

The Maritime Transport War - Emphasizing a strategy to interrupt the enemy sea lines of communication¹ (SLOCs) -

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Preface

Why did the Imperial Japanese Navy not aggressively develop a strategy to interrupt the enemy sea line of communication (SLOC) during the Second World War? Japan's SLOC connecting her southern and Asian continental fronts to the mainland were destroyed mainly by the U.S. submarine warfare. Consequently, Japanese forces suffered from shortages of provisions as well as natural resources necessary for her military power. Furthermore, neither weapons nor provisions could be delivered to the fronts due to the U.S. operations to disrupt the Japanese SLOCs between the battlegrounds and the Japanese home island. Thus soldiers on the front were threatened with starvation even before the battle. In contrast, the U.S. and British military forces supported long logistical supply lines to their Asian and Pacific battlegrounds. However, there are no records indicating that the Imperial Japanese Navy attempted to interrupt these vital sea lines. Surely Japanese officers were aware of the German use of submarines in World War I. Why did the Imperial Japanese Navy not adopt a *guerre de course* strategy, that is a strategy targeting the enemy merchant marine and logistical lines?

The most comprehensive explanation indicates that the Imperial Japanese Navy had no doctrine providing for this kind of warfare. The core of its naval strategy was the doctrine of "decisive battles at any cost." Under the Japanese naval doctrine submarines were meant to contribute to fleet engagements not to have an independent combat role or to target anything but the enemy fleet. Naval restrictions imposed by the 1922 Washington Treaty on the Limitation of Armament restricted the Japanese navy to 60% the size of the U.S. navy. This meant that the Imperial Japanese Navy had to husband its resources. Therefore submarines were deployed exclusively as auxiliaries to the fleet. They were part of the navy's "wait and hit strategy."

Submarine design focused on meeting the requirements of this strategy. Submarines were required to have a high speed to pursuit enemy fleets and a long cruising range to advance to the bases of enemy fleets. This required a large ship size and engine capacity which made the submarine easier for the enemy to detect.

There are three main means of interrupting enemy SLOCs: surface ships, submarines and aircraft. This treatise is intended to explain why the Imperial

¹ The term in English comes from the French: *guerre de course*

Japanese Navy did not focus on interrupting enemy SLOCs (or protect its own.²). It will focus chiefly on national defense and submarine strategy.

1 Transitions in positioning the Japanese Naval Strategy to interrupt enemy SLOCs and Submarines - Confirmation of the fact

(1) Pre-First World War: Japanese naval defense doctrine in the pre-submarines era.

A. Maritime defense concepts in the late Edo (Tokugawa) Period

Sin-en Sato pointed out a risk of blockade the Bay of Edo (Tokyo Bay). He recommended developing canals connected to the Bay of Edo as a pre-emptive alternative measure. According to his book, “History of Inland Sea,” completed in 1833.

“It is unimaginable what serious affairs might arise, if an incident happened at sea, and the rice and salt could not be shipped from western and eastern parts of Japan, and such stalemate of shipping lasted more than a year. . . . If foreign invaders use their warships to shadow and plunder cargo boats at Edo (the Eastern Metropolis [meaning Tokyo Bay]), the metropolis will be surely thrown into immediate confusion.”

In response, the Tokugawa leaders reclaimed lakes and marshes on the coast of Edo Bay and the adjoining Kazusa District and developed alternate transportation routes by water from the Tonegawa River to the Bay of Edo through the Inbanuma Marsh and the Kemigawa River.³ (Tonegawa River runs toward the Pacific coast from the west to the east about 30Km north of Edo.)

In a book published in 1837, Tokizo Matsumoto, foreman of a large group of shipping laborers, also pointed out the vulnerability of the Bay of Edo to blockade. Similarly, C.W. King, an American trader, who had visited Japan commanding the *Morrison* in the same year, suggested two points for foreign military leverage over Japan the blockade of the Bay of Edo and occupation of the Ryukyu Islands.

In 1850, Shozan Sakuma, the famous thinker and strategist, emphasized the importance of protecting the Bay of Edo from blockade. He recommended that the government must construct rigid iron warships, use them to ram approaching foreign vessels and kill any invaders (Here, he demonstrated his foresight by emphasizing that the ability to brake a blockade was a fundamental responsibility of the navy).

The British actually developed a concrete plan to blockade the Bay of Edo in

² The strategy of interrupting enemy SLOCs and the strategy of protecting its own SLOCs are two sides of the same coin. Effective naval strategy requires protecting one’s own SLOCs while attacking those of the enemy. The Imperial Japanese Navy, however, assured that it would maintain command of the sea, therefore, it focuses on preparing for a decisive fleet-on-fleet engagement, not of a war of attrition, requiring the dispersion of naval assets to protect its SLOCs.

³ Takeshi Hara, *Bakumatsu Kaibo-shi no Kenkyu* ([A Study on Maritime Defense in the Closing Days of the Tokugawa Shogunate Government]), (Meicho Shuppan, 1988), p.126.

order to pressure the Tokugawa Shogunate to compensate the British for damages incurred by the attack on the British legation in Tozenji and to enforce the Treaty of Kanagawa. The British Government ordered Vice-admiral Hope, fleet commander of East India and China Regions to study the matter.⁴

Thus during the late Edo period, Western realized the effectiveness marine blockades at pressuring pre-industrial countries such as Japan and China. The Japanese were well aware of this and realized that they must develop counter measures.

The 1850s provided useful lessons on the coastal defense mission of the navy. A visit to Uraga by an American fleet under the command of Admiral M.G. Perry and its gunboat diplomacy in 1853 demonstrated the need to improve Japan's coastal defense. The Imperial Japanese Navy had both a homeland defense mission and a mission to protect trade. Admiral Perry's gunboat diplomacy, the battle between the Satsuma Clan and Britain (1863) and the Shimonoseki Incident (1863-1864) all combined to impress upon the Japanese leaders the need to prioritige the construction of warships that would function as mobile batteries.⁵

B. The National defense doctrine of the Imperial Japanese Navy: "National Defense" and "A History of National Defense" by Tetsutaro Sato

One of the key Meiji Era reforms was the creation of the Japanese Imperial Navy. When discussing the defense doctrine and composition of the Imperial Japanese Navy, we must refer to Tetsutaro Sato.⁶ Sato focus on naval doctrine for national defense and force strategy necessary to fulfill this mission. His focus on the defense contrast with the army doctrine being developed by Giichi Tanaka who emphasized the offensive mission of the Japanese Army on the Asian mainland. This essay will not address the differences in army and navy strategy and doctrine, but discuss Sato's discussion of the anticipated nature of warfare, the projected role of the Imperial Japanese Navy, and the required naval force structure for national defense.

Sato completed his book entitled *Teikoku Kokubo-ron* ([The Theory of National Defense of the Japanese Empire]) in 1902 before the Russo-Japanese War. This book was presented to the Emperor Meiji through Admiral G. Yamamoto, Minister of the Navy. In the book, Sato stressed the importance of the command of the sea. Taking up the Dutch War in the chapter entitled "Armaments and National Power," Satoh reasoned "While the Dutch believe that the direct escort of vessels by military convoys is the only way to provide maritime safety, the English believe it is best to secure the command of the sea, to operate vessels freely within the range of the command, and this strategy has resulted in the decline of Dutch shipping and the

⁴ *Ibid.*, p. 129.

