

Distance and Military Operations: Theoretical Background toward Strengthening the Defense of Offshore Islands

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Abstract

This paper reconsiders the significance of distance on military operations using the principle of Loss of Strength Gradient (LSG) propounded by Kenneth E. Boulding. Even today, with the developments we have achieved in power projection capabilities such as aircraft and missiles, conducting military operations in remote locations away from the home country is not an easy task. In that sense, Boulding's Loss of Strength Gradient principle remains as relevant as before in the area of military operations. Distance exerts a tyrannical influence even in the Self-Defense Forces, which have established an exclusively-defense oriented policy as the basis for national defense and in principle, based their operations within Japan. For instance, for defense operations on offshore islands separated from the mainland by oceans and long distances, the military can be expected to face unavoidable difficulties in ways such as collecting information, coordinating command and communications, mobilizing troops, ensuring continued supplies, and protecting and evacuating residents. For that reason, it is desirable to have large-scale defense capabilities and infrastructure to support the defense forces near the offshore islands, in order to complement and replenish defense capabilities that are depleted in movement. However, we could say that situating defense capabilities in areas of instability during times of normalcy, thereby eliminating the need for any movement, is still the most effective means in maintaining the strength of the nation. In that sense, the passive presence of forward deployed forces serves as an important form of deterrence and capability for responding to events.

Introduction

In the first half of the 1960s, American economist Kenneth E. Boulding made use of the Loss of Strength Gradient (LSG) principle to propound the concept that, in military operations, the further the target for attack is from its home country, the weaker its military strength becomes.¹ Long-distance mobilization not only expends cost and time; it also tends to tire soldiers out and weaken their morale as a result of exhaustion. In addition, the further the forces are from the home country, the longer the logistics line becomes; defense capabilities will thus become depleted as a result of the need for security.

However, at the same time, Boulding asserts that "It is the increase in the range of the projectile that has come with the airplane and the missile (the airplane, after all, is in a military sense mainly a manned projectile with a detachable warhead) that has caused the dramatic breakdown in the

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¹ Kenneth E. Boulding, *Conflict and Defense: A General Theory* (New York: Harper and Brothers, 1962), pp. 79, 230–231.

system of national defense as we see it today, even though the long, slow historical decline in the LSG prepared the way for this breakdown. ... Violence can now jump any boundary and the ancient concept of defense symbolized by the wall, whether of the walled city, the Great Wall of China, the Maginot line, or even the DEW line, has crumbled in ruins,"² hinting that the law of diminishing strength may become meaningless in the future. Indeed, the human race has made moving over distances easier than before through technological advancements. The arrival of airplanes has also removed the topographical barriers posed by mountains and oceans. This progress is not limited to physical movement. With developments in information technology, it has become possible to transmit not only sounds, but also words, graphics, and moving images instantaneously.

Is the influence of geographical distance on the success of military operations gradually weakening, as predicted by Boulding? This paper employs Boulding's LSG principle to reconsider the significance of distance on military operations. It then studies the defense of offshore islands as an example of whether distance has had an impact on the Self-Defense Forces, which have established an exclusively-defense oriented policy as the basis for national defense and based their operations within Japan.

1. The Inverse Correlational Relationship between Distance and Defense Capability

(1) The Tyranny of Distance and Loss of Strength Gradient

Historically, in military operations, distance between one's country and its opponent has been used to the advantage of the defending party, and to the disadvantage of the attacking party. For instance, Australia is a continent located 12,000 miles away from Western Europe, and its distance or isolation from other countries has had an influence on the shaping of historical perspective and national image among the Australian people.³ Although the isolated geographical location of Australia has made it relatively easier for the country to stay safe, it has also been steeped in fears of facing international isolation. On the other hand, Napoleon's Moscow march in 1812 was forced to retreat after his troops fell to the mercy of harsh weather conditions, as well as hunger and exhaustion brought about by the movement over long distances. In the Russo-Japanese war, one of the reasons for the victory of Japan, a small nation, over Russia, a large one, was the short distance to the battlefield. The Russo-Japanese war was fought in the Far East, an extremely long distance away from the industrial heart of Europe, in a time when means of transportation were still undeveloped. As such, it took time to transport soldiers and ammunition from the heart of Russia to the battlegrounds in the Far East, and Russia had no choice but to rely on the Trans-Siberian Railway as the only means of overland conveyance. As a result, Japan, which had an overwhelming advantage with regard to distance to the battlefield, strategically divested Russia of its hegemonic power.⁴ In the Battle of the Sea of Japan in 1905, Russia's Baltic fleet partook in the battle after sailing continuously for approximately seven months in order to cross a massive distance of 33,340km. Each warship was fully laden with the coal required for the voyage as well as other supplies, and the adherence of shells to the bottom of the ships as a result of the long voyage, among other factors, contributed to

