies showed 63 people(43.1%) of 'Very high', 52 people(35.6%) of 'High', 23 people(15.7%) of 'Normal', 5 people(3.4%) of 'Low' and 3 people(2.0%) of 'Very low' out of 146 respondents, which showed that the large companies have built up generally satisfactory level of security systems.

The following <Table 2> is a summary of the narrative research journal conducted by the large companies in Gumi National Industrial Complex shown in <Figure 1>.

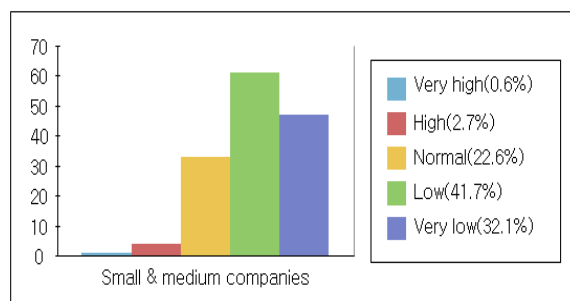
Table 2. Narrative research journal.

Date	Contents	Summary
2014.11.15	Security staffs are moving busily. It is said that there is an irregular spot check on security. This makes them focus on security at all times and they can concentrate on security even at normal times like in actual situation.	Spot check
2014.12.22	It is said that there is a personal ability evaluation for security staffs. The evaluation is performed periodically and internally by the company to enhance the security level through evaluation of acquisition ability of personal ability and recognition ability.	Staff evaluation
2015.01.07	Security evaluation was carried out to check security score through security check by checking through document backup	Security check
2015.01.18	The communication seems smooth between security staffs and general staffs. Security staffs responded kindly to minor questions of general staffs related with security. This minor communication will also be helpful to enhance security consciousness of employees.	Organization culture
2015.02.14	Security looks perfect via more systematic and smooth management. According to the security manager, investment for security is made every year by the government organization.	Budget formation
2015.02.25	I do not know exactly but maintenance and replacement with brand new security equipments are being made in equipment.	Equipment support

3.2. Security level of small & medium companies

The following <Figure 2> is a result of Closed-Ended Question regarding the security level of the small & medium companies recognized by the physical security staffs working in Gumi National Industrial Complex in graphic chart

Figure 2. Security level of small & medium companies.



As seen on the above chart, the answers to the security level of the small & medium companies showed 1 person(0.6%) of 'Very high', 4 people(2.7%) of 'High', 33 people(22.6%) of 'Normal', 61 people(41.7%) of 'Low' and 47 people(32.1%) of 'Very low' out of 146 respondents, which showed that the small & medium companies have built up generally poor level of security systems

The following <Table 3> is a summary of the narrative research journal conducted by the small & medium companies in Gumi National Industrial Complex shown in <Figure 2>.

Table 3. Narrative research journal.

Date	Contents	Summary
2015.04.15	I got a feeling different from large companies in security. First impression on security management of small & medium companies is that they have security manuals but they do not follow the manuals.	Security rule
2015.05.11	Most of the security staffs were not security experts and even security manager was not also.	Security expert
2015.06.11	Compared with large companies, the number of security staffs is less than half of large companies.	Operation personnel
2015.06.28	Security equipment and system seem different from those of large companies. Large companies had clear security system with systematic process in access control but in small & medium companies, access seemed free and security management seemed loose.	Access control
2015.07.19	Today seems to be a payday. Compared with large companies, wage seems lower. It was said that the difference is natural since most of the security service for small and medium companies is carried out by subcontractors who have specialty in providing manpower while large companies hire the security staffs directly. The staffs showed no pride or responsibility on the company security and their security consciousness level seemed very low accordingly.	Wage level

Based on the quantitative questionnaire of 146 security company workers in Gumi National Industrial Complex and as a result of narrative research journal analysis carried out separately in the large companies and the small & medium companies, there was security level difference between the large and the small & medium companies and it was questingly studied what the differences are.

4. Discussion and Conclusion

4.1. Discussion

As a result of this study, there was security level difference between the large and the small & medium companies, and the detailed discussion on the difference is summarized in the following <Table 4>.

Table 4. Discussion.

Item	Main contents
Nation	Attention and support to protect company technology.
	Periodic evaluation of company security level.
	Education on damage case according to the company's core technology leakage.
Company	Approach in terms of not only physical security but also extended security concept from company side.
	Establishment of security guideline systemized by step and integrated manual from company side.
	Recognition of the importance of technology leakage damage and try to form security budget from company side.

4.2. Conclusion

The security level showed high in the large companies but low in the small & medium

companies in Gumi National Industrial Complex. The following <Table 5> is a summary of the research result in chart.

Table 5. Conclusion.

Item	Contents	Keyword	Result
Large company	<ul style="list-style-type: none"> ○ It seems that government level support is being made. ○ O Standard security manual was established in detail. ○ Careers of managers look brilliant. ○ Maintenance and replacement was made for the old security equipments. ○ Company security check was made regularly. 	National support	High
		Security manual	
		Expert	
		Security check	
Small & medium company	<ul style="list-style-type: none"> ○ There seems to be no government level support on security. ○ No standard security manual was established. ○ Most of the staffs are old and normal rather than security experts. ○ No replacement or introduction of the new security equipment is being made. 	National support	Low
		Security manual	
		Expert	
		Security check	

Besides, it was revealed that there are relative difference in the security level difference between the large and the small & medium companies according to the differences such as security policy, security recognition and security budget.

According to a data from Korean Federation of SMEs(Small and Medium-sized Enterprises)(2015), the total number of domestic small & medium companies is now 3,231,634(99.9%)[13]. However, as seen in the result of this study, the security level of the small & medium companies is staying at a poor stage, budget formation of the security is not easy considering the business situation of small companies. Therefore, it is time that the proper intervention in national level is required and new policies and regulations should be organized to protect the core technology of small & medium companies.

First of all, more effective laws should be legislated through detailed revision of domestic security relative law. In addition, it is necessary to build a basic frame on security management by obligating security management regulation in the company. And it is also necessary to improve the recognition of the

importance and necessity of security management by conducting periodic case education on the company core technology leakage.

This study is an exploratory research on security management level evaluation between the large and the small & medium companies and tried to see the security level difference between the large and the small & medium companies in detail. However, it has a limitation for an exploratory research, and I hope that confirmatory research will be continued in much better site research environment in the follow-up research.

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