Chapter 4

Innovation in Defense Capabilities and Organizational Knowledge Creation

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1. Introduction

1.1. Innovation and organization

History tells us that the only way for a county to deter war against a hostile country that exerts a continuous and serious threat is to maintain some form of asymmetrical superiority, or to keep unstable balancing such as mutual assured destruction. Defense organizations that are responsible for the security of a country are entrusted with the mission of correctly recognizing a strategic environment and successfully carrying out self-organizational innovation while hedging with strategic situations. This is because innovation is one of the key elements for keeping asymmetrical superiority and unstable balance.

Competitive military situations between nation states in the global society are similar to those of private corporations, which are in competition over profits in the world market, although nation states do not go bankrupt or get liquidated as industrial corporations do. Important competitiveness for industrial corporations is thought to come from innovations, which are also indispensable for a nation's military power. Here innovation is not limited to the technological area. For example, innovative alliances can improve the security of a nation greatly. Looking back at history, many Japanese would agree that the Anglo-Japan Alliance which was signed in 1902 is such an example. Alliance relationships inevitably reflect in the strategic postures of national security.

1.2. Military Revolution and RMA

This paper will review the innovation in national defense institutions and organizational knowledge creation theory in management studies by referring to

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the preceding historical analysis that uses the concepts of Military Revolution and Revolution in Military Affairs. Historical studies show that it is difficult but not impossible to generate innovations from within national defense institutions in peacetime. Three reasons can be quickly raised. The first is that during peacetime or interwar periods, uncertainties surmount to judge new international threats and to direct a nation's security policies in an appropriate direction. The second is that at the operational and tactical level, defense organizations are basically bureaucratic, and self-organizational reformation is not their strong point. The third is that potential technological superiority has to be implemented not only in the equipment systems, but also in troops' deployments and the doctrine for coping with the new strategic environment, which are accompanied by a noticeable time lag. It would take at least ten years from starting the development of a new weapon system to implementing it as operational in divisions and fleets. Coherent vision and institutional support are indispensable for accomplishing the development of new weapon systems and bringing them into operation.

1.3. Organizational knowledge creation and military organizations

We can quote two Japanese studies of organizational knowledge creation theory which focused on military organizations and security issues. One is *The Essence of Failure: An Organizational Study on the Japanese Military*（『失敗の本質：日本軍の組織論的研究』）[2] and the other is *The U.S. Marine Corps: Self Innovation in a Non-business Organization*（『アメリカ海兵隊：非営利型組織の自己革新』）.[3] These are among well-read business books by Professor Ikujiro Nonaka, who is one of the contributors to this volume. The first book is a critical study of the IJA's tactics using Graham Allison's bureaucratic model. The second is on successful self-innovation by military organizations.

　　Organizational knowledge creation theory emphasizes the importance of pragmatic knowledge, i.e., phronesis, rather than formulative and deductive knowledge, i.e., episteme. Organizational knowledge creation theory emphasizes applying the SECI model to case studies of industrial corporations which,

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[2]　Ryoichi Tobe, Giichi Teramoto, Shinichi Kamata, Takao Suginoo, Tomohide Murai, and Ikujiro Nonaka, *Shippai no Honshitsu, Nihongun no Soshikironteki Kenkyu(Essence of the Japanese Army's Failure)* (Tokyo: Cyuokoron-sha Inc., 1991).

[3]　Ikujiro Nonaka, *Amerika Kaiheitai: Hi-eirigata Soshiki no Jikokakushin (The US Marine Corps: Self Innovation of a Non-profit Organization)* (Tokyo: Chuokoron-sha Inc, 1995).

through the appropriate combination of good leadership and collective knowledge at the practical community level, can generate continuous and self-organizational innovations, which become the sources of corporate competitiveness.

1.4. Information revolution and RMA

Interests in innovations for defence organizations were renewed in the 1990s, instigated by the information revolution, notably the global spread of the commercial use of the Internet. The introduction of information and communication technologies such as computer networks into military organizations made RMA the buzzword among defense communities. The report by the Defence Policy Division of the Japanese Ministry of Defence in 2000 declared that the present stage of RMA is informational.[4] *Joint Vision 2020,* published by the U.S. Joint Chiefs of Staff, focused on network centric warfare and information superiority.[5] Considering however that information technology is not the first example in which technological advancement has brought about a revolutionary change in military affairs, it is natural that a number of studies on RMA concepts followed from the historian's perspectives.

The Dynamics of Military Revolution, 1300 – 2050 by MacGregor Knox, Stevenson Professor of International History at the London School of Economics and Political Science, and Willamson Murray, Senior Fellow at the Institute for Defense Analysis, is an outstanding study on the RMA concept by military historians.[6] They are greatly skeptical about the RMA being led by technological advancements. They first pointed out the current problem of tending to assume that asymmetrical superiority on the battle field would derive from the swift adaptation of scientific and engineering technologies, arguing that war history suggests that it is wrong to think that technology leads to this kind of superiority. The authors then presented historical facts demonstrating that no country has succeeded in winning a war by depending on the linear projection of technological developments. These facts show on the contrary that the countries that won the

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4   Research Center, Defense Policy Division, Japanese Ministry of Defense, *Information RMA*, September 2000.