² Ibid., pp. 267–268.

³ Geoffrey Blainey, *The Tyranny of Distance: How Distance Shaped Australia's History* (Melbourne: Sun Books, 1966). Toshihisa Nagasaka, Hiroshi Kobayashi, trans. (Tokyo: Saimaru Shuppankai, 1980), pp. 7–8.

⁴ Yonosuke Nagai, *Gendai to Senryaku* [Modern Times and Strategy] (Bungei Shunju, 1985), p. 315.

slowing down the ships and hastening their sinking. It is also said that exhaustion and low morale among the soldiers led to their defeat. They failed to keep up a high level of motivation in a war in a distant land that had no direct impact on the safety of the country and its citizens.⁵

Even if, for example, a country had greater national and military power over its opponent, it is possible for its power to become weakened should the point of engagement be away from the home country, but in or close to enemy territory. Boulding considered that “the further from home any nation has to operate...the less strength it can put in the field.”⁶ He then explains the existence of critical boundaries, which are less clearly defined than the legal boundaries between countries. If organizations from other countries violate this boundary, confusion will arise in both the invading country and the country that is being invaded. According to Boulding, although violations to the critical boundary may only evoke a diplomatic protest, a war will be unavoidable if the actions cross the respective boundaries and violate the final critical boundary.⁷ Hence, distance between confrontational states has an impact on the ability of the state.

Boulding’s law of diminishing strength can be explained by the Loss of Strength Gradient. Figure 1 shows the distance AB (=S) between countries A and B. The strength of each country is assumed to be the maximum possible for the territory of that country, and is termed “home strength.” The home strength is shown as H (=a) for Country A, and C (=b) for Country B. As shown by the straight line HEH’ for Country A and the straight line CEC’ for Country B, strength diminishes the further the distance from the home country. A boundary of equal strength exists at D, where the two gradients of strength intersect at E. Country B is dominant over Country A in the area to the right of DE, while Country A is dominant over Country B in the area left of DE.⁸

In other words, since strength diminishes as distance increases, distance is thus an inverse function (1/S), and the multiplier of distance and power determines the relative preponderance of combat strength at the point of engagement (battlefield). For example, the larger of the multiplier of the home strength of Country A (a) and the inverse function (1/S1) of the distance to the point of engagement, and the multiplier of the home strength of Country B (b) and the inverse function (1/S2) of the distance to the point of engagement, will have the upper hand at the point of engagement.

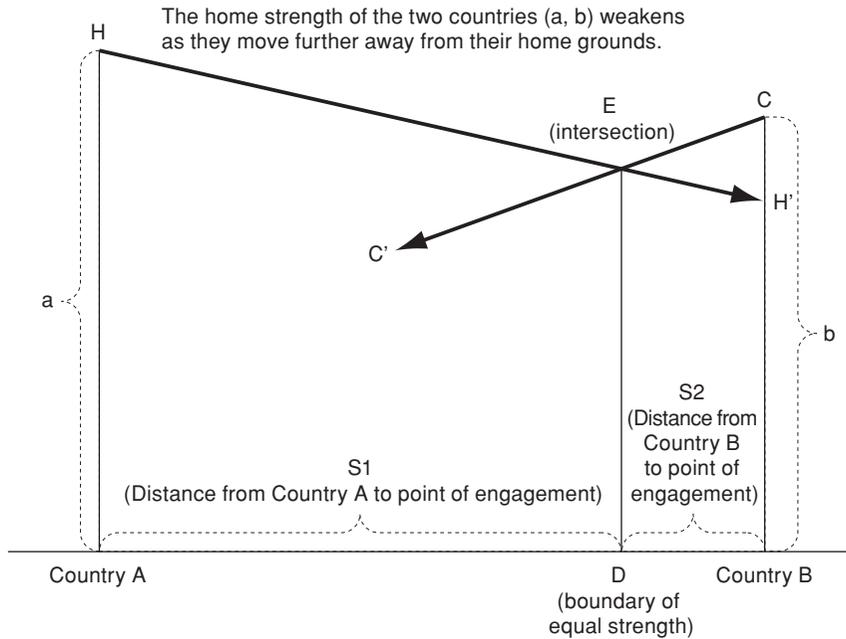
⁵ Bruce Bueno de Mesquita, *The War Trap* (New Haven and London: Yale University Press, 1981), p. 41.