⁵ Ichiro Sato, *Kaigun Goju-nen-shi* ([A 50 Years History of the Imperial Navy]), (Masu Shobou, 1943), p.20.

⁶ For a recent excellent study see Yasushi Ishikawa, *Sato Tetsutaro Kaigun-Chujo Den* ([A Biography of Vice Admiral Tetsutaro Sato]), (Hara Shobou, 2000).

prosperity of British shipping.”⁷ Sato summarized the reason why the Dutch were defeated in the Dutch War, pointing out that the Dutch Navy, which was less powerful by nature stuck to its convoy mission for merchant vessels and consequently it lost its free maneuver. He noted that the Dutch had a navy to protect their vessels, while the British possessed a navy to secure the command of the sea over the vital commercial SLOCs, maintain a large sphere of influence.

Captain Alfred Theyer Mahan of the U.S. Navy glorified the British Navy, he affirmed that the basis of prosperity and power for a country is the monopoly of the command of the sea by force. “If you wish to govern the whole world at all, try to control all wealth in the world; if you desire to control all wealth in the world, try to control the trade in the entire world at first; if you want to control the trade in the entire world, be sure to get the exclusive possession of the sea in the world at first; if you wish to get the exclusive possession of the sea in the entire world, try to win all conflicts at sea in the world by all means; and if you want to win all conflicts at sea in the world by all means, provide strong naval forces by any means. ----- A command of the sea by force is the basis of prosperity and power.”⁸

Sato also argued that the purpose of wars should be national defense. The priority for the Japanese Empire should be securing her dignity and welfare. He specified the following prerequisites:

(a) Secure the Empire and its territory from even the slightest enemy invasion by a step.

(b) Secure protection of all transport between the mainland and the territories.

(c) Maintain the peace and secure results of a victory, in the event of war.

To accomplish this, T. Sato asserted that “the first priority is to provide adequate armaments to seize the command of the sea” and then to maintain force readiness through adequate arms acquisitions.⁹ To protect maritime transport, Sato stressed securing the command of the sea.

The Russo-Japanese War changed Sato’s thinking. In his work entitled “The Summarized Theory of A History of National Defense”¹⁰ published in 1911. Concretely speaking, the purpose of armed forces supplemented the self-defense mission of the armed forces with the protection of the national constitution. Stressing the Dutch War, he emphasized that strong military power and particularly naval power fostered the basic for national wealth, and not vice versa. Sato’s analysis greatly influenced the Imperial Japanese Navy in its neglect of the protection of such non-military targets of SLOCs. He stated “The Dutch do not know that providing

⁷ Tetsutaro Sato, *Teikoku Kokubo-ron Kan* ([The Theory of National Defense of the Japanese Empire, Complete edition]), (Suiko-sha, 1902), p.27.

⁸ *Ibid.*, pp.27-28.

⁹ *Ibid.*, pp.118-119, and Kaigun Rekishi Hozon-kai, *Nihon Kaigun-shi Daiikkan* ([A History of the Imperial Navy, Volume1]), (Daiichi Hoki Shuppan, 1995) , pp. 413-414.

¹⁰ This book was published by Tokyo Suiko-sha.

strong military power is the basis of achieving national wealth and they would not be brave enough to follow this principle, even if they knew it. In other words, providing strong military power is the basis of achieving national wealth and national wealth is not necessarily the basis of strong military power. A policy that developing nations should follow is to provide strong military forces for achieving national wealth and not try to achieve national wealth in order to become a strong military power.”¹¹

He explained the crushing the Dutch in the Dutch War: “The English provided armaments solely for the purpose of maritime control and organized powerful fleets with large naval vessels suitable for naval battles, while the Dutch organized their fleets solely for guarding their maritime trade and did not adopt a policy to control the sea with military forces.”¹² He added the English comprehended that they could not expect national prosperity without a sweeping victory over the Dutch. Therefore they aggressively expanded their navy accepting the financial costs, while the Dutch worried about decreasing of their wealth and consequently expanded their navy in a makeshift way to minimize their expenditures.

In short, Sato blamed the Dutch defeat on the Dutch focus on protecting their maritime trade instead of controlling the sea as the purpose of the armed forces. He appealed to Japanese government to provide the necessary funds to transform Japan into a major military power so that Japan could then become a major economic power.

Although Tetsutaro Sato ended his navy life in obscurity, his ideas became well-established in the Imperial Japanese Navy. Japan’s victory in the Russo-Japanese War was seen as proof of the accuracy of Sato’s ideas. Military strategists did not recognize the domestic factors behind Russia’s defeat, namely, an anachronistic form of government withholding public support. This had caused the 1905 Russian Revolution that forced Russian to the negotiating table. Henceforth, Japanese naval doctrine focused exclusively on the decisive fleet-on-fleet battle of any cost or the destruction of enemy’s fleets. It assured a direct linkage between the retention of a command of the sea and the protection of Japan’s trade. This entailed the end of free trade. Therefore, the Japanese naval forces structure was designed as to place the utmost priority on the destruction of the enemy’s fleet. This became naval orthodoxy and Admiral Togo, a hero of the war became a national symbol.

(2) Experiences in the First World War: The doctrine of the decisive, fleet engagement unchanged.

A. Influence of the First World War on the doctrine of the Imperial Japanese Navy

Japan joined the Allied Forces in the First World War and participated in

¹¹ Sato, *Teikoku Kokubo-shi-ron Shou*, pp.118-119.

¹² *Ibid.*, p.126.

fighting. The Imperial Japanese Navy was engaged in convoy duty and many military officers were dispatched to the European front as observers to study the war. Nevertheless the top leaders of the Navy did not grasp the implication of a total war for the navy, that a prolonged war, by definition, would not end quick with a decisive fleet-on-fleet engagement; the defense of SLOCs would become essential for victory. The United Kingdom clearly recognized the importance of logistical lines at sea, but Japan's naval observers missed this critical lesson to British victory.¹³

In World War , submarines displayed an amazing capacity to interrupt the enemy SLOCs. The advent of submarine required a rethinking of the prewar doctrine of the command of the sea. With submarines destroying the enemy's surface combatants decisive battles no longer necessarily brought the command of the sea. Any nations dependent on maritime trade like Britain and Japan, now had two mission: neutralization of the enemy fleet and, equally important, protection of the SLOCs necessary for trade. Even though Japanese observers understood that the German submarine fleets had almost driven Britain to surrender, this is not taken seriously except by part of the Imperial Japanese Navy.¹⁴

In Japan, military officers including Sato remained fixated on the command of the sea. There were many officers who noted "this new reality." But Sato's thought which had become authoritative was a serious obstacle, so that officers remained faithful to a strategy that no longer reflected reality. The leaders did not combine this reality with the necessary reconsideration of the force structure. Because they considered the Japanese navy inferior to the U.S. Navy, they did not believe that the Japanese navy would have the funding to procure enough submarines for any other role than an auxiliary weapon for decisive fleet-on-fleet engagement.

