Glenn Snyder's Deterrence Theory and NATO's Deterrence Strategy during the Cold War

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Introduction

The main strategic issues on NATO that the U.S. and Europe faced during the Cold War, when they are marshaled from the perspective of deterrence particularly for Europe, should be summarized as the questions of how to deter invasion by the Soviet Union, how to secure extended deterrence by the U.S., and in particular, how to enhance the credibility of the U.S. deterrence by punishment.[1] NATO's conventional military forces dominated by NATO's ground troops were extremely vulnerable to those of the Soviet Union, which meant a significant disparity.[2] Therefore, extended deterrence by the U.S. was thought to be essential for NATO in order to produce deterrent effect on the Soviet Union in the circumstances of the significant disparity in the conventional military forces dominated by ground troops. However, after the Soviet Union acquired the ability to attack the U.S. mainland with its nuclear weapons (typically represented by the situation of mutual assured destruction), Europe began to doubt the effectiveness of extended deterrence by the U.S. In this context, various theories including "stability-instability paradox" and "entrapment-abandonment" were discussed.

The concern Europe felt was connected with the controversy over the positioning theory of nuclear weapons in the U.S., that is, how the nature of nuclear weapons should be defined. The U.S. was also facing a problem concerning deterrence in different terms from Europe, which was rooted in the conflict over the positioning of nuclear weapons, i.e., whether a positive position should be taken on the "nuclear revolution", regarding nuclear weapons as "absolute weapons" different from conventional ones, or a negative position should be taken on "nuclear revolution", regarding nuclear weapons as having the same nature as conventional weapons. The former was called the "deterrence school" that places importance on deterrence, and the latter was called the "defense school" that places importance on defense after deterrence failure.[3] The deterrence school took a negative stance, for example, on the first use of nuclear weapons because they placed importance on mutual nuclear deterrence, and had a tendency not to focus on extended nuclear deterrence. The defense school, on the other hand, devoted their interest to the first use of nuclear weapons, as well as how to carry out a nuclear war because they placed more importance on the defense after deterrence failure. If the concept of the deterrence school was promoted, the strategic stability between the Soviet Union and the U.S. might be improved while the extended deterrence could lose the credibility within the allied nations including NATO. If the concept of defense school was promoted, it might, for example, trigger a surprise nuclear attack which could erode strategic stability[4], while the credibility of extended deterrence within the allied nations was thought to be enhanced. The stated two positions in the U.S., combined with the concern Europe felt about the "stability-instability paradox" and theories of "entrapment-abandonment", arouse complicated controversy between the U.S. and Europe. Thus, the deterrence theories were earnestly researched during the Cold War. Glenn Snyder's theory of deterrence discussed in this study was one of the prominent research

achievements during that period. Now, what kind of arguments were made in Japan at that time?

During the Cold War, there existed in Japan an understanding that discussion on the credibility of the U.S. deterrence by punishment was not so necessary because the disparity in the military capabilities of conventional military forces between the U.S.-Japan alliance and the Soviet military force in the Far East was not so large, compared with the disparity between the Soviet Union and Europe. Shinichi Ogawa argued as follows:

> There was not such a disparity in the military capabilities of conventional military forces based on naval and air forces between the U.S.-Japan alliance and the Soviet Union, compared with the situation seen in the ground troops in the European Continent. As a result, there is (was) no need in Japan to highlight the threat of using nuclear weapons for the purpose of deterring conventional attacks from the Soviet Union, compared to Europe.[5]

Because of this understanding as well as the recognition that the main stage of the conflict between the U.S. and the Soviet Union under the Cold-War structure would be in Europe, few Japanese researchers considered the problem of deterrence as something they should explore.

Recently, however, there has been increasing interest in medium-range ballistic missiles and cruise missiles, and in this context, the momentum of discussion about deterrence seems to be increasing in Japan as well. On February 2, 2019, the U.S. announced its intention to withdraw from the INF (Intermediate-range Nuclear Forces) Treaty for the reason of alleged Russian violations of the treaty, and formally terminated the INF Treaty on August 2, 2019. The Treaty had prohibited both the United States and the

Soviet Union from possessing all of their nuclear and conventional ground-launched ballistic and cruise missiles with ranges of 500–5,000 km. As one of the underlying reasons for the U.S. withdrawal, problems with China's possession of medium-range ballistic and cruise missiles are sometimes pointed out. This weapon system is positioned as the core of A2AD capabilities in China[6], which significantly affects Japan's national security, as well as the U.S. Thus, it is important for Japan to explore the strategic meaning of the INF Treaty itself. The matters concerning this treaty were considered to be an important issue for NATO during the Cold War. This issue will be discussed in Section 5, Chapter 3 of this study, too.

From the viewpoint as above, it may be meaningful to discuss the deterrence strategy of NATO during the Cold War, which is a theme of this study, in order to cast light on the problems with the environment of Japan's national security. Yukio Sato points out the following:

> In fact, Japanese society has avoided facing directly at and discussing earnestly on its security issue for a really long time. As for the issue on nuclear deterrence, in particular, the Japanese government has avoided facing the reality of its deterrence strategy, leaving the threat of nuclear weapons to the U.S. in consideration of the strong antipathy toward nuclear weapons among the people. Therefore, it may be hard to say that the concepts of "deterrent power" and "extended deterrence" have been understood among the people… Probably I am not the only one who thinks we cannot wait any longer to discuss the issue on deterrence directly.[7]

Based on the awareness of the issue above, this study will summarize the theoretical aspects including the concept of deterrence, the difference in nature between deterrence by denial and deterrence by punishment, the stability-instability paradox and the theories of entrapment/abandonment as an analytical framework of this entire study, followed by discussion on

the history of NATO's deterrence strategies during the Cold War, mainly focusing on various aspects of the credibility of the U.S. deterrence by punishment. In the conclusion of Chapter 4, I will mention some problems in Japan's national security utilizing the insights gained through this study. In the discussion on the deterrence theories, I particularly focus on Glenn Snyder's theory which distinguishes deterrence by punishment from that by denial and highlights the relationship between them because I think the understanding of Snyder's theory of deterrence would deepen the recognition of the strategic issues of NATO during the Cold War.

In addition, I would like to pay attention to Patrick Morgan who points out the following:

> In discussing the theory, it is important to distinguish it from deterrence strategy. Deterrence strategy refers to the specific military posture, threats, and ways of communicating them that a state adopts to deter, while the theory concerns the underlying principles on which any strategy is to rest.[8]

The gist of what Morgan says above is that theories should be distinguished from strategies adopted by nations. Therefore, I took consideration of what he pointed out in setting the title of this study.

Though this study discusses the situation of NATO during the Cold War as the subject, please note that the purpose is not to provide a historical description of the Cold War but to explore, as part of strategic studies, the responses of the U.S. and Europe particularly concerning the credibility of deterrence by punishment sought by NATO during the Cold War, mainly based on Snyder's theory of deterrence.

1. Summarization of Analytical Framework

(1) Concept of Deterrence and its Nature

Deterrence can be conceptualized as "one state's attempt to convince another state to refrain from initiating some course of action for the reason that cost and (or) risk which may be incurred would be greater than the benefit"[9], or as "an attempt, which is made by one state as a defender, to prevent an action expected from another state as a challenger by using the threat of incurring cost".[10]

Either concept implies that the aim of one party that deters the other party is to "convince" or "threaten" the other party in order to "keep it from taking some course of action" by incurring risk or cost.

And the nature of deterrence should be understood as a phycological action of sorts. It should be noted that deterrence is different in nature from defense that is physical. Glenn Snyder refers to the difference between deterrence and defense[11]as follows:

> Deterrence works on the enemy's "*intentions*"; the "*deterrent value*" of military forces is their effect in reducing the likelihood of enemy military moves. Defense reduces the enemy's "*capability*" to damage or deprive us.[12]

Deterrence is a psychological influence on the "intention" of the other party. Defense, on the other hand, is mainly a physical action on the "capability" of the other party. They are different in nature. Thomas Schelling more clearly described that deterrence is an inluence on intention:

> But deterrence is about intentions — not just estimating enemy intentions but influencing them.[13]

The descriptions of the nature of deterrence made by Snyder and Schelling are extremely important in discussing deterrence.

(2) Conditions of Deterrence

Now, what are the conditions under which deterrence succeeds? The conditions whereby deterrence is effective are generally considered to be a concern with the opposite state's benefit, in which one state, in order to deter the opposite state, must have the sufficient military capability and will to use that capability and be able to communicate that fact to the opposite state to make it recognize it.

Based on this, the conceptual framework of the deterred party is formalized as below. This is a formula elaborated by Alexander George.[14] When the aggressor recognizes that this formula is valid is true, deterrence is likely to succeed. (Please note that this formula should be understood as a model of sorts.)

$$p(C+R) > (1-p)B$$

p is the probability of a retaliation by the deterring party, C is the cost to the aggressor, R is the estimated damage (risk) that the aggressor incurs, and B is the benefit gained through the attack of the aggressor.

The nearer p comes to 1, or the larger the values of C and R are, the better deterrence works. This concept will be discussed in the next section, applying it to the nature of deterrence by denial and punishment.

(3) Deterrence by denial and deterrence by punishment

As pointed out before, deterrence is a psychological activity that influences the intention of an enemy, and the next concern is how to distinguish between deterrence by denial and that by punishment. Snyder

describes the difference between deterrence by denial and deterrence by punishment as follows:

> Deterrence by denial uses the capability of denying territorial acquisition attempted by an enemy while deterrence by punishment uses threats and capabilities of punishment by nuclear weapons.[15]

Chikako Kawakatsu simply describes each type of deterrence as follows:

> Deterrence by denial means convincing an enemy that "an attack will fail because the defense is strong" while deterrence by punishment means threatening an enemy to "avenge an attack if it is carried out" for the purpose of making the enemy refrain from it.[16]

Concerning deterrence by punishment and that by denial, Snyder also says that "An absolutely sharp distinction between the punishment and denial functions cannot be made"[17], however, it is at least important to distinguish deterrence by denial from that by punishment theoretically because they are different in nature.[18]

According to the descriptions made by Snyder and Kawakatsu, it may be allowed to understand that deterrence by denial basically uses conventional military force while deterrence by punishment means using strategic nuclear weapons. Seen from the recent trend of advanced technology, however, non-nuclear arms that can be positioned as punitive power may be considered.