⁶ Boulding, *Conflict and Defense*, 230–232. Similarly, Spykman said that “the tactical strength of a fleet is in inverse ratio to the distance from its base.” Nicholas J. Spykman, *America’s Strategy in World Politics: The United States and the Balance of Power* (New York: Harcourt, Brace, 1942), pp. 393–394.

⁷ Boulding, *Conflict and Defense*, pp. 265–266.

⁸ *Ibid.*, p. 230.

Figure 1: Loss of Strength Gradient (LSG)



Source: Based on Boulding (1962), Figure 12.1.

In the case where attempts are made to take action remotely while the boundary of equal strength exists near the home country, various forces will come into play for the purpose of overcoming the distance, thereby giving rise to friction. When transportation lines become extended, the transportation of soldiers, and command and control, are liable to become chaotic. The control of these aspects also expends energy, further weakening and dissipating the home strength. With the separation from the mainland, personnel become unaccustomed to the land, such as language, customs, and culture, resulting in loss of courage and moral core, and a drop in individual and group morale. Furthermore, having the battlefield in a distant land also makes it more difficult to sustain the citizens' support toward the country's involvement in war.⁹ As such, although the country must project sufficient military strength to the point of conflict, the longer the distance, the higher the costs are, which pose as a barrier to operations.¹⁰

Generally, in order for the attacking party to win on the battlefield, it is believed that there is a need for the attacking party to possess three to five times the defense capability of the defending party, which has the advantages of geography and of being in standby status.¹¹ According to Liddell Hart, during the Second World War, when Allied ground strikes were less than five times those of

⁹ Bueno de Mesquita, *War Trap*, p. 41.

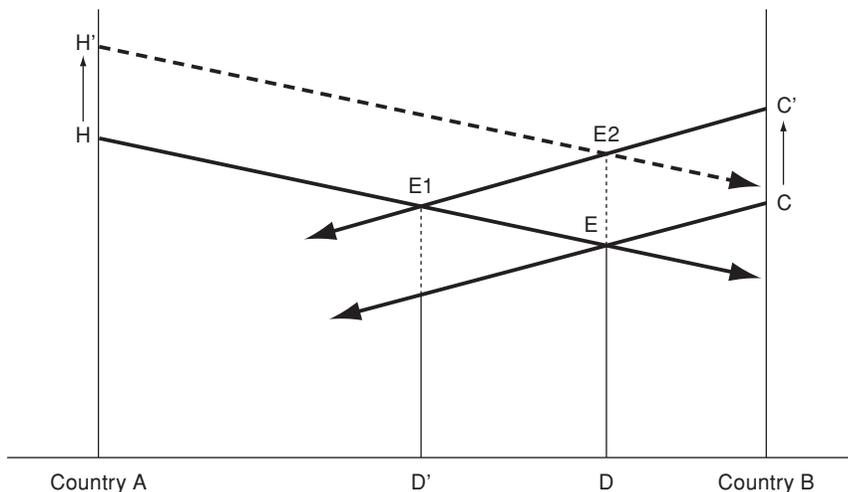
¹⁰ Paul F. Diehl, "Contiguity and Military Escalation in Major Power Rivalries, 1816–1980," *The Journal of Politics* 47 (4) (November 1985), p. 1207.