Rear Admiral W.S. Simus, Commander of U.S. Navy unit dispatched to Europe, stated in his book "A Victory at Sea."¹⁵

"In April 1917, when I arrived in England, I found an anticipated defeat of Germany to be erroneous. According to the British Navy, the actual situation of the War was that Britain was in a situation of having no choice other than unconditional surrender in a few months to come, if the situations remained unchanged because the effect of Germany submarines was so serious. I interviewed Admiral V. Jellicoe, chief of Naval Operation. He handed me a record of the lost merchant vessels in a past few months. According to the record, the total lost tonnage of the British and neutral countries had increased from 536,000 tons in

¹³ Kiyoshi Ikeda, *Nihon no Kaigun Yakushin-hen*, ([The Navy of Japan: Its Advance]), (Asahi Sonorama, 1933), p.57 and *Kaigun Rekishi Hozon-kai, Nihon Kaigun-shi Dainikan* ([A History of the Imperial Navy, Volume2]), (Daiichi Hoki Shuppan, 1995) , pp. 420-421.

¹⁴ In this connection, a group of Rear Admiral M. Akiyama and Lt. Commander K. Yamanashi who were members of the provisional Naval Affairs Investigation Committee and visited U.S. and Europe from March 1916 just before Germany unrestricted submarine operations started in full-scale reported an amazing progress of aircrafts and submarines in the European Front.

¹⁵ A Japanese translation by Lt. Commander T. Ishimaru published by Konishi Shoten in 1924.

February 1917 to 603,000 tons in March 1917, and further 900,000 tons in April 1917. In other words, actual damages were three to four times as much as those published on newspapers. And Admiral Jellicoe mentioned that if this situation continued, he would have no choice but to surrender. Surrender of the Allies is a matter of time and experts had determined the date of surrender would be November 1, 1917.”

Admiral Jellicoe states in his book “Danger of Battles at Sea.”¹⁶

“Though the danger which British people confronted was not slight, it was not so frequent yet in 1917 as it had been in the days when submarine threat was at its height. There was no one who did not worry about the future, observing that the maritime forces were gradually decreasing day after day. If the British Navy had not carried out measures against submarine attacks, the victory of the Allies would have been doubtful and most of the British people would have been in a danger of starvation. I cannot help but feel an instinctive shiver.”

“*The Economist*”¹⁷also reported: “Spring in 1917 was the most critical time we ever encountered since the outbreak of the War. If a loss of merchant vessels in Britain and the Allied countries should have continued in such a ratio as noted in April through June 1917, Germany would have won a victory before the end of that year.”

Those reports and books were not classified, but were available to general public. Nevertheless, there is no record that the Imperial Japanese Navy made any definite modifications in its naval doctrine in spite of drastic changes of the war fighting environment resulting from the appearance of submarines. Because of the widespread destruction of military records of the end of World War the absence of surviving records does not necessarily require to an absence of modification to naval doctrine

The strengthening of the naval forces devoted to the protection of SLOCs, especially against submarine attacks, and the positive operation of submarines for interruption of the enemy SLOCs can be seen as the beginnings of a modification in naval doctrine. During the First World War, Japan was making the first revision to her policy for national defense.¹⁸ The chief executive officers in the Imperial Japanese Navy were fully occupied in planning and coordinating these changes. Yet there is no existent document concerning the first revision of the national defense policy. The Strategic Principle (approved in 1918) is unavailable and the annual operations plan based on the Essentials for Naval Strategy is also unavailable. However, some historical references based on the Naval Annual Operational Plan for the late Taisho

¹⁶ A Japanese translation of this book is also published by Suiko-sha in 1922.

¹⁷ dated on Sept. 7, 1918.

¹⁸ The War History Office of the National Defense College of Japan Defense Agency (ed.), *Senshi Soshō - Daihōnei Kaigun-bu Rengo Kantai (1)*, ([History Series, Navy Division of the Imperial Headquarters – The Combined fleet (1)]), (Asagumo Shinbun-sha, 1975).

and early Showa eras have been preserved. They describe the strategy against U.S. until 1941.¹⁹ According to these documents, the Navy planned to assign part of submarine fleet to interrupt the enemy SLOCs on the West Coast of the United States, and assign the First Combined Fleet to patrol the East China Sea while they awaited the decisive battle, to terminate the war.

It would be an exaggeration to say that an appearance of submarines in the First World War had no influence what so ever on the doctrine of the Imperial Japanese Navy. Whether these changes in naval doctrine focused on anti-submarine warfare and on the protection of Japan's SLOCs against the U.S. will be the subject of a future paper.²⁰

B. Evaluation by the Imperial Japanese Navy of Submarine Warfare in the First World War.

The decision to use of weapon-system often depends on the engineering and manufacturing capability to produce it domestically. During the First World War, Japan did not have engineering ability independently to complete submarines from design to construction. Submarines built by Japan before the Showa Era were copies of the imported models. Among those submarines, were four medium-sized special submarines were keel-laid in 1921 and completed in 1924. They were originally designed by Kawasaki Shipyard for deployment of interrupting enemy SLOCs.²¹ This means that by 1924 the Navy was considering the use of submarines for interrupting SLOCs. Thus it seems that the Imperial Japanese Navy applying the lessons of German submarines in interrupting the enemy SLOCs.

The Imperial Japanese Navy had dispatched many military war attaches to the Allies, especially to England where over 400 war attaches had been dispatched to Europe from 1914 till 1920²². Most of the surviving reports were from the military attaches assigned to naval vessels, particularly warships and cruisers attached to British Home Fleet. Therefore, these reports focused on major fleet battles between the British and German navies. Many of the reports refer to matters related to fleet operations including anti-submarine warfare, cooperation between submarine groups and the fleet submarine attacks on the enemy's naval vessels, and comparisons of submarines with other naval vessels, etc. Only a few reported on naval strategy using submarines to interrupt the enemy SLOCs, and their political and military effects.

¹⁹ *Ibid.*, pp.168,175, 213 – 215.

²⁰ Included among recent studies concerning the Imperial Navy and maritime defense warfare is the pioneering study, "Nihon Kaigun to Kaijo Goaisen" ("The Imperial Navy and Maritime Defense Warfare") written by Katsunori Tanaka. This treatise analyses the reason why the Imperial Navy could not carry out effective battles to defend the sea approaches to Japan, focusing on strategy and organization.

²¹ The War History Office of the National Defense College of Japan Defense Agency (ed.), *Senshi Soshō – Sensuikan-shi* ([History series - A History of Submarines]), (Asagumo Shinbun-sha, 1979), p.13.

²² K. Nagai, "Nihon Kaigun no Daiichiji-Sekaitaisen ni kansuru Sen-kun tou Chosa no Jittai ni tsuite," ([On Actual State of Investigation on lessons through the First World War by the Imperial Navy]), (The Military History Department of National Institute for Defense Studies, 1996), pp.66-67.