Based on the conditions of deterrence discussed in the former section and the theoretical distinction between deterrence by denial and that by punishment, the nature of each type of deterrence is as shown in Figure 1:

Figure 1 Nature of Deterrence by Denial and Punishment

	Deterrence by punishment (power)	Deterrence by denial (power)
Probability of retaliation: p	Generally low	High
Damage estimate: R	High	Low
Calculation of damage estimate R	Difficult	Easy

Source: Prepared based on: Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No.1: Princeton University, January 2, 1959), p.3.

The probability of retaliation for deterrence by punishment (p), is generally lower than that for deterrence by denial. This is because the party deterring the other party is likely to hesitate to retaliation since the destructive capability for deterrence by punishment is extraordinarily large and there is a possibility of retaliation from the other party using hugely destructive power as well. For example, in the case where mutual nuclear deterrence works, probability p is likely to be low. On the other hand, damage estimate R is higher for deterrence by punishment than that by denial. The calculation of damage estimate R is easy for deterrence by denial because a lot of official information is available, but the calculation of R for deterrence by punishment is difficult due to the uncertainty.

Deterrence by denial and that by punishment are different in nature as described above. Therefore, in order to make deterrence effective, it is

important to consider deterrence by denial and punishment with the nature in mind.

Please note that "probability" in this study can be taken to have the same meaning as "credibility" which is used widely in the context of deterrence theories[19] and thus these words will be used compatibly.

(4) Stability-Instability Paradox and Theories of Entrapment-Abandonment

In discussing NATO's deterrence strategy during the Cold War, stability-instability paradox[20] and the theories of "entrapment" and "abandonment" are helpful.

Robert Jervis describes the stability-instability paradox according to the argument of Snyder as follows:

> Because the balance is so stable at the level of all-out nuclear war, each side is relatively free to engage in provocations and military actions at lower levels of violence. The most obvious application of this argument is that if NATO lacks the ability to defend Europe with conventional weapons, it faces the danger of having to fight such a war: thus the Soviet second-strike capability would "deter our deterrent" (to paraphrase the title from the article by Paul Nitze).[21]

That is, when the military balance of strategic nuclear forces is stable between the U.S. and the Soviet Union and thus the situation of mutual assured destruction is established, the risk of warfare rises because instability in the conventional military power level arises due to imbalance in the ratio of conventional military forces particularly in Europe. This is because the credibility of the U.S. deterrence by punishment decreases.

In addition, the theories of "entrapment" and "abandonment" were also pointed out. Those theories concerning Europe during the Cold War were

discussed particularly in terms of the concern with nuclear wars. Snyder describes them as follows:

> Simply put, nuclear abandonment means the loss of U.S. will to use its strategic weapons in defense of Western Europe; more precisely, that the credibility of U.S. deterrence drops below the level required to " are not so much fears of actual U.S. nuclear abandonment as they are worries that U.S. strategic nuclear forces are no longer effective in deterring the Soviets…Nuclear entrapment means the actual use of nuclear weapons in case deterrence fails, especially in a way that makes Europe the principal battleground.[22]

As Snyder says, there was a possibility that Europe might face both the fear of "abandonment", that is, the doubt if the U.S. would fulfill its obligation to defend Europe (response) at the risk of a nuclear exchange, and the fear of "entrapment", that is, the fear that only Europe might be a battleground where "tactical nuclear weapons are used" on the premise of "disuse of strategic nuclear weapons" in the alliance between Europe and the U.S. Both of the fears, from the viewpoint of deterrence theories, concern the credibility of deterrence by punishment.

(5) Linkage (Coupling) and Decoupling

Then, how should linkage and decoupling used in this study be understood? Though "linkage" used here can be put into "coupling", I will basically use "linkage". In this study, linkage and decoupling will be summarized in connection with the stability-instability paradox and the

theories of entrapment/abandonment, particularly focusing on the relationship in the force structure between the U.S. and Europe.

When the stability/instability paradox is created, stability in the strategic nuclear level leads to instability in the level of conventional military forces because stability in the strategic nuclear level means a decrease in the effect of the entire deterrence, or a decrease in the credibility in the deterrence by punishment. Such a state can be recognized as a sort of decoupling.

As for decoupling, it may arise in terms of entrapment/abandonment. Like Snyder, Umemoto also argues it as follows:

> Both "abandonment" and "entrapment" were the expressions of Western Europe's concern for decoupling from the security by the U.S. strategic nuclear weapons. The fear of "abandonment" represented a suspicion of "decoupling by non-engagement" which meant denial of using not only strategic nuclear forces but theater nuclear forces while the fear of "entrapment" represented the concern for "decoupling by limited engagement" which meant theater nuclear forces could be used on the assumption that the activation of strategic nuclear forces would be avoided. In other words, "abandonment" and "entrapment" were both sides of concerns expressed about the possibility of weakened "linkage" between the theater nuclear forces in Europe and the strategic nuclear forces of the U.S.[23]

As argued by Snyder and Umemoto, abandonment causes decoupling that is similar to the stability/instability paradox. In this case, the U.S. is not willing to use nuclear forces, which implies depreciation in the credibility of extended deterrence, particularly that of deterrence by punishment, assumed by the U.S.

As entrapment also implies the concept that the U.S. uses only tactical nuclear weapons to have a showdown in a war between the Soviet Union and Europe, it logically means depreciation in the credibility of the U.S. deterrence by punishment.

Linkage, on the other hand, is opposite to decoupling, which can be understood as a state where the U.S. deterrence by punishment using strategic nuclear forces is highly credible.

(6) Methods of Linkage … the Complementary Effects and Depreciatory Effects of Deterrence by Denial

Now, how can linkage be established? Or, how can the credibility of deterrence by punishment be enhanced?

As factors that affect the credibility of deterrence by punishment, Snyder focuses on the complementary effects and depreciatory effects of deterrence by denial.[24]

Snyder says that the more the complementary effects of deterrence by denial are recognized, or when the depreciatory effects are limited more and more, the credibility of deterrence by punishment is enhanced.

Apart from the argument of Snyder, it may be allowed to discuss the "capability of tactical nuclear forces in themselves" as an idea of enhancing the credibility of deterrence by punishment. Shinichi Ogawa describes as follows:

> For enhancing the credibility of the "Nuclear Umbrella", it is necessary to enhance the capability of damage limitation that enables nuclear escalation because credibility is predicated on the threat of nuclear escalation. As the most effective measure for damage limitation is counterforce capability today, it is required to improve this capability in order to maintain the credibility of the "Nuclear Umbrella".[25]

In this study, the “capability of tactical nuclear forces in themselves”, that is, enhancement of the credibility of deterrence by punishment through the “enhancement of damage limitation capability” will not be discussed, but discussion will be mainly based on the argument of Snyder.

Now, Snyder argues the examples of complementary effects of deterrence by denial as follows:

(1) Deployment of U.S. forces as a tripwire

By deploying U.S. forces as a tripwire on the border, the credibility of deterrence by punishment is enhanced because the probability that the U.S. will use its tactical nuclear weapons will increase if U.S. forces are attacked by the Soviet Union.

(2) Possession of a deterrent by denial enough to prevent an attacker from creating a fait accompli in an early stage

A deterrent by punishment which is used after occupation becomes an established fact in an early stage would hold little possibility that the adversary withdraws from the occupied area that is made an established fact. Therefore, possession of a deterrent by denial enough to prevent the occupation from becoming an established fact can enhance the credibility of deterrence by punishment.

(3) Link between tactical nuclear forces and strategic nuclear forces

Tactical nuclear forces, when they are combined with strategic nuclear forces and positioned as ones that increase the intensity of wars, can enhance the credibility of deterrence by punishment. In contrast, when tactical nuclear forces are combined with limited wars, the credibility of deterrence by punishment decreases.

As for the depreciatory effects of deterrence by denial, Snyder describes the following examples in which the credibility of deterrence by punishment decreases:

(1) Possession of an enormous deterrent by denial

Possession of enormous military capabilities which alone have similar effects of deterrence by punishment is recognized as an expression of a desire to avoid using strategic nuclear forces, which leads to a decrease in the credibility of deterrence by punishment. Thus, an increase in NATO's conventional military forces up to 40 divisions of troops could produce complementary effects, but an increase in those forces further would produce depreciatory effects, which could result in a decrease in the credibility of deterrence by punishment.

(2) Prolongation of conventional warfare

If it takes a long time from the start of an invasion by the Soviet Union to the finish of it, that is, if the war is protracted, the probability of using strategic nuclear forces decreases. If the policy makers could take enough time for discussion about the use of strategic nuclear weapons, they might become wary of the use, which would result in a decrease in the credibility of deterrence by punishment.

2. NATO's Deterrence Strategy during the Cold War[26]

In this chapter, the credibility of the U.S. deterrence by punishment concerning NATO during the Cold War will be discussed by categorizing the period of focus into four phases.

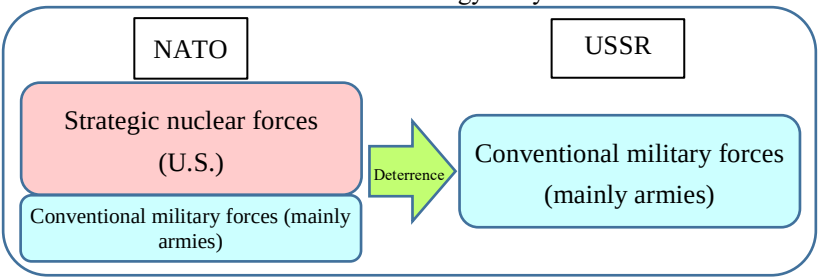
The first phase is the period of massive retaliation strategy early in the Cold War, the second phase is the period of fall of the massive retaliation strategy, the third phase is the period of developing a flexible response strategy and the fourth phase is the period of INF deployment by NATO.