¹¹ *FM100-5: Operations* (Washington, DC: U.S. Department of the Army, 1976); John J. Mearsheimer, "Assessing the Conventional Balance: The 3:1 Rule and Its Critics," *International Security* 13 (4) (Spring 1989), pp. 54–89; Joshua Epstein, "The 3:1 Rule, the Adaptive Dynamic Model, and the Future of Security Studies," *International Security* 13 (4) (Spring 1989), pp. 90–127.

the enemy forces, they rarely succeeded.¹² When the distance to the battlefield is long, in order to possess a military strength that is three to five times that of the enemy's at the point of engagement, it becomes necessary to possess even greater military strength in the home country. Jervis asserted that a situation in which the attacking party has the advantage is one in which it is easier to destroy the enemy troops and take the enemy territory, than to defend ourselves.¹³ Of course, the objectives of making an attack are not restricted only to occupying the enemy territory, and occupying and possessing territory is not a necessary or sufficient reason to win a war.¹⁴ However, at the point of encounter with the enemy, or in the occupied region, the degree of dominance a military force has, and in particular, its ability to possess ground assault capability, are the key to winning the battle. In order to carry out military operations over long distances, significant military and national strength are needed in order to overcome these distances. That is why military expansion advances among countries that are planning to attack.

As shown in Figure 2, this can be explained using the graph that illustrates Boulding's Loss of Strength Gradient. In order for Country B to position the boundary of equal strength further from the home country, it needs to increase its home strength; C is raised to C'. With that, the boundary of equal strength moves from E to E1 (to position D'). If it does that, Country A would also wish to position the boundary of equal strength further away, and like Country B, will increase its home strength from H to H' by allocating national resources to the military. As a result, the boundary of equal strength is once again pushed back to E2 (returning to position D). In this way, an arms race will ensue in order for each country to overcome distance.¹⁵

Figure 2: Boundary of Equal Strength and Growth in Military Strength



Source: Based on Boulding (1962), Figure 12.1.

¹² Basil Henry Liddell Hart, *Deterrent or Defense: A Fresh Look at the West's Military Position* (London: Stevens and Sons, 1960), p. 179.

¹³ Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (2) (January 1978), p. 187.

¹⁴ Bernard I. Finel, "Taking Offense at Offense-Defense Theory," *International Security* 23 (3) (Winter 1998-99), p. 183.

¹⁵ Boulding, *Conflict and Defense*, p. 230.

(2) Distance and Frequency of War

If distance were an obstruction to military operations, would it not also be a factor deterring the temptation to go to war? Conversely, in military operations, would a short traveling distance or distances that are easy to overcome not increase the temptation for a country to go to war? For instance, although situations in which countries are separated by vast oceans or mountain ranges would work to the advantage of the defending country that wishes to maintain the status quo, they would only pose as barriers to the country planning an attack in order to break out of the status quo. As such, a lack in means of transportation served to repress the desire to attack. On the other hand, as distance is not a deterring factor in cases where countries are separated by narrow sea straits or by land, it became easier for the armies of both countries to close in on one another, thus increasing the opportunities to provoke wars.

In that sense, the Russo–Japanese war was a watershed that changed the geographical offense and defense balance for modern Japan. By gaining control of the Sea of Japan, as well as extending lines of benefit to the Korean Peninsula and stationing troops on the mainland, Japan succeeded in significantly reducing the transportation costs for the movement of soldiers and supplies. On the other hand, as a result of its deployment of forces onto the mainland, it became directly confrontational with China and Russia. This was the underlying cause that gave rise to numerous border disputes, including the Marco Polo Bridge incident (1937), the Battle of Lake Khasan (1938), and the Battles of Khalkhyn Gol (1939).

Pearson’s research is representative of analyses on distance between countries and state relations.¹⁶ Pearson studied state intervention by conducting analyses on whether geographical distance had an influence on the drive for state intervention, using national strength and geographical distance as variables. Table 1 shows the distances during intervention in other countries, in relation to national strength. According to the table, larger countries tend to intervene in countries that are further away, while a shorter distance tends to be linked to hostile interventions. In fact, 87% of hostile interventions are carried out within 1,500 miles from the home country.