Very few reports have titles concerning submarines or even a chapter on the topic, few.²³

Among those reports, there is a report written by Lt. Commander Nobumasa Suetsugu who was later promoted to an admiral, emphasizing submarine warfare. He showed a keen interest in a book entitled, "The Submarine's Almighty" written by Rear Admiral Scott of the British Navy. He reported that "Scott sets a very high value on submarines but still regards warships as most important." He focused on "fleet operations and submarines." He concluded that a role of submarines of interrupting the enemy SLOCs was minor when compared with that of warships winning a decisive fleet-on-fleet engagement, establishing command of the sea. He did not make the connection that there were multiple ways to lose command of the sea. Japanese naval doctrine seemed to assure that command of the sea could only be lost through fleet-on-fleet engagements. It did not take into account the ability of submarines to erode command of the sea, particularly in a theater as vast as the Pacific Ocean. He does not mention at all the submarines potential to interrupt enemy SLOCs without command of the sea, nor the influence of submarines on the entire war or on overall naval strategy.²⁴ That is to say, he recognized the powers of submarines but only in the context of their effectiveness in attacking an enemy's capital ships. Commander Suetsugu designed the so-called gradual decrease strategy for U.S. from his observation that submarines might be useful for fleet operations as surprise combatant. This idea of the gradual decrease strategy was encouraged by the Armament Reduction Treaty, and later remained official basic strategy of the Imperial Japanese Navy in its war plans for naval battles against U.S. until just before the start of the Greater East Asian War. Admiral Suetsugu, having been promoted to a rear admiral in 1923 after his return to Japan, was assigned as commander of the First Submarine Fleet, where he implemented his strategy.

Another report was written by Lt. Commander M. Niimi.²⁵ The report, after mentioning the necessity of protecting communication lines, continued, "The interruption of trade at sea is necessary. . . . When our country goes to a war against a hypothetical country (the U.S.), the interruption of the trade would be the most effective economic blow that we can deal the enemy, in view of a fact that the enemy has an extremely close trade relationship with the Mainland China. Therefore, if the interruption is effective, the enemy's major fleet would be forced to go to the West Pacific Ocean, which would give our fleets an opportunity to battle with them."²⁶

²³ Ibid., p.71.

²⁴ Ibid., p.72.

²⁵ Niimi Seiichi, "Senshi Kenkyu-hokoku Sono-San Jikyusen no Junbi ni kansuru Shoken," ("Study Report of War Histories Vol.3 - Findings of Preparations for wars of attrition"), (1925, Possessed by National Institute for Defense Studies), dated as Aug. 1st, 1925. However, there is a possibility that this was rewritten after the Second World War by the author himself using Chinese characters and Hiragana letter, judging from the use of Hiragana letters in a mode used only after the War, and the manuscript papers used.

²⁶ Ibid., p.32.

Although Niimi perhaps overestimated the trade between U.S. and mainland China, his strategy proposed interrupting the enemy SLOCs in order to decoy the enemy's major fleets to the West Pacific Ocean where Japan would have the advantage of short SLOCs. These reports referring to the significance of submarine strategy were extremely rare.

In the long run, the Suetsugu Report recommending the use of submarines as auxiliaries in the role of surprise combatants in the decisive fleet engagement became the keynote report from war attaches in the First World War.

(3) The arms reduction treaty period; Submarines as a means to supplement numerical inferiority

A. The Washington Conference

In February 1922, Japan signed the Washington Treaty, restricting its naval tonnage to 60% of that of U.S. or Britain. At the time, there were discussions about submarines. Britain insisted on the total ban of submarines. Japan opposed this for the following reasons: "The abolition of submarines has two sides, costs and benefits to Japan, and a conclusion depends on which one will be regarded as more important.

From the viewpoint that we may be forced to surrender without battling due to a threat the trade posed by many hostile submarines, the ban of submarines would be advantageous. From the viewpoint that our Navy that is inferior in tonnage will have difficulty resisting a superior enemy by conventional means, and therefore, we have no alternative way to seek victory than the use of submarines, then the total ban would be disadvantageous to us. Considering the above regardless whether submarines are annulled or not, our trade cannot avoid an enemy threat as long as the enemy's fleets are superior. In addition, if submarines are banned, the threat and damage to us would be more than the case of , as the enemy's fleets would navigate our country's coastal waters depending on their superiority. In the long run, the ban of submarines would not be favorable to us, rather it would create the disadvantage to us of denying us a strategic means to resist a superior enemy."²⁷

The above conclusion demonstrated a lack of an analysis of the past or insight into the future. In the initial stage of the First World War, Germany successfully employed submarines to compensate for their naval inferiority. However, the German submarines lacked the speed to fight British warships, therefore, Germany used its submarines to interrupt the enemy SLOCs. The above-mentioned conclusion by the Imperial Japanese Navy missed this. The Japanese analysis also did not take account the possibility for submarines to focus on interrupting our SLOCs without the command of the sea, and in so doing, deprive our major fleet its base of operations. It did not occur to Japanese military planners that the enemy might avoid

²⁷ *Senshi Soshō – Sensuikan-shi*, pp.24-25.

decisive battles, concentrating its interrupting our SLOCs to cuts off our food and military supplies. This means that Japan did not anticipate the nature of the future U.S.-Japan war. The Washington Conference never reached an agreement for either banning or limiting the quantity of submarine but merely recommended their use for humanitarian purposes.

B. The London Conference

In the period from 1922 until 1929, it did the navy produce a study specifically on the use of submarines to the attack transport shipping. The 1922 study was entitled "The Way to Attack against Transport Ships with Submarines."

It envisioned a new submarine doctrine to be in place by 1929: "In a wait and attack strategy submarines would keep watch over ports or harbors containing hostile vessels and follow those depart from the port or harbor for reconnaissance of the enemy's movements. For in this strategy Japanese naval fleets would wait and intercept a superior number of enemy ships and destroy them in a decisive battles." In other words, submarine had a reconnaissance mission to report of the enemy's fleet movements.

The Geneva Conference on the Limitation of Naval Armament took place five years after the Washington Conference, but it ended unsuccessfully due to confrontations over auxiliary ships. With respect to submarines, agreement was reached regarding the measurement of the standard displacement, the restriction to a maximum size of 1,800 tons, and the service life before substitution of 13 years. The London Conference of the Limitation of Armament in 1930 set the tonnage for submarines and of auxiliary vessels. The former was set at 52,700 GT each for U.S., Britain and Japan. At that time, the Washington Treaty limited Japan to the number of major ships that Japan could legally build. Therefore, Japan focused on maximizing the number of auxiliary vessels, submarines and aircraft. In 1930, Japan possessed 70,000 GT of submarines. Though the U.S. possessed a superior tonnage, many of her ships were old, while the Japanese naval ships were regarded superior in quality. Naval supporters in Japan criticized the London Treaty as disadvantageous to Japan.

During the London Conference in 1930, a translation was published that compelled the Imperial Japanese Navy to change its "the strategy to interrupt the enemy's SLOCs." Chapter 4 of "A Doctrine of Naval Operations in light of the First World War" written by Captain Otto Gross of the German Navy and translated by the Japanese Navy high command described "A Concept of the Command of the Sea." Gross stressed the strategy of interrupting the enemy's SLOCs:

"In the future, destroying or capturing of sea the enemy's public and private maritime asset should be the principal means of winning war for a nation possessing a great naval forces.The outcome of the war becomes decisive not by military and naval power alone but by economic and financial power that will display a power not inferior to military or naval power. Therefore, any means to degrade or destroy the

enemy's economic or financial power should be regarded as a direct means for defeating the enemy. The best way to make a maritime trading country surrender is to take measures to seize such trade profits and the relevant earnings from such a country. Therefore, even if a country with a powerful navy concentrated her efforts on destruction of hostile fleets in naval operations, it does not mean that she has voluntarily abandoned trying to seize the economic and financial resources, forming the permanent basis for the enemy's military strength.In the naval operations, in contrast to land operations, operations to capture enemy assets and the strategy to interrupt the necessary enemy's SLOCs for such operations is the primary not secondary purpose of the operation. In this case, there may be an extreme circumstance where economic pressure could be the only means of fighting."²⁸

After signing of the London Treaty, the Navy high command commissioned a study on force structure required for national defense. The definite plan was completed in 1931, and delivered to the minister of the Navy. In this the Navy set up an operational plan – The plan assured that conflict with the United States could not be avoided, therefore, it was imperative to eliminate the U.S. presence in the Far East. The first stage was to occupy and destroy the American bases in the Philippines etc. This strategy was based on the Naval Strategy Principle taking the naval forces of U.S. into account. The second stage was to wait to ambush the approaching American fleet. The mission for the submarine units in the first stage was to cooperate with the conquest of the Philippines. Four units of mine-laying submarine would be assigned to interrupting the maritime traffic on the West coast of the U.S.