In addition, as a supplementary debate for the third phase, the deterrence theory of France, which has been developed apart from Snyder's theory of deterrence, will be discussed in Section 4 of this chapter.

(1) The Period of Massive Retaliation Strategy Early in the Cold War

In April 1949, the North Atlantic Treaty was signed, and NATO was established. At that time, the U.S. had a monopoly on nuclear weapons. However, the Soviet Union announced the possession of nuclear arms in September 1949, followed by a success in a hydrogen bomb test in 1952. At that time, though the Soviet Union had succeeded in nuclear bomb tests, it had not been able to obtain a nuclear delivery vehicle for a direct attack on the U.S. It might be fair to say that the Soviet Union's nuclear threat had not been actualized yet. Therefore, the overwhelming advantage of the U.S. in nuclear forces was not shaken. In those circumstances, the U.S. announced a massive retaliation strategy under President Eisenhower in January 1954. The figure below indicates the concept of the force structure according to the strategy:

Figure 2 The concept of the force structure for deterring the Soviet Union under a massive retaliation strategy early in the Cold War



The massive retaliation strategy for deterrence of the Soviet Union early in the Cold War was to deter the Soviet Union, which had the overwhelming advantage in conventional military power, by the U.S.' overwhelming deterrence by punishment which complemented the inferior deterrence by denial. At that time, there was little need to discuss the credibility of deterrence by punishment.

However, the massive retaliation strategy based on the concept above could not help but change due to the enhanced nuclear forces of the Soviet Union.

(2) The Period of Fall of the Massive Retaliation Strategy … Positioning of Tactical Nuclear Forces

After 1955, the Soviet Union began deploying Tu-16 and Tu-95 bombers, by which the Soviet Union became able to possess measures for a direct nuclear attack on the mainland U.S. Moreover, the Soviet Union succeeded in the launch test of Sputnik in October 1957. In those circumstances, Europe came to feel concern about the U.S. extended deterrence. The reason was the suspicion of "abandonment" caused by the decrease in the credibility of deterrence by punishment; Europe came to doubt whether the U.S. would provide Europe the extended nuclear deterrence using its strategic nuclear forces at the risk of a nuclear attack by the Soviet Union, given the fact that the mainland U.S. would be remain intact even if a war using conventional military forces broke out in Europe.

Therefore, NATO agreed to host the U.S. nuclear warheads and IRBM on condition of receiving an agreement from the countries to deploy the armament in December 1957. Indeed, "The deployment of tactical nuclear weapons in Europe began in the1950s, reaching as many as around 7,000 nuclear warheads in the 1960s".[27]

However, the deployment of tactical nuclear weapons in Europe further elicited the problems of "entrapment/abandonment". Theoretically speaking, there are probably two viewpoints regarding the deployment of tactical nuclear forces in Europe; (i) tactical nuclear forces for enhancing the credibility of deterrence by punishment and (ii) those for preventing deterrence by punishment from being brought to the fore. Thus for Europe,

(ii) can be interpreted as depreciation in the credibility of the U.S. deterrence by punishment.

The theoretical support for view (i) is, as pointed out in Section 6 of the preceding chapter, the argument by Snyder. He identifies the roles of tactical nuclear forces in the integration with the U.S. deterrence by punishment as follows:

> The "nuclearizing" of the shield enhances its "integrating" effect on the overall deterrent posture.[28]

According to this theory, the deterrence effect increases. However, Snyder also calls attention to the following case:

> If NATO's tactical nuclear forces are definitely combined with the strategy for limited war, the tactical capabilities might decrease the credibility of a threat of massive retaliation.[29]

And therefore, he develops his argument as follows:

> Tactical nuclear warfare is much more likely than conventional warfare to give rise "accidents" leading to the inadvertent explosion of full-scale war. And, aside from accidents, tactical nuclear war can easily shade into a "spiraling" situation born of deliberate decisions to step up the intensity of the war just a little bit to convince the enemy of the high cots that will follow his continued rejection of terms of settlement.[30]

Schelling also argues as follows:

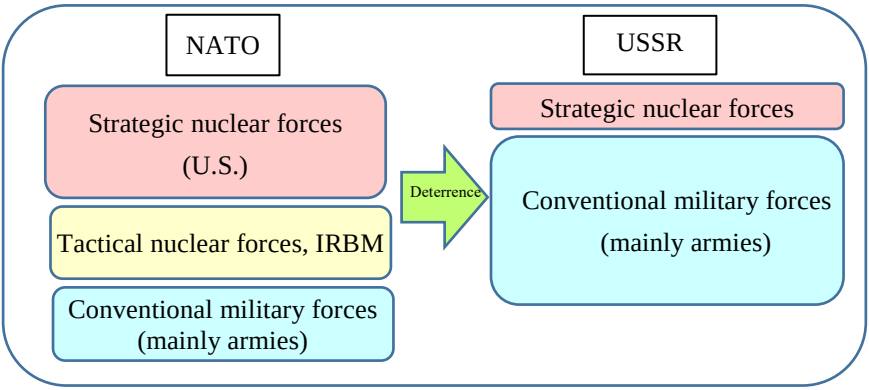
> One of the functions of limited war is to pose the deliberate risk of all-out war, in order to intimidate the enemy and to make pursuit of his limited objectives intolerably risky to him.[31]

Snyder also summarized in his later article the reason that Europe controverts limited war as follows:

> Europeans have always favored pure deterrence over war-fighting postures after deterrence failure…. Nuclear war-fighting and limited nuclear war strategies favored by the United States are resisted for at least three reasons:
>
> (i) They imply a greater likelihood, and greater degree, of devastation in Europe than a strategy of assured destruction.
>
> (ii) They might encourage the U.S. to initiate nuclear war too casually in the event of conventional attack or to take excessive risks in a crisis.
>
> (iii) They are provocative to the Soviet Union, both politically and militarily.[32]

When the understanding of deterrence explained by Snyder and Schelling is applied, tactical nuclear forces have to be combined with the U.S.' strategic nuclear forces in order to enhance the credibility of deterrence by punishment because possession of tactical nuclear forces for the purpose of limited war may lead to not only a decrease in the credibility of deterrence by punishment but also giving a stimulus to the Soviet Union. Therefore, deployment of nuclear warheads and IRBM in Europe is, from the viewpoint of the deterrence theories argued by Snyder and Schelling, an attempt to secure the mechanism of linkage as shown in Figure 3. The issues in relation to tactical nuclear forces will be discussed in the next section again.

Figure 3 Concept of the force structure for deterrence of the Soviet Union during the period of fall of the massive retaliation strategy



Adoption of a flexible response strategy means breaking away from the massive retaliation strategy. In the massive retaliation strategy, if the Soviet Union conducts a large-scale invasion, the U.S. will not hesitate to make a nuclear retaliation. This strategy was reasonable when the disparity in the capabilities of conventional nuclear forces was significant and the Soviet Union's nuclear forces were small. However, the circumstances changed; the Soviet Union's nuclear arms buildup promoted the change from the massive retaliation strategy.

Under the Kennedy Administration which started in 1961, U.S. Secretary of Defense Robert McNamara announced the adoption of a flexible response strategy in February 1962. Differing from the deterrence based on the massive retaliation strategy in which the use of nuclear weapons would be considered from the beginning of a battle, the flexible response strategy was for deterrence based on the concept that defense should be made by conventional military forces and would be escalated properly if it was insufficient to deter the adversary, while response with all-out nuclear attacks would be made against a nuclear attack as needed.

Why was the flexible response strategy adopted? The reason was that the U.S. felt serious concern about the massive retaliation strategy. I would like to clarify here about the concerns the U.S. and Europe had at this period as follows.

The U.S.' concern was that conflicts in Europe (or the world including Europe), under the massive retaliation strategy, might escalate directly to all-out nuclear war, combined with the progress in the nuclear development of the Soviet Union. In order to eliminate the concern, the U.S. not only enhanced the conventional military forces in Europe but also proposed a flexible response strategy with a view to avoiding the use of strategic nuclear forces. Europe, on the other hand, expressed concern about the flexible response strategy as follows; Europe suspected that the enhancement of conventional military forces might rather decrease the credibility of nuclear retaliation by the U.S. and increase the risk of limited war in Europe. In particular, the positioning of tactical nuclear forces also gave rise to a controversy in this context as stated above; that is, the concerns for decoupling between the U.S. and Europe, "abandonment" and "entrapment".

Though the U.S. and Europe both had their concerns, NATO adopted the flexible response strategy in December 1967 after a more than five-year consultation over the strategy after the announcement by the U.S. in February 1962.

Now, I would like to examine the positioning of the flexible response strategy once again. This strategy seems to have been a product of compromise with the dilemma caused by the U.S. concern for all-out nuclear war with the Soviet Union and Europe's concern for the abandonment and decoupling due to lacking the capability of nuclear escalation, rather than a solution for those concerns. In particular, whether to enhance conventional military forces and how to position tactical nuclear forces were major issues.

First, I would like to discuss the issue regarding conventional military forces. At the time, the U.S. asked Europe to enhance its conventional military forces in order to wrestle with the overwhelming Soviet military capabilities and from the perspective of widening the scope of military options. However, Europe could not carry out the enhancement of military power immediately because of financial constraints and other reasons. Also, in theoretical terms as summarized in Figure 1, Europe was concerned about a decrease in the effect of deterrence by punishment due to the enhancement of conventional military forces without careful consideration, which would produce the depreciatory effects of deterrence by denial as Snyder said. As a result, Europe and the U.S. compromised with each other, increasing the number of divisions and solders of NATO and putting the defense line forward. See Figure 4.