5   Department of Defense, *Joint Vision 2020* (Washington, D.C.: US Government Printing Office, 2000).

6   MacGregor Knox and Willamson Murray, *The Dynamics of Military Revolution, 1300 – 2050* (New York: Cambridge University Press, 2001).

next war were those that analyzed the reality and lessons of the war of the immediate past – the war that had just ended –, transformed organizational behavior and principles into doctrines, and made serious efforts to adapt them for real war. The authors further argued that while technologies in warfare are important, they are only a factor in the whole mix. The book expounded this view by conducting a review of military history from the 14th century to World War II.

2. Military Revolution and RMA

2.1. The framework of Knox and Murray

The basic framework of *The Dynamics of Military Revolution 1300 – 2050* is to distinguish between Military Revolution and RMA. Military Revolutions occur from extensive social and political changes. There have been five such cases in modern history; (1) creation of the modern state and modern military institutions in the 17th century; (2) (3) the French Revolution and the Industrial Revolution which occurred in the same period; (4) World War I; and (5) development of nuclear weapons. On the other hand, RMAs were directed by military institutions during those five Military Revolutions with significant difficulty. In their article, "Thinking about Revolution in Warfare," in *The Dynamics of Military Revolution, 1300 – 2050,* chap. 1, they summarize the relationship between Military Revolutions and the RMA, using the Table below.[7]

1) *Preparatory RMAs: Medieval to Early Modern*
–longbow, attacking defense strategy, gun powder, new castle building technologies
2) *Military Revolution 1: Modern Nation State and the Creation of Modern Military Institutions in the 17th century*
RMAs that accompanied military revolutions or resulted from them
–reform in military tactics in the Netherlands and Sweden, reform in military tactics and organizations in France, naval revolution, British financial revolution
–French military reform that continued into the Seven Years' War

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7   Table I.I, in ibid, chap. 1, p.13.

3) *Military Revolution 2 and 3: French Revolution and the Industrial Revolution*
RMAs that accompanied military revolutions or resulted from them
–political and economic mobilization by the state, Napoleonic war (annihilation of enemy military on the battlefield)
–financial and economic power generated through industrial revolution (England)
–technological revolution in land warfare and transportation methods (telegraphic communication, railway, steam ships, small arms and artillery using smokeless gunpowder that allowed rapid firing, self-loading)
–Admiral John Fisher's reform in the naval warfare including all-big-gun battleships and fleet
4) *Military Revolution 4: First World War, Combining the Three Preceding Wars*
RMAs that accompanied military revolutions or resulted from them
–combined-arms tactics and warfare, Blitzkrieg, strategic bombing, carrier warfare, submarine warfare, amphibious warfare, information warfare including radar, radio and signal intelligence
Military Revolution 5: Nuclear Weapons and Ballistic Missiles as a Delivery System
RMAs that accompanied military revolutions or resulted from them
–precision reconnaissance and strike, stealth, computerization and computer networking of command and control, increased lethality of "conventional weapons"

2.2. World system and military revolution
This list is instructive from at least four aspects. First of all, it explains the military aspect of modernization in the context of globalization of nation states originating in Western Europe. Those nation-states, which became members of the international society from the 17th century, introduced domestic military organization as a part of their modernization by adopting the Military Revolutions in this list. The second point is that the two authors view RMAs as institutional, organizational and conceptual as well as technological. Even if the direct trigger of RMAs was innovation in scientific and industrial technology, it is not immune from the overall situation of the society which contains the military institutions. Information RMA is actually an application of the information revolution as a social phenomenon to military areas. The statement, "RMAs that accompanied

military revolutions or resulted from them" in the above list rightly reflects this thinking.

The third point is that the list questions whether the information revolution is sufficiently significant economically and socially, such that it would stimulate numbers of informational RMAs and become the sixth Military Revolution. The two professors do not focus on this point, but I believe that the information revolution as the third industrial revolution should be understood as a social change with the same dynamic, although understandably, this is debatable. The fourth point is that the methodology derived from historical study is highly instructive. The studies show that; (i) the country that analyzes the reality and lessons of the war of the immediate past and genuinely learns the organizational behavioral principles wins the next war; and (ii) the innovation in military institutions places the importance of technology as a premise, but innovation must be organizational, doctrinal, and implemented in the commander's leadership and troop tactics. Applying the teachings of this book, this paper will review the eastern front of the Cold War in the 1980s as the international confrontation that Japan has experienced in the immediate past.

3. The Cold War and the Japanese Defense Policy in the 1980s: Global Nuclear Deterrence and Japan

The Cold War was a confrontation between two ideologies, capitalism and socialism. The two sides continued the global confrontation for forty years. The main front of the Cold War was in central Europe and other fronts had subsidiary and derivative importance. The characteristics of the Cold War appear in the fifth Military Revolution, which are nuclear weapons and ballistic missiles as a delivery system. Continuous innovation in technology and strategy occurred while keeping nuclear deterrence at the core.