In the second stage, the submarine units would prepare an ambush in the inner Southern Pacific for the anticipate U.S. counter attack. The submarine forces necessary for this operation far exceeded the limits set by the London Treaty.²⁹

(4) The Sino-Japanese War

A. The use of submarines in the annual operational plan of the Imperial Navy

The Imperial Navy hoped to compensate for the restriction on the number of her capital ships under the Washington Treaty by increasing other types of equipment like heavy cruisers, submarines and aircraft. Because she was also subject to restriction of the number of heavy cruisers, the naval strategy depended on reducing the enemy's forces prior to any decisive battles. This would be done with submarines and aircraft, using an ambush strategy. This ambush mission was given to the submarine units. This required submarines with a long-range, high speed, and an enlarged in size. Such a strategy established the submarine role in decisive battles.³⁰

²⁸ Otto Gross (translated by the Imperial Navy General Staff), *The Doctrine of Naval Operations in light of the First World War*, (Originally published in 1928. Translation published in 1930), pp.84-85.

²⁹ *Senshi Soshō – Sensuikan-shi*, pp.32-35.

³⁰ *Ibid.*, p.36.

The annual operational plans for the Imperial Navy for Fiscal year 1936 through 1940 have survived. The structure of these annual operational plans differs greatly from those for the years after the beginning of the Sino-Japanese War of 1937-45. The pre-war plans assumed hostility with a single country, while those for the war years assumed hostilities with several countries.³¹ Nevertheless, those sections dealing with hostilities with the United States and the use of submarines to attrite US naval assets, were a very similar.³² “A part of the submarine flotilla assigned to the Combined Fleet³³ will advance to Hawaii as an outpost and the West Coast of U.S. upon the opening of hostilities and make efforts to weaken the enemy, whenever chances arise, while conducting reconnaissance on the movement of the enemy.” A book written by Nobuo Abe, entitled “Navy Textbook” and published at the end of 1937, has no descriptions of submarine operations to interrupt the enemy SLOC. “The duty of submarines relates to the submarine’s special capabilities. The first is stealth. It can destroy even capital ships. Therefore, submarines are capable of participating in fleet engagements. The next characteristic is enabling long range submarines to conduct reconnaissance, searches, lookouts, etc. during ambush operations Submarines are the most useful weapon for coastal guard.” In other words, the Imperial Navy considered itself as an inferior navy and hoped to use submarines as a force multiplier to compensate for this inferiority.

B. Tactics of the Combined Fleet and the use of submarines in the manual “Important Naval Tactics”

According to the operational procedures of the Combined Fleet, it could be necessary, when the fleet remained in its base, to watch the enemy’s fleet using submarines and aircrafts, and to wait and attack, follow the movement and maintain contact with cooperation of other submarine flotillas, should the enemy fleet sortie. Further, it would be necessary to drive the enemy into the range of our aircraft command and participate in search and destroy operations with our utmost power”.

Because submarines were required to participate in any decisive battles of the Combined Fleet, their participation in other operations was restricted.

“Important Naval Tactics” which outlines the fundamental doctrine of the Imperial Japanese Navy first referred to submarine battles in its second revision in

³¹ The Military History Department of National Institute for Defense Studies of Japan Defense Agency (ed.), *Shiryō-shū - Kaigun Nendo Sakusen-keikaku* ([Historical] Data Collection - The Navy Annual Operations Plan), (Asagumo Shinbun-sha, 1986).

³² It is not correct that the Navy did not consider the strategy to interrupt the enemy SLOC in battles against the U.S. at all. In the chapter of Anti-U.S. Battles of Annual Operations Plans, actions for the strategy to interrupt the enemy SLOC are always described without specifying the Submarine Flotillas as follows. “Depending on the situations, part of our naval forces may be dispatched to the West coast of the U.S. in the Pacific Ocean or to the Atlantic Ocean.”

³³ In the Annual Operations Plan 1938, “Part of the submarine forces” was modified to “Most of the submarine forces”, and in the Annual Operations Plan 1940 “Most of the submarine forces in the Combined Fleet” was modified to “The unit basing on the Sixth Fleets”.

1920. The third revision in 1928, and the fourth revision in 1934 also did so. The chapter entitled “Battles of the Fleet” in the fourth edition described the mission of submarine flotillas as attacking the enemy’s capital fleet either in coordination with other flotillas or independently. The chapter entitled “Battles of Submarines,” said that submarine flotillas should make their primary object surprise attacks on the enemy’s capital fleets through appropriate deployments. There was no consideration given to using submarines to interrupt enemy SLOCs either in the Operational Procedures of the Combined Fleet or in “Important Naval Tactics”.

C. Search and destroy missions for submarines

The use of submarines in the above-mentioned decisive battles along with the wait and destroy strategy was examined for the first time in August 1939. As a result of this exercise reports from each submarines concluded that shadowing enemy vessels was possible, but advancing to the front to attack would be difficult. In the exercise damage done by submarines to enemy destroyers and aircrafts had been extensive, while the submarines had kept watch in the vicinity of hostile ports or harbors awaiting the sortie of the enemy’s fleets.

The 1941 annual long-range special action plan took place from February till April. The findings were as follows:

“In operations by an advance party from the initial stage of the war until the decisive engagement, nowadays small numbers of submarines are unlikely to be able to fulfill their duty of shadowing hostile vessels for long periods of time given that the cruising speed of hostile fleets has been increased and their watch on submarines has become more strict.”

During the second drills of the second stage conducted in October 1940, the interruption of traffic lines was studied and practiced. The findings of the drill were as follows: “(1) The number of merchant vessels attacked by submarines was 133 in five days Submarines used for long-term operations to interrupt the enemy LOC should be provided with ordnance allotted for wartime and spare torpedoes. (3) For the efficient and proper execution of the wait and destroy strategy against a hostile sea convoy, it is necessary to detect the hostile vessels with the cooperation of aircrafts and to change to the appropriate and controlled deployment of the submarines. (4) Many of our submarines were detected by radar.”

One year before the attack on Pearl Harbor, Japan could get lessons how to employ the submarines. These drills took place against the backdrop of the Sino-Japanese War of 1937-45. The Imperial Navy implemented a naval blockade of specific South Chinese ports in 1939, and all South and Central ports in 1940. That is, the Imperial Navy was carrying out blockade operations in order to interrupt commerce from the beginning of Sino-Japanese War of 1937-45.

This was the fact when the war game findings had been submitted that submarines were more suited to commerce interruption than to wait and destroy

operations.