> In September 1963, Lyman Louis Lemnitzer, who was appointed as Supreme Allied Commander Europe of NATO after Lauris Norstad expressed their intention to advance the forward defense line within West Germany to the borders with East Germany and Czechoslovakia as proof of unity of the alliance. Along with this, West Germany established the twelfth army division in 1965, which had been aimed at as an initial goal, and increased the number of solders to 430 thousand. Thus, NATO made preparations for the forward defense as proof of sharing a common destiny with West Germany.[33]

This forward defense posture may mean a strategy that contributes to an increase in the credibility of deterrence by punishment through the complementary effects of deterrence by denial as argued by Snyder, in terms of the role of the U.S. forces as a tripwire and the prevention of creating a fait accompli early. Kaneko argues from another viewpoint as follows:

Figure 4 Image of NATO's forward defense

Source: Created based on footnote 26, Kaneko, p.147.

> From the military viewpoint, this posture with no strategic depth had no measures for response after the defense line was broken through by the forces of the Warsaw Treaty Organization. In this sense, the forward defense was mainly a political strategy for assuring NATO's mutual intention of mutual defense rather than a strategy based on military rationality.[34]

Second, I would like to summarize the argument about the confrontation over the positioning of tactical nuclear forces between the U.S. and Europe. Concerning the timing, scale and geographical scope of the use of tactical nuclear weapons, a conflict of opinions surfaced between the U.S. and Europe. In particular, confrontation over the timing and geographical scope of the use of tactical nuclear forces is as described below. However, the U.S. at that time was negative about Snyder's theory of the positioning of tactical nuclear forces discussed before, while Europe seems to have been positive about it.

> An adoption of the policy of responding to the invasion by the Soviet Union using conventional military forces meant to West Germany, which would be unable to avoid destruction of its land if an invasion actually occurred, an increase in the risk because it would give the Soviet Union the leeway in advance to calculate the risk they might incur. For West Germany, which preferred avoiding any war to winning a battle, it was far more important not to give the Soviet Union time to calculate risk by holding up the first use of nuclear weapons and enhance the forward defense.[35]

> There was also an underlying confrontation over the geographical scope of the first use of tactical nuclear forces between the U.S. and Western Europe (particularly West Germany). While West Germany was positive about a deep attack generally aiming at targets within the Soviet Union's territory, the U.S. insisted that the scope of first use should be limited to a battle area (within West Germany's territory in many situations).[36]

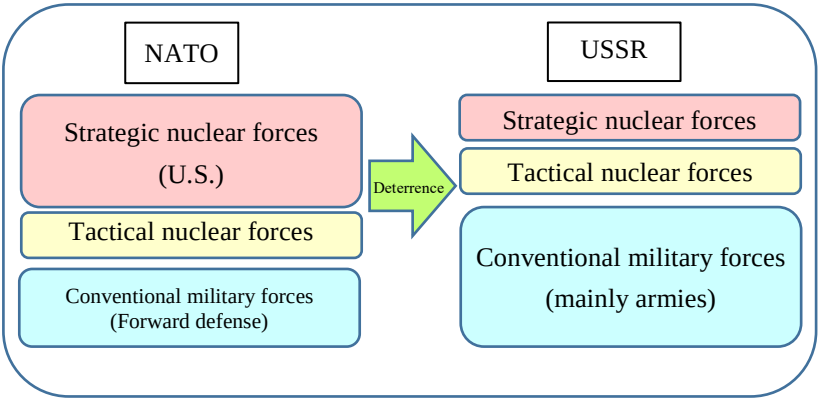
Concerning the confrontation over the timing and geographical scope of the use of tactical nuclear forces between the U.S. and Europe, a compromise was accepted as follows:

> If any of the member states is attacked with nuclear forces, a retaliation shall be made promptly and automatically using nuclear forces without consultation. On the other hand, if any of the member states is attacked with conventional military forces, the nuclear states shall consult with the other member states as long as time allows.[37]
> The target of the first use shall be limited to the states of Eastern Europe.[38]
> Thus both the parties accepted the points of compromise including the above.

Though the flexible response strategy was agreed between the U.S. and Europe, it was also a product of compromise between the both parties as mentioned above. First, Europe did not accept the U.S. request for the enhancement of conventional military forces easily because what was important for Europe was the U.S. function of deterrence by punishment for effective deterrence of the Soviet Union and therefore enhancement of conventional military forces without careful consideration might decrease the credibility of deterrence by punishment as pointed out by Snyder.

In addition, Europe ultimately had to show the Soviet Union the linkage with the U.S. deterrence by punishment through the development of a strategy for the early and extensive use of tactical nuclear forces. The U.S., on the other hand, did not like the occurrence of all-out nuclear war, showing "an attitude of seeking the reduction in the necessity for escalating the scale of conflict to the condition that strategic nuclear forces would have to be used".[39] This confrontation between the parties can be regarded as conflict between deterrence and defense. That is, the threat of deterrence by punishment is necessary in order to increase the effect of deterrence, however, the dilemma of expansion of war and difficulty in limiting it will be posed if the deterrence fails and the deterrent by punishment is actually used. Even so, Europe argued firmly for the strategic theory from the viewpoint of deterrence, without following the U.S. view at all. Europe still stuck to the strategy for deterrence of the Soviet Union through an increase in the credibility of deterrence by punishment. The force structure for deterring the Soviet Union at that time is shown in Figure 5.[40]

Figure 5 Concept of the force structure for deterring the Soviet Union during the period of developing the flexible response strategy



On the other hand, France at that time showed independent movements. I would like to mention the movements of France as well.

In July 1956, the Suez Crisis occurred, triggered by the nationalization of the Suez Canal announced by Egypt. In response to the movement by Egypt, Britain and France dispatched troops to the Sinai in October, but the U.S., one of the allied nations, opposed it. The troops dispatched by Britain and France couldn't help but withdraw. This experience made the both states deepen their view regarding the alliance, and in particular nuclear weapons. In this context, Britain succeeded in a hydrogen bomb test in May 1957. After that, Britain pursued a course as a nuclear nation while belonging to NATO's military structure. So, what course did France select?

(4) France's Nuclear Deterrence Theory

France succeeded in an atomic bomb test in the Sahara in February 1960. Since then, France has been a nuclear-capable state up to now. In

March 1966, France announced withdrawal from NATO's military structure, and actually withdrew from it in July 1966, selecting a course different from Britain. In this sense, there is an argument that "it is safe to say that the withdrawal of France from NATO's military structure made it easier for NATO to adopt a flexible response strategy."[41]

Now, I would like to focus on the concepts that France was based on regarding the possession of nuclear weapons, i.e., its deterrence theories. There were two major nuclear deterrence theories in France; one was a French Air Force General Pierre Marie Gallois's "proportional deterrence" theory and the other was Army General André Beaufre's theory of "multilateral deterrence".

In terms of genealogical classification, the former may be also regarded as the theory of "independence-focused" nuclear possession and the latter as the theory of "alliance-focused" nuclear possession. Each theory is described as follows.

Gallois's "proportional deterrence" theory was based on the strong distrust of the U.S. extended deterrence, suspecting that the U.S. could not launch a retaliatory attack with nuclear weapons, even if Paris suffered a nuclear attack, as long as the U.S. itself was not attacked. It was a kind of concern of "abandonment". Gallois argued as follows:

> Even in the alliance, the same measures will not be always used for the defense of all the member states, and what would be fatal for Paris and Bonn may be a simple and peripheral matter for Washington.*[42]
>
> Nuclear force capabilities are only useful for the security of the nations that possess them. Irrespective of whether the nuclear-capable states are friends, neighboring countries or allies, it is difficult to believe that those states will put all of their homelands at the risk of devastation in order to defend other states.*[43]

Gallois's concept seems to be based on a great distrust of the extended deterrence by the allied nations, that is, a distrust of the credibility of the U.S. deterrence by punishment. In order to eliminate the distrust and maintain sufficient deterrence, Gallois argued that France should possess nuclear weapons. And he asserted that France would not have to possess as many nuclear weapons as the U.S. or the Soviet Union because even small-scale nuclear forces would be sufficient to function as a deterrent. What was the logic of his assertion?

Even if the Soviet Union considered an attack on France, it would refrain from the attack when it recognized that "the benefit to be lost due to nuclear retaliation from France" would be larger than the "benefit to be gained through invasion into France".

Gallois thought that nuclear deterrence could work even with the small-scale nuclear forces as long as the correlation between the "benefit to be gained through invasion" and the "benefit to be lost due to nuclear retaliation against the invasion" was maintained so that the proportion of the former could be smaller than the latter. His theory held that deterrence would depend on the magnitude relation between the benefit to be gained and that to be lost, not the scale of nuclear forces. Thus, he proposed a nuclear deterrence theory called "proportional deterrence".[44]

> In purely theoretical terms, the policy of nuclear deterrence can achieve its intended aim fully if that powerful tool can damage an aggressor state enough to inflict more loss on the state than any benefit they gained through conquest.
>
> The aggressor state has to tackle tough work for reconstruction of the ruins in its homeland caused by the retaliatory attack and then destruction of the state it has conquered. This means accumulating ruins, which proves the aggressive policy to be absurd.