Table 1: Size (power) of countries engaged in foreign intervention and geographical distance (Unit: Miles)

	0–500	501–1500	1501–3000	3001–5000	> 5000	Total
U.S. Soviet Union	0	5	1	1	22	29
U.K., France, China	1	6	7	17	4	35
India, Turkey	5	8	1	0	0	14
Five countries including Australia, Indonesia, Pakistan, etc.	4	3	1	6	0	14
10 countries including Israel, Thailand, Malaysia, etc.	28	13	0	0	0	41
12 countries including Iraq, Syria, Nigeria, Lebanon, etc.	8	6	2	0	4	20

1. Geographical distance refers to the distance from the intervening state to the capital of the intervened state.

2. Target period is from 1946 to 1964.

Source: Frederic S. Pearson, “Geographic Proximity and Foreign Military Intervention,” *The Journal of Conflict Resolution* 18, no. 3 (September 1974): 446.

¹⁶ Frederic S. Pearson, “Geographic Proximity and Foreign Military Intervention,” *The Journal of Conflict Resolution* 18 (3) (September 1974), pp. 432–460.

Fearon asserted that it is easier to enter into battle with an opponent that is nearby, rather than with an opponent that is far away, and that distance is favorable not to the attacking party, but to the defending one.¹⁷ In *The War Puzzle*, Vasquez applied analyses undertaken by Wallestein, Diehl, and Bremer to say that most international wars are fought among neighboring countries. Based on the fact that 93% of neighboring countries have hostile relations while 64% are in a state of war, Wallestein concluded that geographical conflicts, and adjoining territories in particular, are the main cause for discord.¹⁸ Holsti's analysis showed that between 1648 and 1815, 53 out of 58 wars were fought between neighboring countries; excluding imperialist wars, wars are fought between neighboring countries.¹⁹ According to data analyzed by Singer and Small, in 59 out of 67 wars (88%) fought since 1815, the opposing countries either share a joint boundary, or the distance between the two countries comprises waters less than 150 miles long.²⁰ Mearsheimer also pointed out that large countries that are situated on the same continent often attack and conquer one another. That frequency increases particularly when large countries are located next to countries with an adjoining boundary.²¹ According to Bremer's data, neighboring countries are 35 times more liable than those that are not to go into war.²²

Table 2: Main wars from 1648–1980

	Wars that include neighboring countries ¹	Other wars	Total
1648–1713	21	1	22
1714–1814	32	4	36
Total (1648–1814)	53 (91%)	5 (9%)	
1816–1980 ²	59 (88%)	8 (12%)	67

1. Refers to countries that share boundaries or countries that are separated by waters less than 150 miles apart.

2. Includes the following wars: U.K.–Persia (1856–57); France–Mexico (1862–67), Spain–Chile (1865–66), China–France (1884–85), Spain–U.S. (1898), Righteous Harmony Society Movement (1900), Italy–Ethiopia (1936), France–Thailand (1940–41). Source: John A. Vasquez, *The War Puzzle* (Cambridge: Cambridge University Press, 1993), 134; Frank Whelon Wayman and Daniel M. Jones, "Evolution of Conflict in Enduring Rivalries" (paper presented at the annual meeting of the International Studies Association, Vancouver, British Columbia, March 20–23, 1991).

¹⁷ James D. Fearon, "The Offense-Defense Balance and War Since 1648" (paper presented at the annual meeting of the International Studies Association, Chicago, February 21–25, 1995), p. 13, <http://www.stanford.edu/~jfeardon/papers/OFFDEF1.pdf>, accessed on April 15, 2009.

¹⁸ Peter Wallestein, "Incompatibility, Confrontation, and War: Four Models and Three Historical Systems, 1816–1976," *Journal of Peace Research* 18 (1) (March 1981), pp. 83–85.

¹⁹ Kalevi J. Holsti, *Peace and War: Armed Conflicts and International Order 1648–1989* (Cambridge: Cambridge University Press, 1991), pp. 48–49, 85–87.