(5) World War II in the Pacific - Actual use of submarines

Although the interruption of enemy SLOCs was not considered a key mission for submarines, after Pearl Harbor, special purpose submarines were developed for this purpose. In March 1942, the Eighth Submarine Flotilla (comprising two special purpose cruisers and three detached units each consisting of 11 submarines) took charge of the secondary special attacks the primary being the Hawaii operation. The major assignments of this Flotilla were: search and destroy mission aimed at the enemy's main naval ships, and the interruption of maritime traffic lines. The Indian Ocean (the Eastern African Coast) was assigned to the "Kou" Advance Unit as its operational sea area.

A. Development and operations of the "Kou" Advance Unit.

The "Kou" Advance Unit departed Kure Naval Base in mid-April of 1942 and deployed to the south of Madagascar Island in mid-May.³⁴ At the end of May, it carried out a special attack on Diego Suarez (Fruits of the attack were the destruction of warships and oil tankers). Immediately afterward on June 5, a subordinate unit comprising four submarines began to interrupt a traffic on the Mozambique Strait. Operations lasted one week, resulting in the sinking of twelve ships (52,840 GT). On June 17, subordinate units gathered at a scheduled rendezvous point and received supplies from the *Hokoku-Maru* and the *Aikoku-Maru* to carry out a second operation from the end of June until mid-July (about three weeks). The second operation resulted in the sinking of ten ships (50,656GT). Malfunctions of torpedoes, especially self-detonating torpedoes, impeded these operations.

B. The Imperial Headquarters' instruction to interrupt enemy SLOCs

The interruption of enemy SLOCs in the Indian Ocean by the Eighth Submarine Flotilla was satisfactory to the Imperial Headquarters. The operation gave rise to hopes that the coordination of such activities with German submarines might lead to the surrender of Britain. An outline of a report by Captain Tomioka, the Chief of the First Section of the Navy high command, prepared at a meeting of the Army and Navy section chiefs held on August 1st 1942 provided allied merchant tonnage. The figures in parentheses are actual totals, not only for the U.S. and Britain, but for all Allied nations included Norway, the Netherlands, Denmark, Greece, and Canada.

As of June 1st, Britain and U.S. possessed merchant ships of 32.75 million tons in total, including ships built before opening of the war and thereafter. Regarding the preceding, this figure was reduced to 17.45 million tons (45.70 million

³⁴ On May 5th of this year, special attack operations to Diego Suarez were carried out.

tons) since Germany, Italy and Japan sank hostile ships of 15.30 million tons after opening of the war. Assuming that 80% of the merchant fleet is navigable, the remaining ships of 14.00 million tons (36.56 million tons) will be navigable. On the one hand, as the absolute tonnage of naval ships, including oil tankers required by the British and U.S. Navies was 11 million tons, the present surplus is 3 million tons (25 million tons). On the other hand, the actual record of shipbuilding in U.S. and Britain is a total of 350 thousand tons per month. The shipbuilding record by the Allied Powers was 760 thousand tons per month in the second quarter (April to June), 980 thousand tons per month in the third quarter and 1.15 million tons per month in the fourth quarter of 1942. If Germany, Italy and Japan sink hostile vessels of 800 thousand tons per month, then, the U.S. and Britain will have no spare capacity in six and a half months. (The actual record for the Allied ships sunk by the Axis Powers was 990 thousand tons in the second quarter and 900 thousand tons each in the third and fourth quarters.)

Transport vessels of the Allied Powers ship 120 thousand tons of oil per month from Persia to Australia. There will be at least 2 million tons in the Indian Ocean. In addition, there will be merchant vessels hired for military use. Germany will have 300 submarines shortly and they will definitely sink a net of 400 thousand or 500 thousand tons of ships. From the above, if the Allies did not have a surplus of 3 million tons, something would happen among the Allied Powers within six months.

However, this full-scale operation to interrupt enemy SLOCs had to be postponed because of Guadalcanal.

C. The loss of Allied merchant vessels to the Japanese submarine fleet

The loss of U.S. and Japanese merchant vessels by submarines for the period from 1942 until 1944 is shown in Fig.1. The figure shows a rapid increase in Japanese losses, particularly from mid-1943 onward. Contrary to established beliefs, the U.S. losses to submarines were greater than those of Japan during the first months of the war before stagnating. Thereafter, Japan never equaled its early records. In other words, in the initial stage of the war the Imperial Japanese Navy did use submarines to interrupt enemy SLOCs, but this was not the main mission of the submarine fleet even then. Most of the enemy's capital ships were lost during the attack at Pearl Harbor. Therefore, an operational target was assigned to submarine flotillas. This enabled submarines to carry out independent operations and led to good results. In fact, after outbreak of Guadalcanal, submarines began to target the enemy's aircraft carriers. But the efficacy of submarines gradually diminished in inverse proportion to the progress of anti-submarine warfare by the U.S. Navy.

[Remarks]

Data on the loss of the Allied merchant ships by Japanese submarines are based on Jurgen Rohwer, "Die U-Boot-Erfolge der Achsenmächte" 1939-1945, J.F.Lehmanns Verlag Munchen, 1968, and data on damages of Japanese merchant ships by "Maritime Defense Warfare" by Atsushi Ooi (AsahiSonorama, 1983)
(The original source is "The United States Strategic Bombing Survey".)

2 Analysis

(1) Prediction on the form of wars

Looking at the use of submarines after the Pearl Harbor by Naval Division of the Imperial Japanese Headquarters, it becomes clear that the Navy did not correctly understand the nature of the war it was fighting. The Imperial Navy did not have an idea of employing submarines to interrupt enemy SLOCs during the War. (Although the Admiral Shigemi Inoue had proposed large scale use of submarines to interrupt enemy SLOCs to Hawaii and the West Coast of the U.S. mainland,) the Japanese Navy remained fixated on fleet-on-fleet scenarios. While such a focus might have been appropriate in the previous era of limited wars, it was anachronistic in the new era of total war, where victory would come through a superior ability to withstand attrition. (The actual war was a war between the Axis and the Allied Forces as shown in Fig.2. It was a global logistical warfare over routes to the battlefield by land, sea and air. Therefore, the defense and interruption of logistical lines became an important factor determining the outcome of the total war.)

(2) Potential reasons for the failure to optimize the use of submarine – The unspoken premises

The Japanese failed to focus on a *guerre de course* because of two flawed assumptions. First it was assumed that the U.S. would not be vulnerable to an attack on its logistical lines. Second it was assumed that submarines constructed for anti-warship activities would be equally effective for anti-merchant vessels.

A. Ineffectiveness of a *Guerre de Course* against the U.S.

The aforementioned annual operations plan of the Imperial Navy had been revised in Fiscal year 1938 to the plan for a war not against one, but multiple hostile nations. However the positioning of the fleet differed for the “case of opening a war against Britain during the operations in China” from the “case of opening a war against U.S. during the operations in China”. The latter case has already been discussed. In the case of war against Britain the fleet would be deployed “to threaten the traffic lines between England and Singapore and Australia/New Zealand, and to prevent the transportation of military forces to the East by Britain.”³⁵ That is, if a war opened against Britain, Japan would have a capital fleet in Asia superior to that of Britain. In such a case, the Japanese Navy believed that a strategy to interrupt the enemy SLOC by submarines would be highly effective.