> Thus, the concept of proportion of benefit sought to the risk incurred when a conflict occurs is formulated.*[45]

On the other hand, Beaufre's nuclear deterrence theory was more complicated than Gallois's. He found the meaning of France's possession of nuclear weapons in reducing the distrust of the U.S. extended deterrence. That is, he thought that France's possession of nuclear forces would strengthen the alliance with the U.S., which could result in enhancing the credibility of the U.S. deterrence by punishment. Beaufre provided three reasons for possessing nuclear forces. The first reason was as follows:

> What is the nature of risks caused by an independent nuclear force? Obviously it is the risk that the third party ay react unwisely to a threat and may thereby give rise either to the fait accompli of open and irrevocable hostilities precluding any compromise solution. The fear is that the third party may play the game badly. *[46]

The third country here refers to France and the two strong powers refer to the U.S. and the Soviet Union. Beaufre found the meaning of France's possession of nuclear forces in making the both strong powers feel a risk. The second reason was as follows:

> Yet if it desired to ensure that a third party's actions will invariably take into account the very strict conditions governing the nuclear confrontation of two great powers, that third party must be treated unreservedly as an ally; the various aspects of the situation with which he may be confronted must be discussed with him thoroughly, without dogmatism and without reservations on the score of nuclear secrecy (a futile business anyway); a real common strategic doctrine would thus be built up collectively.*[47]

Even if France's nuclear capability is small in scale, its retaliatory attack against the Soviet Union's nuclear attack, if it occurs, may possibly escalate into all-out nuclear war. As the U.S. probably does not want tobeinvolved in all-out nuclear war caused by such an act of France, it will always respect France's wishes and take account of France's intention more than before in offering extended deterrence. Beaufre elicited the theory of making it possible to enhance the credibility of the U.S. deterrence by punishment. Thus, he found one of the meanings of France's possession of nuclear weapons in enhancement of the U.S. extended deterrence offered to France. [48] This was the second reason.

The third reason was that the Soviet Union would inevitably have to take France's nuclear forces into consideration in developing its nuclear strategy, which would make it difficult for the Soviet Union to judge whether its nuclear attack would succeed or not. Beaufre argued as follows:

> In multinational strategy the fact of being faced by several opponents makes any appreciation of the situation extraordinarily complicated, so much so that it may make any forecast impossible.*[49]

> In fact they automatically make allied solidarity applicable to all sufficiently important interests of all members of a nuclear alliance, and they tend to equalize the influence exerted by the various members within the alliance. They increase deterrent effect upon the enemy by demonstrating to him the degree of solidarity achieved and any increasing his uncertainty of the possible results of any aggressive action. They therefore reduce the size of the area in which the cold war can be pursued.*[50]

Based on the three reasons above, Beaufre argued that France's nuclear forces should not be "integrated" into the U.S. nuclear forces, and preferably France should develop a nuclear strategy based on "coordination" with the U.S. while maintaining the independence of its nuclear forces. He thought that "coordination" would make it difficult for the Soviet Union to judge the probability of nuclear attack, and thus it would increase a sort of "uncertainty", which could result in enhancing the effect of deterrence. Beaufre's deterrence theory is called a "multilateral deterrence theory" which is positive about nuclear multipolarity.[51]

As introduced above concerning the nuclear deterrence theories of Gallois and Beaufre, Gallois insisted on the possession of independent nuclear forces due to his deep doubt about the credibility of the U.S. deterrence by punishment, and Beaufre developed a theory of possessing nuclear forces for enhancing the credibility of the U.S. deterrence by punishment while having a suspicion about it.

Yasuhiro Nakasone, the former prime minister of Japan, recorded the discussion in the 6th G7 Summit held in Venice on June 8, 1987 in his own diary as follows:

> In the G7 summit dinner on June 8, an intense discussion was held between Western Europe and the U.S. concerning INF, SR/INF and nuclear policies. The U.S. believed that it would be possible to reduce tactical nuclear weapons less than 500k equally with a view to the reduction of conventional and chemical weapons, but Britain argued that the status quo concerning nuclear weapons less than 500k should not be changed because it would inevitably leave a negative legacy. President of France Mitterrand argued that nuclear weapons would be necessary because peace was maintained particularly due to the nuclear weapons targeting the capital of the Soviet Union. He insisted on De Gaulle's theory, saying, "It does not matter whether the nuclear forces are massive or not because even small

> nuclear bombs are three times more powerful than the one dropped over Hiroshima, which will be always linked with massive ones."[52]

It does not matter whether the nuclear forces are "massive or not" and "always linked with massive ones" seem to be related with the concepts of Gallois and Beaufre respectively. Nakasone seems to have understood the essential factors of France's nuclear deterrence theory.

(5) Period of INF Deployment by NATO

In May 1972, the U.S. and the Soviet Union signed the SALT I agreement (a 5-year agreement) and the ABM Treaty (open-ended). And in November 1973, negotiations for conclusion of SALT II began. There was growing sentiment of a thaw between the U.S. and the Soviet Union. The movement of a so-called détente was accelerated.

Under those circumstances, the Soviet Union began to deploy SS-20 intermediate-range nuclear missiles (IRBM) after 1976. The missiles with a range of around 5,000 km could reach Europe, but not the U.S. mainland. As mentioned before, NATO had not deployed intermediate-range nuclear missiles with such a range yet at that time. Though NATO had deployed Pershing Ia with a range of 700 km, it had not been evaluated as one with a capability enough to counter SS-20.

IRBM is hereinafter referred to as INF for use in this study. The reason is, as mentioned in the introduction, the INF (Intermediate-range Nuclear Forces) Treaty which was concluded in December 1987 referred to missiles with ranges of 500 - 5,500 km as INF.

The Soviet Union's deployment of SS-20 brought about a big argument between the U.S. and Europe again. Why? Europe thought that the crisis of decoupling between Europe and the U.S. had deepened. As pointed out before, SS-20 could not reach the U.S. If NATO clashed with the Soviet Union, only Europe would be attacked with SS-20 and the U.S. might not

retaliation – this suspicion posed a concern for the depreciation in the credibility of deterrence by punishment. On this point, Takumi Itabashi described the threat of SS-20 as follows:

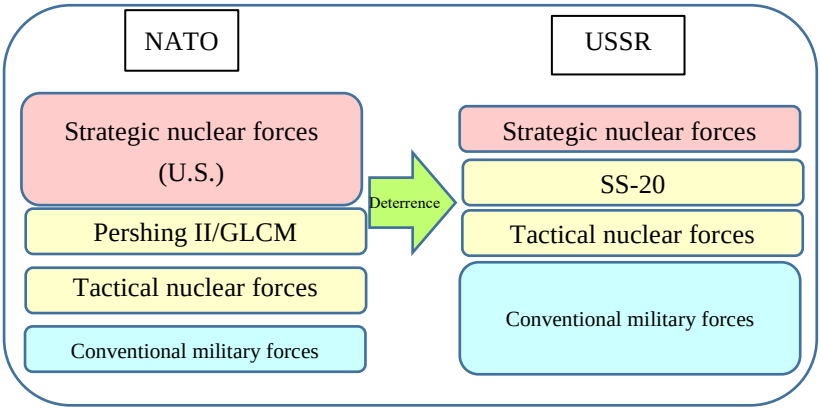
> SS-20 was a critical threat for Europe. The ranges of traditional theatre ballistic missiles SS-4 and SS-5 were 2,000 – 4,800 km, however, the range of SS-20 was 5,500 km as mentioned above. If it was deployed targeting the West, it would be able to cover as a target the whole of Western Europe even from the east side of the Ural Mountains, but the U.S. was outside the range (excluding Alaska). If SS-22 was deployed on the east side of the Ural Mountains, the nuclear weapons deployed in Europe by the U.S., Britain and France could not reach it and only intercontinental ballistic missiles (ICBM) in the U.S. had a capability of destroying it. Would the Soviet Union aim at localizing the stage of battles in Europe? And would the U.S. use its nuclear forces for the defense of Europe if a war occurred? The new-generation intermediate-range nuclear missiles deployed by the Soviet Union shook the credibility of the U.S. "Nuclear Umbrella".[53]

Now, how did NATO address this issue? NATO sought solution by "Double-Track Decision" (December 1979). This was to deploy INF in Europe while offering the Soviet Union a negotiation for arms control. First, 108 Pershing II missiles were introduced to West Germany, and 464 GLCMs were introduced to Britain (160), West Germany (96), Italy (112), Belgium (48) and the Netherland (48, however, they were not deployed due to the Intermediate-Range Nuclear Forces Treaty) to show the firm commitment of the U.S. to the extended deterrence in Europe.

From the Soviet Union's standpoint, Pershing II and GLCM can be evaluated as weapons that have a character as tactical nuclear weapons, given the fact that they could attack the mainland of the Soviet Union

directly, including Moscow. However, apart from that character, this study focuses on the pursuit of enhancing the relationship with the U.S. extended deterrence, or deterrence by punishment. That is, it is safe to say that the introduction of INF aims at the same effect as linking tactical nuclear forces to strategic ones. The concept of the force structure in this situation is shown in Figure 6:

Figure 6 Concept of the force structure for deterrence of the Soviet Union during the period of INF deployment



The negotiation with the Soviet Union for arms control began in November 1981. After negotiations, the Intermediate-Range Nuclear Forces Treaty was concluded in December 1987 between the U.S. and the Soviet Union to eliminate all land-based INF with ranges of 500 to 5,500 km.

Before the conclusion of this chapter, I would like to discuss the evaluations of the Treaty. Japanese researchers Kawanago, Nakagawa and Umemoto argue as follows respectively:

First, when discussing the impact of the situation that should be called "post-INF" on Europe (elimination of land-based INF with ranges of 500 – 5,500 km), it is clear that the analytical view that the situation only returned to that 10 years ago, i.e., the situation before the U.S. deployed Pershing II and GLCM as a countermeasure for the Soviet Union's deployment of SS-20, is not reasonable, seen from the response of NATO (the North Atlantic Treaty Organization) after the conclusion of the INF Treaty. In fact, it is reasonable to say that the removal of the U.S. INF more clearly highlighted than 10 years ago the advantage of the Soviet Union and the Warsaw Treaty Organization (WTO) in conventional military forces, tactical nuclear forces (with ranges of 500 km or less) and chemical weapons over Europe, as well as the inferiority of the U.S. and Europe in defense against them (disparities). This is the reason for understanding that the elimination of the powerful nuclear system INF caused a relative weakening of the "Nuclear Umbrella" for NATO.[54]

The INF Treaty brings about the decoupling between the U.S. and Europe and weakens the bond of the U.S.-Europe alliance.[55]

INF with both long and short ranges were eliminated under the INF Treaty (Double Zero). In the first place, however, introduction of the long-range INF was for alleviating Western Europe's concern for "Abandonment" by securing the possibility of escalating the scale of conflict. If so, it may be natural that elimination of INF was criticized because it might decrease the likelihood that the Soviet invasion into Western Europe would lead to the situation of using strategic nuclear forces – i.e., it might weaken the "linkage" of theater nuclear forces in Europe with the U.S.' strategic nuclear forces, which would lead to "decoupling" of the U.S.' strategic nuclear forces from the security of Western Europe. Therefore, NATO thought it was necessary to secure the "linkage" and prevent the

> "decoupling" by taking some measures which were an alternative to the deployment of long-range INF.[56]

Considering the above arguments, it is safe to say that researchers evaluated the INF Treaty as undermining the credibility of the U.S. extended deterrence, which would bring about the decoupling and reigniting Europe's concern for abandonment.