²⁰ John A. Vasquez, *The War Puzzle* (Cambridge: Cambridge University Press, 1993), p. 134. Other studies on distance and frequency of war include Evan Luard, *War in International Society: A Study in International Sociology* (New Haven and London: Yale University Press, 1987), p. 96; Rudolph J. Rummel, *The Dimensions of Nations* (Beverly Hills: Sage, 1972); Harvey Starr and Benjamin A. Most, "The Substance and Study of Borders in International Relations Research," *International Studies Quarterly* 20 (4) (December 1976), pp. 581–620; Harvey Starr and Benjamin A. Most, "A Return Journey: Richardson, 'Frontiers' and Wars in the 1946–65 Era," *Journal of Conflict Resolution* 22 (3) (September 1978), pp. 441–467; David Garnham, "Dyadic International War, pp. 1816–1965: The Role of Power Parity and Geographical Proximity," *Political Research Quarterly* 29 (2) (June 1976), pp. 231–242; Manus I. Midlarsky, "Power, Uncertainty, and the Onset of International Violence," *The Journal of Conflict Resolution* 18 (3) (September 1974), pp. 395–431; Erich Weede, "Conflict Behavior of Nation-States," *Journal of Peace Research* 7 (3) (September 1970), pp. 229–235.

²¹ John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York and London: W. W. Norton, 2001), p. 44.

²² Stuart A. Bremer, "Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816–1965," *The Journal of Conflict Resolution* 36 (2) (June 1992), pp. 309–341.

From the previous studies described above, we learnt that the geographical conditions that a country is faced with and the distance between countries have an influence on military operations, and that these are also correlated to the occurrence and frequency of wars. Murray and Grimsley point out, “The size and location of a nation are crucial determinants of the way its policy-makers think about strategy. ... If geography has exerted a dominant influence on threat-assessment and strategy, it can also shape critical doctrinal decisions. ...the influences —or constraints— of geography can place severe limits on the achievements of national strategic aims.”²³ In the realm of international political science in recent years, Mearsheimer, Walt, Gray, and Brzezinski, among other scholars, have begun to study the concepts of geography and distance again, and the relationship between geography and international politics and security is undergoing review.²⁴

2. Advancements in Military Technology, and Overcoming Distances

(1) Distance and Advancements in Technology

Distance imposes an influence on military operations, and as mentioned before, it also has an impact on the frequency of war. As traveling became easier with advancements in means of transport and transportation, will distance cease to have an impact on military operations? Currently, it is true that navigating the oceans is no longer a difficult matter. From 1816 to 1918, the distance traveled by ships per day had been 250 miles; from 1919 to 1945, it had been 375 miles, and 500 miles after 1945. Of course, airplanes can go anywhere in a day. The Air Force commanders of both the U.K. and the U.S. have declared that their Air Forces alone, without the Army and Navy, have already succeeded in producing decisive fruits of war from the 1920s to the 1930s.²⁵ Have these advancements liberated the curse of distance in military operations?

One of the ways of overcoming distance was through technology. Advancements in mobility, long-range firepower, and information technology have, at least, changed the flow of time brought about by the barrier of distance, and reduced costs. Levy noted that when weapons have certain properties — for instance, when they have mobility —it becomes easier for attacks to be carried out.²⁶ As it has become possible to conduct stand-off attacks from a distant as a result of the technological revolution, it has also led to improvements in our defense capability. Wohlsletter also pointed out that communications and transportation costs, and particularly costs for long-distance communication and transportation, have fallen significantly as a result of advancements in military

²³ Williamson Murray, MacGregor Knox, and Alvin Bernstein, eds., *The Making of Strategy: Rulers, States, and War* (Cambridge: Cambridge University Press, 1994), pp. 7–9. Tomoyuki Ishizu, Satoshi Nagasue, trans. (Tokyo: Chuokoron-Shinsha, 2007), pp. 21–26.

²⁴ For example, Colin S. Gray, *The Geopolitics of Super Power* (Lexington: The University Press of Kentucky, 1988); Colin S. Gray and Geoffrey Sloan, eds., *Geopolitics, Geography and Strategy* (London and Portland: Frank Cass, 1999); Colin S. Gray, *The Geopolitics of the Nuclear Era: Heartland, Rimlands, and the Technological Revolution* (New York: Crane, Russak, 1977); Zbigniew Brzezinski, *The Grand Chessboard: American Primacy and Its Geostrategic Imperatives* (New York: BasicBooks, 1997); Stephen M. Walt, *The Origins of Alliances* (Ithaca and London: Cornell University Press, 1987); Stephen M. Walt, *Taming American Power: the Global Response to U.S. Primacy* (New York and London: W. W. Norton, 2005); Mearsheimer, *Tragedy of Great Power Politics*.