In a series of books on the history of war, there were descriptions that the “effects of a strategy to interrupt the SLOC are questionable against the U.S., a hypothetical enemy.” This was because such a strategy was intended to interrupt trade but the U.S., in contrast to Great Britain in World War I, did not depend on trade. Moreover, if Japan managed to close off the Pacific, trade would still reach the U.S. via the Atlantic. It concluded: In a nation like the U.S. which does not depend at all on the importation by sea, the economic pressure exerted by the command of the sea will be ineffective. To influence such a country, there was no alternative to occupying islands or part of the territory belonging to such a country or a determined invasion.”³⁶

This logic has persuasive, because Japan could not occupy the continental U.S., only Hawaii. However, a *guerre de course* has another aim, that is, to interrupt the enemy’s military supply route. Battles in the Pacific Ocean seemed to be a contest for control over the islands there. The occupying nation was responsible for supplying to the island. Or a nation (which had lost the islands) had to provide the weapons and supplies for its recapture. This entailed a contest to control or sever supply routes. From a global point of view, the Middle East became the decisive theater in 1942, and in a global logistical warfare between the Allied and the Axis Powers. These operations to destroy hostile supply lines entailed a strategy to interrupt the enemy SLOC. Nevertheless the use of submarines in the *guerre de* remained a minor mission for submarines in the doctrine of the Imperial Navy during the war.

Was the U.S. really not at all dependent on imports by sea? According to the data prepared by the U.S Navy concerning the U.S. dependence on overseas imports (the data is for 1946), it was fully dependent on overseas imports for tin, tin ores, rubber, chrome ores, vegetable oil, manganese ores, fibers for manufacturing marine

³⁵ NIDS, *Kaigun Nendo Sakusen-keikaku* – The Imperial Navy Annual Operations Plan, (Tokyo: Asagumo Shinbun-sha, 1986), pp.222-223.

³⁶ Gross, *The Doctrine of Naval Operations in view of the First World War*, p.79.

ropes, among others.³⁷

B. The effectiveness of submarines for anti-warship and anti-merchant vessels

The Imperial Japanese Navy assumed that submarine suitable for anti-warship missions would be equally effective against merchant ships, but that the reverse would not be the case. It was incorrect for several reasons: Against warships, submarines required high speed, a large size, high performance, heavy armament, and rigid and distinguished protective power. This type of submarines was not suited to mass production. These specifications would have possibility to become fatal for interrupting SLOCs. The U.S., taking into account lessons from the First World War, did not adopt diversified types but the Gato type, which was inferior to Japanese submarines. The U.S. concentrated on mass production of standardized ships and submarines during the War. The time required to construct submarines (Type B of 2,200 GT) in 1942 in Japan was a minimum of 24 months. Whereas it took the U.S. 9.5 months to construct submarines (Gato type of 1,475 GT). The cost of a submarine in Japan was 15.5 million Yen while compared to 9.2 million Yen in the U.S. at an exchange rate of US\$1.= ¥4. In other words, a Japanese submarine cost 1.7 times as much as a U.S. submarine.³⁸

(3) Problems of crew organization for the submarine

In 1920 just after the First World War, the Navy Submarine School, a school exclusively for training submarine crews, was officially established in Japan.³⁹ In August 1924, it moved to a new school building at the Kure Naval Base. The school commandant had been in a subordinate position to the Chief of the Navy Education

³⁷ The Operations Division Office of the Chief of Naval Operations Department of the Navy, *U.S. LIFELINES: Procurement of essential materials* –1946., Washington, D.C., 1947.

³⁸ With regard to the cost and building time, refer to attached tables of *A History of Kawasaki Heavy Industries Co.*, (K.H.I, 1959) and *A 50 Years History of Kobe shipyard, Mitsubishi Heavy Industries, Reorganized* (MHI Kobe Shipyard, 1957), p.35 and *Senshi Soshō – Kaigun Gun Senbi (1)* ([War History Series-Navy Armaments (1)]), (Asagumo Shinbun-sha, 1969), pp.500-501. However, those costs quoted here are based on the “Fiscal Year 1941 Explanatory Budget Proposal.” of the Navy Department. The building period and costs of U.S. submarines quoted are based on a book, Gary E. Weir, *Forged in War*, (Naval Historical Center, Department of Navy, Washington D.C., 1993), pp.34-35. But the costs are for 1942 and deflated to those for 1941. Refer to U.S. Department of Commerce, *Survey of Current Business*, 1947, Supplement.

³⁹ Rear Admiral Kiyotane Yasu of the Navy high command submitted the following opinions, “Sensuikan Kokuki ni kansuru Chuo-kikan Kyusetsu no Ken,” ([“Proposal on the Prompt Establishment of a Central Organization for Submarines and Aircraft”]) in *Nihon Kaigun Kō ku-shi Hensan Iinkai* (ed.), *Nihon Kaigun Kō ku-shi (3) - Seido Gijutsu-hen*, ([A History of the Imperial Navy Air Force (3) - System and Engineering]), (Jiji Tsushin-sha, 1969), p.29. This proposal pointed out that the conventional system is incomplete to cope with rapid development of submarines and aircraft and counter measure against submarines and aircraft, and therefore it is a matter of urgency to establish a new system to take charge of research and investigation, planning and execution under an independent organization. It seems that this proposal triggered the establishment of the submarine school.

Division at the time but by an Imperial command in 1923 he was transferred to a position subordinate to the Commander-in-chief of the Kure Regional Admiralty. (This administrative change meant that any lessons concerning submarine warfare would be funneled through the Commander-in-Chief of the Kure Regional Admiralty, not directly to the Naval High Command. This meant that key information concerning the lessons would not necessarily reach the High Command.)

Between 1936 and the attack on Pearl Harbor in 1941, 363 officers and 5,414 petty officers and sailors completed the course of the Navy Submarine School. (The number of personnel completing the course rapidly increased from 1940 on.) In December 1941, Japan possessed 60 submarines. Assuming that the each submarine required a crew of 60 to 90 sailors, almost all personnel who had completed the submarine course would have been assigned to submarines; there was no surplus personnel.

In July of 1919, the Temporary Submarine Department had been established to take charge of the administrative matters concerning submarines in the Bureau of Naval Affairs. Then, in October of 1920, Department Seven of the Naval Ordinance Command replaced the Temporary Submarine Department. While Department Seven remained small, Department Six, in charge of naval air weapons was separated from Naval Ordinance Command in 1927 and became a large independent organization called the Naval Air Force Headquarters. Submarines have narrow cabins and small crews, requiring special logistical support. Establishment of such an organization called Submarine Base Unit was established in March 1941 to provide such support. Eleven Units were organized in a period from April 1941 until July 1944.

According to a chapter entitled “Utilization of Lessons from Wars” in “A History of Submarines”⁴⁰:

“Why is not adequate reflection given to the use of submarines but the same errors repeated? Why were not adequate studies made on counter measures for the enemy’s anti-submarine warfare? No military lessons are utilized concerning problems on submarines or self-explosion of their torpedoes, no reflection on the Gilbert Islands in Operation “A-go” nor on the breaking through the Bay of Biscay by Japanese submarines visiting Germany.