However, through the fall of the Berlin Wall in 1989, German reunification in 1990 and the dissolution of the Soviet Union in 1991, the controversy over the credibility of deterrence by punishment between the U.S. and Europe was settled.[57]

Conclusion

Concerning deterrence, Jitsuo Tsuchiyama has recently pointed out as follows:

> As deterrence has accumulated its theories and policies for 70 years, I think it is very important that how those theories and policies can be used for solving our security issues should be discussed not only in the Japan Self-Defense Forces but across Japan.[58]

This study can be positioned as one discussing part of NATO's deterrence strategies during the Cold War in terms of policies, while mainly summarizing the deterrence theory of Glenn Snyder in the theoretical aspect, in reference to "*Nanajunen ni Wataru Riron to Seisaku* [Theories and Policies of 70 Years about Deterrence]" described about deterrence by Tsuchiyama. This study also referred to the nuclear deterrence theories of France.

Perhaps this study could reveal that NATO's deterrence theories during the Cold War were developed in response to the capabilities and force

structure of the Soviet Union, based on the strategic insights into deterrence theories. It seems that an appropriate deterrence theory was formulated at least in light of Snyder's theory of deterrence. It was a result of earnest discussion between the U.S. and Europe on the strategy of deterring the Soviet Union.

There was a possibility of decoupling between the U.S. and Europe depending on the capabilities of the Soviet Union, particularly on the change in or the enhancement of the force structure. In order to avoid such a situation, Europe during the Cold War held a strategic consultation with the U.S. As for the positioning of tactical nuclear forces, there was no convergence of opinions seen between the U.S. and Europe, but both parties pursued the development of a new force structure and an idea of operation that could be considered to be good for NATO, in order to address the weapon system of the Soviet Union.

As NATO's deterrence theories can be summarized as above, I would like to pay attention to what Nozomu Matsubara pointed out about the importance of strategies focusing on an adversary's capabilities once again:

> A strategic view based on the capabilities of an adversary rather than their intention is the mature and stable one. Specifically,
> (i) What is intended by the decision maker – if he or she is not unreasonable – does not exceed the scope of the capabilities. His or her intention is restricted or limited by the capabilities.
> (ii) The capabilities can be objectively understood through the scientific integration of long-term judgements on various aspects. It is difficult to understand intention from the outside.
> (iii) Intention is only a matter of presence or absence, but capability is a matter of extent, and flexible response to it is possible.

(iv) The success of what is intended going above the scope of capability can be realized only by good luck.
(v) An “accident” itself cannot be controlled, but its impact is controllable to the minimum.[59]

As mentioned in the introduction of this study, the INF Treaty was terminated on August 2, 2019. The Yomiuri Shimbun newspaper reported in its morning edition of August 4 as follows, and in line with the newspaper report, I would like to discuss the problems in Japan’s national security by applying the insight identified in this study.

U.S. Defense Secretary Mark Esper said on August 3 that he was considering placing in Asia ground-launched, intermediate-range missiles, which the U.S. began to develop in earnest after the United States withdrew from the INF Treaty concluded with Russia. He said so mainly with the capabilities as a counterbalance to China in mind, and it is likely that Japan will be also considered for the deployment.

Whether the repot is true or not, what Esper said seems to contain issues that Japan should look at.

The same situation that NATO experienced during the Cold War when it faced the question of how it should consider the “defense from SS-20”, i.e., its strategic issue that was discussed in this study, may more likely occur in Japan as well.

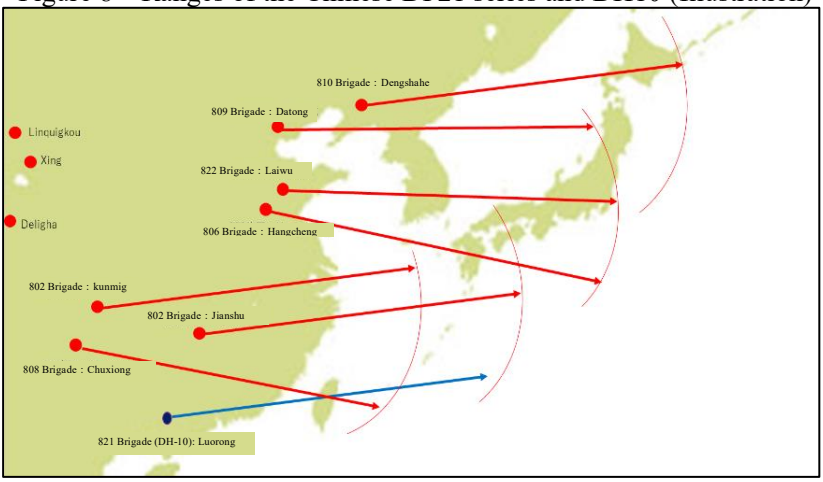
The reason is, as a matter of course, China’s possession of INF. The status of INF possession in China is summarized in Figure 7 as below:

Figure 7 INF possession in China

Range (km)	Name	Number	CEP (m)
350	DF-11A HE	1200 Note 1	200
600	DF-15 (Nuclear/Nonnuclear)		300
900	DF-15A (Nuclear/Nonnuclear)		45
1000	DF-16 (Nuclear/Nonnuclear)		?
2150	DF-21 Nuclear/Nonnuclear)	300	700
2500	DF-21A (Nuclear/Nonnuclear)		50
2500	DF-21B (Nuclear/Nonnuclear)		10
1750	DF-21C		40-50
1550	DF-21D		20 or less
4000 - 5000	DF-26 (Nuclear/Nonnuclear)	80 - 160 Note 2	150
2200	DH-10 (Nuclear/Nonnuclear)	200 - 300 Note 3	10 Note 4

Source: The figures in the table are primarily from IHI Jane's Weapons 2017-2018, p.115.
Note 1, Note 2: Office of Secretary Defense, "Military and security developments involving the People Republic of China 2018", p.63.
Note 2, Note 3: ibid., p.125.
Note 4: The National Institute for Defense Studies (Ed.), NIDS China Security Report 2016, Section 43.

Figure 8　Ranges of the Chinese DF21 series and DH10 (Illustration)

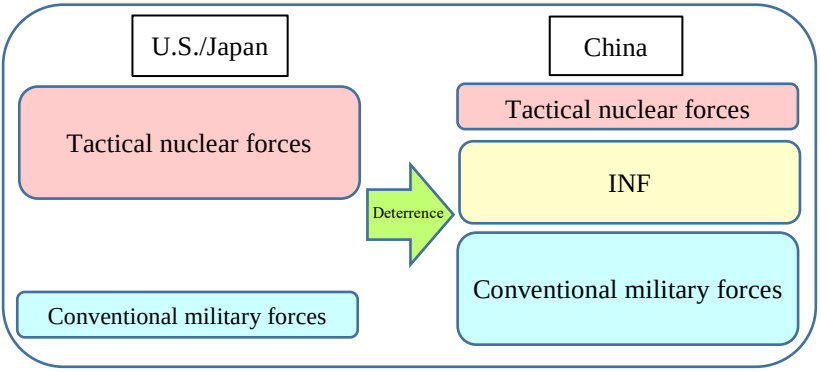


Legend: The red lines indicate the ranges of the DF-21 series from the bases to which they are deployed, and the blue line indicates the range of DH-10 from the base to which it is deployed.
Source: http://www.global.mil.com/military/news/comment/2009/1229/64.html as a reference.

Of the missiles shown in Figure 7, the ranges of the DF-21 intermediate-range ballistic missile series[60] and the range of the DH10 cruise missile from the bases to which they are deployed are illustrated in Figure 8.

Figure 9, which outlines the concept of the current force structures between the U.S.-Japan alliance and China, when it is viewed with the above figures in mind, shows a blank between the tactical nuclear forces and the conventional military forces in the U.S.-Japan alliance. How should it be evaluated?

Figure 9 Concept of the force structure in the U.S.-Japan alliance to deter China



Exploration of Snyder's theory of deterrence and NATO's deterrence strategy during the Cold War highlights the following issues. Does the U.S.-Japan alliance have a sufficient deterrent to China? In particular, is the credibility of the U.S. deterrence by punishment sufficient? Don't any concerns for decoupling between the U.S. and Japan, stability/instability paradox, abandonment and entrapment arise? (Or won't any concerns for them arise in the future as well?)

At any rate, when we recognize the military power of Japan's neighbors, consider the geopolitical difference between Europe and East Asia, the difference in the scale of tactical nuclear forces between the U.S. and China, the difference in the nature of the relationship with the U.S. between the Soviet Union and China, etc., and pay attention to the position of new areas such as space and cyber, as well as change in the picture of military science and technology, I think we can learn from the deterrence theories developed in the Cold Wear and NATO's actual deterrence strategy derived from those theories when discussing Japan's national security for the future.[61]

In order to explore options for Japan's national security strategy for the future, it would be needed to discuss what is "immutable" and how we should follow the "trend" in the future among strategic studies that have been accumulated, based on a theoretical and reasonable judgement of value,.