The Soviet Union constructed a military complex of strategic nuclear weapons and conventional weapons in the Far East on top of the NATO front for the following reasons. The naval strategy of the Soviets moved toward what the West called the "Bastion Strategy" from the mid 1970s.[8] This strategy was to base the SSBNs, which is a part of the strategic nuclear triad (ICBM, strategic

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[8]   David B. Rivkin, Jr. "No Bastions for the Bear," *US Naval Institute Proceedings 110,* April 1984, pp. 36-43.

bombers, SLBM) and the center of the second strike capability, in the coastal zone of the Soviet territory, and to defend them with surface vessels, attack submarines, and land-based aircraft capabilities. The Soviet naval bastions were built in the Barents Sea and the Sea of Okhotsk, which were the two areas suited for defense due to their geological aspects.[9] The force structures of the Soviet Pacific Fleet at Vladivostok and Kamchatka were significantly strengthened from the end of 1970s.

The American Maritime Strategy adopted by the Reagan administration intended to contain the Soviet naval forces inside coastal zones and, if necessary, to deploy attack submarines and even carrier task forces into the high threat areas.[10] As a result both navies faced each other in strategic competition along the Japanese and the Kuril Islands as the front line. This was not only because Hokkaido is located at the interior defense zone of the Soviet Far East, but also because of a geological reason, which was that securing free passage of the Souya Channel was indispensable for the long-term maintenance of the Russian Bastion Strategy.

The Nakasone administration visibly strengthened the Japan- US Alliance and the defense posture of the Self Defense Forces. The Maritime Self Defense Force increased the acquisition of P-3Cs, the anti-submarine patrol aircrafts, from 45 planned in 1977 to 75 in 1982, and to 100 in 1985. The planned number of F-15 interceptor fighters to be acquired by the Air Self Defense Force was 100 in 1977 but was increased to 155 in 1982 and 187 in 1985. The number increased to 223 in 1990. The strategy of the Ground Self Defense Force transformed from "inland attrition" to "shoreline, front defense" to deter the Soviet plan to secure the strategic Channel area. Acquisitions of new weapon systems for the northern forward deployment in the 1980s included; Type-90 MBTs combatable with Soviet T-80s, F-2 attackers equipped with four long-range air to ship missiles (F-16 modified) , and Aegis destroyers to improve air protection and ASW capabilities escorting the U.S. 7th Fleet. We can interpret that Japan recognized

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9   The US strengthened strategic collaboration with NATO members, especially Norway, in order to counter the Russian SLBMs in the Barents Sea. As a result, the Russian SLBMs gradually moved to the Arctic Sea. See Carl G. Jacobsen, "Soviet Strategy: The naval dimension," in Carl G. Jacobsen ed., *The Uncertain Course, New Weapons, Strategies and Mind-Sets* (Oxford: Oxford University Press, 1987), pp. 187-197.

10   Hisahiko Okazaki, Shigeki Nishimura, and Seizaburo Sato, *Nichibei Domei to Nihon no Senryaku (The US-Japan Alliance and Japan's Strategy)* (Tokyo: PHP, 1991).

its defense roles in the global context and made decisions on the equipment and deployment posture accordingly. The START-I treaty was an arms reduction regime that aimed to stabilize the East-West relations through deterrence based on advanced nuclear weapons. The Soviet Union failed to sustain this strategic structure using the START-I treaty because of the collapse of the domestic political system, which led to the end of the Cold War. The transition in defense postures during the 1980s shows that continuous and self-organizational innovation occurred in nuclear strategy, tactics, and doctrines as the fifth Military Revolution.[11]

4. Lessons Learned from Experience

The Japanese contribution to global deterrence during the Cold War was minimal as a non-nuclear armed country with an exclusively defensive security policy. The general public also paid little attention to it. But we can draw three lessons from the military history of the region.

The first is that if the structure of the deterrence posture between China and the United States continues to develop according to the increase in Chinese blue water advancement and maritime nuclear weapons, the situation will be analogous to the one between the U.S. and the Soviets. This is evident when we compare the defence-line connecting the Kuril Islands and Hokkaido around the Sea of Okhotsk and the line connecting Okinawa, Taiwan, the Philippines, and Indonesia.[12] The effectiveness of the alliance with the United States in this strategic condition has been historically proven.

The second lesson is that history does not simply repeat itself. If an information revolution is a Military Revolution, regional deterrence will no doubt change dramatically. We all know the history of the Cold War, and both friends and foes will draw lessons and develop countermeasures from this knowledge.

The third lesson is that if organizational knowledge creation theory is appropriate for defense institutions, analysis based on practical knowledge on the battlefield is what is important for innovation. The following should be

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[11] Shigeki Nishimura, *Bouei Senryaku towa Nanika (What is a Defense Strategy?)*(Tokyo: PHP, 2012).

[12] National Institute for Defense Studies, *NIDS China Security Report 2011*, 2012, p. 20.

addressed properly; (1) justified true belief and political leadership; (2) the middle management that transforms the principles of the political leaders into concrete forms while absorbing the changes in the security environment and reflecting them in commanding troops; and (3) the creation of organizational knowledge based on actual and practical military behaviour. We can expect new forms of analytical conduct for national security from both this knowledge-based framework and war history.