Lessons from wars related to submarines are submitted by respective submarines and the Submarine Flotilla Command, and studying the lessons will be a duty of the Navy Submarine School. Opinions about these lessons were to be studied by the top management and senior command, and appropriate measures had to be taken. However, the School did not have the authority to exercise such power and it was at Kure far from the Imperial Command. While the Naval Air Force that organized the Naval Air Force Command had the Yokosuka Air Base but short distance from the headquarters, and so grew rapidly and reported directly to the

⁴⁰ *Senshi Soshō – Sensuikan-shi*, pp.447-448.

headquarters, the submarine forces remained weak and inadequately prepared. Though the Navy Submarine Division was organized in 1943, the timing was too late and the authority inadequate. The Navy system and organization to utilize military lessons were defective. In addition, persons connected with submarine matters lacked creativity.”

(4) A tentative plan for the use of submarines flotillas in the spring of 1942

If the aforementioned Tomioka's conception had been put into effect in March 1942, what would have been the consequences for the Allied logistical line off the East coast of the African Continent? In this analysis it is assumed that Japan had adopted the “Defend in the East and Advance in the West” strategy,⁴¹ advanced to Diego Suarez off of Madagascar and was utilizing this port as its operational base before British occupied the Island. (This is not an unrealistic hypothesis at all. At that time, Madagascar was a French territory and under a governor-general dispatched from Vichy. There was a high probability of a bloodless occupation of Madagascar like that of South Indochina.⁴² In fact, because Britain worried about this, it occupied the Island on May 5th.)

Four submarines of the aforementioned “Kou” detached force sank twelve merchant vessels totaling 52,840 GT at the Mozambique Strait during the 1st week of June. This converted to a kill ratio of 60,000 GT per month destroyed by one submarine unit. According to the British statistical data, about 80 to 90 Allied vessels (400,000 to 450,000 GT) per month transited in this area.⁴³ Assuming that the sinking capability of a single submarine remained unchanged, 7 to 10 submarines would have been sufficient to cut off the SLOC. The kill ratio has been adjusted downward on the assumption that the Allied Forces would have taken counter measures. To constantly deploy such a number of submarines in this sea area, a total of 21 to 30 submarines consisting of three submarine flotillas would have been required. Since the Imperial Navy possessed 60 submarines at the time of opening the War, this strategy would have required the entire submarine forces given maintenance requirement. In that meaning, the “Defend in the East and Advance to the West” strategy that should shift defense in the Pacific theater is essential as a basic premise in this operation.

In 1942 the U.S. constructed ships totaling 5,393,000 GT, that is, 450,000 GT per month. (This was about 1.8 times the capacity estimated by our higher naval command as shown in Tomioka's report.) This equaled the tonnage lost to Japanese

⁴¹ Ken'ichi Arakawa, “Nanpo Shigen Kanso Mondai,” ([“The shipping of Southeast Asian Resources Back to Japan”]) *Rikusen Kenkyu*, Vol.47, 1999, p.97.

⁴² Kyoichi Tachikawa, *Dainiji-Sekaitaisen to Furansuryo Indoshina* ([The Second World War and French Indo-china]), (Sairyu-sha, 2000), pp.221-222.

⁴³ C. B. A. Behrens, *MERCHANT SHIPPING AND THE DEMANDS OF WAR*, London: Her Majesty's Stationery Office & Longmans, Green & Co, 1955, p. 296.

submarine flotillas in the Indian Ocean.

However, an important point here is not that the quantity of sunk ships is nearly equal to the quantity of newly built vessels in the U.S. but that this SLOC is interrupted at this time. 2,145 tanks and 1,969 aircraft were supplied from England and the U.S. to the areas surrounding the Indian Ocean (the Middle East, Persian Gulf, and India) by the Allied vessels through this route in the first six months of 1942. Furthermore, during the same period, 44,425 vehicles had been supplied from England and 81,470 from the U.S. to this area through marine transport.⁴⁴ Therefore, the war situation at the African front and the Eastern front might have been changed if this operation to interrupt the SLOC had been successful.

Conclusion

Why was the Imperial Navy not aggressive in developing a strategy to interrupt enemy SLOCs? A conclusion made by our investigations and analyses so far is as follows.

Tetsutaro Sato's "doctrine concerning placing a priority on armaments for the command of the sea – that is, the principle of decisive battle supremacy" became navy doctrine. It combined with an image of the decisive victory over Russia in the Battle at the Japan Sea. At the same time, Admiral Togo's authority, passed straight into the untouchable sanctuary of an "order of the Emperor."

Submarines made their first appearance during the First World War as a weapon of great potential. The Imperial Japanese Navy did not try to use submarines to disrupt SLOCs because it could not adapt itself to the obvious change in warfare, from limited to total war model. The Imperial Japanese Navy before the First World War relied on the doctrine of placing the utmost priority on decisive battles by fleets to secure the command of the sea or control over the sea lanes. (It does not mean that they did not understand the concept of cutting the enemy line of communication, but the doctrine placed utmost priority on decisive battles by major fleets to acquire control of the sea as the basis for free operations against the SLOCs.) Naturally, fleet engagements were merely a means of securing control over the sea, and placing the utmost priority on such battles was merely a reflection of doctrine and finally of an Imperial edict.

The Imperial Japanese Navy observed "The New Reality" of total war from the viewpoint of a decisive fleet-on-fleet engagement. The appearance of the submarine was an event that should have forced the Imperial Japanese Navy to modify its concept of "command of the sea." But the Imperial Japanese Navy did not modify its doctrine. Rather it dealt with submarines by asking how they could be used in the decisive fleet battle. As a result of several naval exercise during

⁴⁴ *Ibid.*, pp.309-311.

Sino-Japanese War of 1937-45, operational commanders frequently reported that submarines were more effective against SLOC targets than in a strategy of gradual attrition against the enemy main fleet prior to the decisive battle. The Navy as an organization did not promptly react to the new reality brought forth from these maneuvers and followed the conventional policy on the use of submarines. This deviation had a serious influence on Japanese and U.S. submarine strategy in the Second World War. In particular, it brought about a lethal result in terms of submarine production that ultimately determined victory or defeat.

In 1941, Japan had 5 facilities for the construction of submarines, that is, three Navy arsenals and two civilian shipbuilding yards. On the other hand, the U.S. had merely two arsenals and a civilian shipbuilder.⁴⁵ (Two civilian shipbuilding yards were added after the opening of the war.) Nevertheless, the number of submarines completed in both countries from 1942 till 1944 was 90 units in Japan and 171 units in the U.S., that is to say the U.S. produced twice as many submarines as Japan did. (As of 1941, U.S. had decided to concentrate the submarine construction on an ordinary type inferior in all respects to Japanese submarines built for SLOC operations.) This fact is a natural result of an organization that noted changes but could not adapt itself on its doctrine to such changes.

⁴⁵ Weir, *Forged in War*, p.34.

Fig. 1: Loss of merchant vessels by U.S. and Japanese submarines (1942-1944)

Merchant ships of the Allied nations

Japanese merchant ships

Unit: 1,000 GT

1st Quarter 1942

2nd Quarter

3rd Quarter

4th Quarter

1st Quarter 1943

2nd Quarter

3rd Quarter

4th Quarter

1st Quarter 1944

2nd Quarter

3rd Quarter

4th Quarters

Fig.2 Conceptual Diagram of Global Logistical Warfares

Production base

A Mainland

Resources zone

Production base

B Mainland

Field of a decisive battle