(Completed on August19, 2019)

[Postscript]

After completing this study, I read *'Kaku no Bokyaku' no Owari* [The End of 'Forgetting Nuclear Forces'] with a subtitle of *Kaku-heiki Fukken no Jidai* [The Era of Reinstatement of Nuclear Weapons] edited by Nobumasa Akiyama and Sugio Takahashi, 2019, Keiso Shobo Publishing. The last chapter "*Nihon* [Japan]" with a subtitle "*Sekai de Mottomo Kibishii Anzen Hosho Kankyo-ka deno Kaku-yokushi* [Nuclear Deterrence under the Harshest Environment of National Security in the World]" , written by one of the editors Takahashi, is helpful for considering Japan's deterrence strategy for the future.

(September 12, 2019)

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[1] David Yost, *The U.S. and Nuclear Deterrence in Europe*, 1999, p.8.

[2] There was another view that more focus should be on the strategies of the Soviet Union rather than the imbalance in conventional military forces. John J. Mearsheimer, *Conventional Deterrence*, 1983, p.169.

[3] For the "Deterrence School" and "Defense School", see Shuichiro Iwata, *Beikoku Kakusenryaku no Hensen* [History of the Nuclear Strategies of the U.S.], *Kokusai Seiji* [International Politics] 40th Issue, 1989, p.66. For what was described as "Defense School" by Iwata, the writer of this study thinks it might be more suitable to use "response" for the translation instead of "defense". For more information on this matter, see my article *Gray Zone Jitai eno Taishohoho toshiteno Kikikanri* [Crisis Management as a Means to Respond to "Gray Zone Situations"], Air Power Studies, 3rd Issue, 2016, p. 56, Note 10.

[4] For the concept of strategical stability, see Jitsuo Tsuchiyama, *Anzen Hosho no Kokusai Seijigaku* [International Politics of Security] 2nd edition, Yuhikaku Publishing, 2014, p.192

[5] Shinichi Ogawa, *"Kaku no Kasa" no Rironteki Kento* [Theoretical Discussion on the "Nuclear Umbrella"], International Politics 90 vol., 1989, p. 96. Also see Tetsuya Umemoto, *Kakuheiki to Kokusai Seiji* [Nuclear Weapons and International Politics], Japan Institute of International Affairs, 1996, pp.158 - 159 as a similar opinion. However, there were different opinions as well. Yatsuhiro Nakagawa, for example, stated that "The gap in the capabilities of conventional military forces between the Soviet Union is rapidly increasing" (*Gendai Kakusenryaku* [Nuclear Strategies of Today], Harashobo, 1985, p.152) and "As far as it relates to the military balance between East and West in terms of the capabilities of conventional weapons in the Far East, the Soviet Union has established an overwhelming advantage, and at the same time, is enhancing it further." (*Kakugunshuku to Heiwa* [Nuclear Disarmament and Peace], Chuokoron, 1986, p.160)

[6] For A2AD of China, it may be helpful to read Tetsuya Umemoto, Chapter 7, *Chugoku A2AD to Beikoku no Taio* [A2AD of China and Response of the U.S.] in *Beichu Senryaku Kankei* [Strategical Relationship between the U.S. and China], Chikumashobo, 2018.

[7] Yukio Sato, *Sashimukerareta Kasa* [The Umbrella Held Over Us], Jiji Press, 2017, pages of iv. Sato held as a diplomat prominent positions such as Director, Security Division of the Minister for Foreign Affairs, Private Secretary to the Minister for Foreign Affairs, Director-General of North American Affairs Bureau, Ambassador to the Netherlands, Ambassador to Australia, Permanent Representative of Japan to the United Nations (Ambassador), etc.

[8] Patrick M. Morgan, *Deterrence Now*, 2003, p.8.

[9] Alexander L. George and Richard Smoke, *Deterrence in American Foreign Policy*, 1974, p.11.

[10] James D. Morrow, *Game Theory for Political Scientists*, 1994, p.38.

[11] With regard to the translation of "defense" into Japanese, particular when it is used in contrast with "deterrence", I think it should be suitable to use the Japanese word meaning "response", not "defense". For this matter, see my article *Gray Zone Jitai eno Taishohoho toshiteno Kikikanri - Sono Yuyosei to Genkai* [Crisis Management as a Means to Respond to "Gray Zone Situations" - Its Effectiveness and Limit], Air Power Studies, 3rd Issue, 2016, p. 56, Note 10, or Note 3 of this study.

[12] Glenn H. Snyder, *Deterrence and Defense*, 1961, p.3.

[13] Thomas Schelling, *Arms and Influence,* 1966, p.35. Translated by Tsuyoshi Saito, *Gunbi to Eikyoryoku* [Armaments and Power of Infuluence], Keiso Shobo Publishing, 2018, p.41. For Schelling's deterrence theory, see Yamamoto's article in this issue.

[14] Alexander L. George and Richard Smoke, op.cit., p.60.

Though this mathematical expression is used in the original article as the one about the conditions for effectiveness of the U.S.'s extended deterrence, this study will use it because I think it is helpful for discussing the characteristics of deterrence by denial and that by punishment. The explanation of this mathematical expression in the original article is as follows: "If a superpower in the East believes that the U.S. will defend nations that are attacked by the superpower, the expectation of deterrence is maintained. More precisely, if the probability that the U.S. is estimated to conduct defense which is multiplied by the cost and risk incurred by the defense by the U.S. exceeds the benefit estimated when the U.S. does not conduct defense, there is such an expectation." (p.60) This explanation is described with an eye on the question of what the conditions of the extended deterrence of the Soviet Union are. Even so, as this mathematical expression may be effective for grasping the characteristics of deterrence by denial and that by

punishment, this study uses it as one of the concepts without caring too much about the views of the original article.

[15] Glenn H. Snyder, *Deterrence and Defense*, 1961, p.14.

[16] Yoshinobu Yamamoto, Masaru Kono (Ed.), *Akusesu Anzen Hoshoron* [Theory of Access Security], Nihon Keizai Hyoronsha, 2005. P.78

[17] Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No. 1: Princeton University, January 2, 1959), p.1. Translated by Makoto Momoi, *Kyohi to Chobatsu niyoru Yokushiryoku, "Takyokuka Jidai no Senryaku-Jo* [Strategy in the Era of Diversification - 1st Vol.]", Japan Institute of International Affairs, 1973, p.37. Please note that I read his translation as a reference but did not always follow it.

[18] Robert Powell criticizes the theory of differentiation between deterrence by punishment and that by denial argued by Snyder. See Robert Powell, *Nuclear Deterrence Theory*, 1990, p.8, note 3.

[19] For example, Snyder makes an annotation of 'i.e., "credibility" of a threat to response' on 'the probability of a military response'. Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No, 1: Princeton University, January 2, 1959), p.3, note 3.

[20] The stability/instability paradox is said to have been introduced by Snyder, however, Masahiro Kurita pointed out that Snyder himself did not use the term stability/instability paradox. See Masahiro Kurita, *Kaku no Risk to Chiiki Funso* [Nuclear Risks and Regional Conflicts], Keiso Shobo Publishing, 2018, p.22.

[21] Robert Jervis, "Why Nuclear Superiority Doesn't Matter", *Political Science Quarterly*, Volume 94, Number 4 winter 1979-1980, p.619.

[22] Glenn H. Snyder, "The Security Dilemma in Alliance Politics", *World Politics*, Vol.36, No.4(jul., 1984), pp.491-492.

[23] Umemoto, op.cit. 5, p. 139

[24] Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No, 1: Princeton University, January 2, 1959), pp.9-30.

[25] Ogawa, op.cit. 5, p.92

[26] For NATO's strategies during the Cold War, see the reference as follows: Beatrice Heuser, *NATO, Britain, France and The FRG: Nuclear Strategy and Force for Europe, 1949-2000*,1998. For previous studies in Japan, in addition to the references listed above, see Hiroshi Yamada, *Kaku-yokushi Senryaku no Rekishi to Riron* [History and Theoiesy of Nuclear Deterrence Strategies], Horitsu Bunka Sha, 1979; Shuichiro Iwata, *Kaku-senryaku to Kaku-gunbi Kanri – Nihon no Hikaku Seisaku no Kadai* [Nuclear Strategies and Management of Nuclear Disarmament – Problems in the Non-Nuclear Policy of Japan], Japan Institute of International Affairs, 1996; Masamori Sase, *NATO – 21 Seiki karano Sekai Senryaku* [NATO – Global Strategies from the 21st Century], Bunshun Shinsho, 1999; Hiroshi Yamada, *Gendai Amerika no Gunji Senryaku to Nihon* [Military Strategies of the Current U.S. and Japan], Horitsu Bunka Sha, 2002; Yuzuru Kaneko, *NATO Kita-Taiseiyo Joyaku Kiko no Kenkyu* [Studies on NATO; North Atlantic Treaty Organization], Sairyusha, 2008; Kanehara Nobukatsu, *Senryaku Gaiko Genron* [Principles of Strategic Diplomacy], Nikkei Publishing, 2011; Takao Segawa, *Beiso Kaku-gunshuku to Nihon Gaiko* [Negotiations on Reducing Nuclear Arms between the U.S. and the Soviet Union, and Japan's Diplomacy], Hokkaido University Press, 2016; Tomohisa Sakanaka,

Tenkanki no Kaku-yokushi to Gunbi Kanri [Nuclear Deterrence in the Transition Period and Arms Control], Yatsuhiro Nakagawa, *Gunbi Kanri to Kaku-yokushi no Sokoku* [Arms Control and Conflict in Nuclear Deterrence] and Makoto Kawanago, *"Kaku no Kasa" to Nihon* ["Nuclear Umbrella" and Japan] published in Kokusai Seiji [International Politics] Vol. 90, 1989; Michito Tsuruoka, *Oshu Senjutsukaku-mondai no Kozu* [Structural Outline of the Problems with Tactical Nuclear Forces in Europe], Masakatsu Ota, *Senjutsu-kaku to Kakudai Yokushi* [Strategic Nuclear Power and Extended Deterrence] and Yoko Iwama, *Nishi-doitsu to Senjutsu Kakuheiki* [West Germany and Tactical Nuclear Weapons] published in *Kokusai Anzen Hosho* [International Security], Vol 40, Issue 4, 2013; Takumi Itabashi, *NATO "Niju Kettei" no Seiritsu to Nishi-doitsu* [NATO Establishment of "Dual Decision" and West Germany], *Seikei Hogaku* [The Seikei University Journal of Legal, Political and Social Sciences], Issue 88, 2018, etc. as recent articles.

[27] Umemoto, op.cit. 5, p. 140. Tsuruoka describes in op.cit. 26, p.4, that "The US military in Europe deployed a wide variety of tactical nuclear weapons from nuclear land mines to short-range missiles from 1950s, but those weapons were removed after the Cold War, leaving only B-61, gravity nuclear bombs."

[28] Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No, 1: Princeton University, January 2, 1959), p.24.

[29] Ibid., p.29.

Snyder places importance on combining tactical nuclear forces with deterrent by punishment (strategic nuclear forces) from the viewpoint of how to deter the Soviet Union from invading Europe. Logically, on the other hand, there could be a viewpoint that enhancement of the capabilities to wage tactical nuclear war, i.e., limited nuclear war, would result in an increase in the effect of deterrence because the credibility of deterrence by punishment is essentially low.

One of the Japanese articles discussing the subject from this viewpoint is Kiichi Saeki, *Gentei Kakusensou wa Kano* [Limited Nuclear War is possible], *Kokusai Seiji* [International Politics] Issue 5, 1958. Citing Kissinger's theory, Saeki argues as follows: "The capabilities of waging all-out war, due to the hugely destructive power, may paralyze the will to use it. If the will to fight is paralyzed, the containment capacity does not increase no matter how the destructive power of nuclear weapons is strengthened. Reliance on the capabilities of waging all-out war as the main containment hinders the establishment of equilibrium between the force of arms and the intention to use it. Thus, the power of the threat to wage all-out war loses its credibility, as well as the political effect of deterring war. Even if the U.S. believes the credibility, the Allies do not. Furthermore, the Soviet leaders may think that there would be no need of fearing the threat from the U.S. The U.S.' belief that massive retaliation is not wise and the Soviet leaders' belief that there is no need of fearing the threat from the U.S. makes an emotional gap in the power of threat to wage all-out war. This gap may inspire the Soviet leaders to an act of aggression." (p.44) The words the capabilities of waging all-out war, containment and the allied nations used here can be rephrased as deterrence by punishment, deterrent and allied nations.

Larsen and Kartchner, eds., *On Limited Nuclear War in the 21st Century*, 2014.

[30] Glenn H. Snyder, "Deterrence by Denial and Punishment" (Research Monograph No, 1: Princeton University, January 2, 1959), p.29.

[31] Thomas Schelling, *The Strategy of Conflict*, 1960, p.193. Translation supervised by Masaru Kono, *Funso no Senryaku*, Keiso Shobo Publishing, 2008, p.201. However, the translation is not cited as it is.

[32] Glenn H. Snyder, "The Security Dilemma in Alliance Politics", *World Politics*, Vol.36, No.4(jul., 1984), p.492.

[33] Kaneko, op.cit. (26), p. 145.

[34] Kaneko, op.cit. (26), p. 146.

[35] Kaneko, op.cit. (26), p. 142.

[36] Umemoto, op.cit. (5), p. 145.

[37] Kaneko, op.cit. (26), p. 143.

[38] Umemoto, op.cit. (5), p. 146.

[39] Umemoto, op.cit. 5, p. 141. As for the positioning of the flexible response strategy, there were four theories as follows: (i) Conventional defense theory, (ii) Theater nuclear defense theory. (iii) Theory focusing on "Linkage" and (iv) Conflict scale "escalation supremacy theory". They may be categorized into two groups - (i) / (ii) that seem to place an importance on response after deterrence failure and (iii) / (iv) that are based on the concept of deterrence theories. See Umemoto, op.cit. 5, pp.142 - 143.

[40] Yu Koizumi points out that "the Soviet Union seems to have acquired the capabilities of carrying out a large-scale deep operation actually using a massive amount of tactical nuclear weapons after the latter half of 1960s." Yu Koizumi, *Soren no Anzen Hosho Seisaku ni okeru Senjutsu Kaku-heiki no Ichizuke to Tenbo* [Position and Vision of Tactical Nuclear Weapons in the Security Policy of the Soviet Union], *Kokusai Anzen Hosho* [International Security], Vol 40, Issue 4, 2013, p.55.

[41] Kaneko, op.cit. (26), p. 145.

[42] Pierre Marie Gallois, *Kaku-senryaku to Chukyu Kokka* [translated from Stratégie à l'ére nucléaire], Chuo Koron, 1964, April Issue, p.143.

[43] Gallois, op.cit. (43), p.159.

[44] With regard to the translation of "proportional deterrence", I adopted the Japanese translation of Yuzuru Kaneko because I thought it might be more accurate, considering Gallois' argument that deterrence depends on the correlation between the benefits of different parties. Kaneko, op.cit. (26), p.164.

[45] Gallois, op.cit. (43), p.154. I think the Japanese translation of proportion might be less suitable. Op.cit. (45).

[46] Andre Beaufré, *Deterrence and Strategy*, 1965, p.89.

[47] Ibid., p.91.

[48] Whether France's possession of nuclear forces can actually enhance the credibility of the U.S. extended deterrence still remains as another issue.

[49] Andre Beaufré, op.cit., p.93.

[50] Ibid., p.102.

[51] Masataka Kosaka, *Furansu no Kaku-seisaku* [Nuclear Policies of France], *Kosaka Masataka Chosakushu* [Masataka Kosaka Collection] Vol.7, Toshishuppan, 2000, p.338.

[52] Nakasone Peace Institute (Ed.), *Nakasone Naikakushi-Shiryohen* [History of Yasuhiro Nakasone's Cabinet-Materials]. Cited from Segawa, op.cit. (26), p.411.

[53] Itabashi, op.cit. (26), p.344.

[54] Kawanago, op.cit. (26), p.103.
[55] Nakagawa, op.cit. (26), p.21.
[56] Umemoto, op. cit. (5), p.155.
[57] For the strategic consultation between the U.S. and Europe after the conclusion of the INF Treaty until the end of the Cold War, see Umemoto, op. cot. (5), pp.156-157, and Sase, op.cit. (26), p.130 - 139.
[58] Jitsuo Tsuchiyama, *Naze Ima Yokushiron ka?* [Why Deterrence Theories Now?], Air Power Studies 3rd Issue, 2016, p.27.
[59] Nozomi Matsubara and Keisuke Iida (Eds.), *Kokusai Seiji no Suri/Keiryo Bunseki Nyumon* [Introduction to Actuarial/Quantitative Analyses for International Politics], University of Tokyo Press, 2012, p.64, Note 5. On the other hand, the decision-making process and cognitive structure of the nation to be deterred cannot be overlooked because deterrence, as pointed out in this study as well, is a kind of phycological action. Human beings do not always make a reasonable judgement. They are, for example, beings that cannot escape from various biases. In addition, Jitsuo Tsuchiyama points out as follows: "The most important example of deterrence failure is the World War I. Nobody thought that it would escalate into a large-scale war. Germany, Britain and Russia had thought that it would end rather early, but all of them were wrong… Deterrence threatens the other party, and particularly in the case of nuclear weapons, as deterrence threatens the other party using nuclear weapons, both the parties become tense very much. It is highly likely that deterrence does not work well." (Tsuchiyama, op.cit. (59), p.22.)

Jervis, Lebow and Stein, *Psychology and Deterrence*, 1985. As Japanese references, Jitsuo Tsuchiyama, *Ninchi Kozo to Gaiko Seisaku* [Cognitive Structure and Diplomatic Policy] in Tadashi Aruga, et.al (Eds.), *Koza Kokusai Seiji 2 Gaiko Seisaku* [Lecture of International Politics: International Politics], University of Tokyo Press, 1989 is helpful. In addition, see Junichi Fukuda, *'Fukkugoteki" de "Zendankaiteki" katsu "Ryoiki Odanteki" na Yokushi* ['Complex', 'All-phase' and 'Cross-disciplinary' Deterrence], Air Power Studies 5th Issue, 2018, p.50.
[60] There are various types in DF21; DF21D is an antiship ballistic missile called an aircraft carrier killer, which is thought to be a significant threat to the U.S. Navy's carrier battle group. See National Institute for Defense Studies (Ed.), *Chugoku Anzen Hosho Repoto 2016* [China's National Security Report 2016], pp. 40 – 41.
[61] Tsuruoka, op.cit. (26) points out harshly as follows; "Tactical nuclear forces in Europe are, on one level, matters specific to Europe; at the same time, however, they are connected with universal issues concerning nuclear deterrence and alliance policies, including the position of tactical nuclear forces in the U.S. nuclear policy, today's meaning in the forward deployment of nuclear weapons and the possibility of alternative solutions for the forward deployment. Therefore, Japan and South Korea cannot afford to ignore the issue on the tactical nuclear forces of Europe." (p2), and "According to the NPR in April 2010, Tomahawk Land Attack Missile - Nuclear (TLAM/N), which had been regarded as playing an important role in the extended deterrence offered by the U.S. to its allied states in the Asia-Pacific region including Japan, was decommissioned for the reason that it could be replaced with other measures while the tactical nuclear forces deployed in Europe were maintained with no explanation of why they could not be replaced with other measures.

Irrespective of the decommissioning of TLAM/N, the lack of consistency and the insufficient explanations about the difference in the approach between Asia and Europe should be blamed." (p13)