²⁵ Williamson Murray, MacGregor Knox, and Alvin Bernstein, eds., *The Making of Strategy: Rulers, States, and War* (Cambridge: Cambridge University Press, 1994), p. 8. Tomoyuki Ishizu, Satoshi Nagasue, trans. (Tokyo: Chuokoron-Shinsha, 2007), p. 23.

²⁶ Jack S. Levy, “The Offensive/Defensive Balance of Military Technology: A Theoretical and Historical Analysis,” *International Studies Quarterly* 28 (2) (June 1984), pp. 222–230.

technology.²⁷ Wriston asserted that information technology has destroyed the concepts of time and distance.²⁸ According to Mathews, the information revolution has given rise to new ways of power distribution, reducing the importance of the proximity of distance, and giving unprecedented power to non-state actors.²⁹

However, that has not necessarily brought about an increase in the number of wars between countries in remote lands; does distance not remain an important factor in deterring war? For instance, the Taiwan Straits measuring 60km in breadth have been the greatest factor obstructing China's control of Taiwan. Even if North Korea's missile range were extended, it would still be unable to make any significant impact on European countries. Japan's exclusively-defense oriented policy, which is one of the basic policies in the national defense of Japan, is embodied in the possession of weapons with short firing range or cruising distance and the inability to attack other countries. The existence of forward deployment bases has also had a significant influence in the age of nuclear weapons. Bombers, which are used to transport nuclear weapons, the cruising distance of missiles, and the geographical location of the platforms of the missiles, are still relevant to strategy.

All these examples speak of the correlation between distance and military strength, and it may appear that distance continues to be a determining factor for military operations. Although we have succeeded in overcoming some of the obstacles that arise in tandem with the introduction of military power and the command and communication of orders through the phenomenal development of modern technology, elements such as time, distance and weather still exert a huge influence on military operations and the option of national strategies. Gochman wondered if geographical proximity would cease to be a factor behind military confrontation, as a result of technological advancements. Contrary to his expectations, after 1870, geographical proximity has proven to be more of a factor contributing to military confrontation than before, suggesting that technological improvements had made little impact.³⁰

(2) Distance and the U.S. Armed Forces

Throughout the world, the U.S. Armed Forces are the military forces that have travelled the longest distances from the home country to conduct military operations. Most of the military operations conducted by the U.S. Armed Forces have involved expeditions overseas, and have been conducted outside of the country. While the Pacific and Atlantic Oceans serve as the bulwark of U.S. homeland security, they have, at the same time, posed barriers to military operations. Have the U.S. Armed Forces, which possesses the most advanced military technologies, already overcome the distance obstacle?

²⁷ Albert Wohlstetter, "Illusions of Distance," *Foreign Affairs* 46 (2) (January 1968), p. 245.

²⁸ Walter B. Wriston, "Bits, Bytes, and Diplomacy," *Foreign Affairs* 76 (5) (September–October 1997), p. 172.

²⁹ Jessica T. Mathews, "Power Shift," *Foreign Affairs* 76 (1) (January–February 1997), pp. 50–66.

³⁰ Charles S. Gochman, "The Geography of Conflict: Militarized Interstate Disputes since 1816" (paper presented at the annual meeting of the International Studies Association, Washington, DC, April 10–14, 1990), quoted in Vasquez, *War Puzzle*, pp. 135–136.

Former U.S. President George W. Bush declared that the U.S. Armed Forces are “able to strike anywhere in the world over great distances.”³¹ U.S. Armed Forces stationed in Europe numbered 248,000 in 1989, but had shrunk to 109,000 in 2002. The background to this drop was the fact that it became no longer necessary to station troops in distant lands because transporting large numbers of soldiers had become an easy matter as a result of technological improvements.³² Krepinevich notes, “Several events in recent years have demonstrated that traditional means and methods of projecting power and accessing the global commons are growing increasingly obsolete — becoming ‘wasting assets,’ in the language of defense strategists.”³³ In *Illusions of Distance*, Wallestein observed that the United States is able to cross vast oceans that span long distances and deliver people and resources to the coastal parts of South and East Eurasia cheaply, and that it is easier for them than for the heartland powers to conquer distances.³⁴ Bandow, who had served as special assistant to President Reagan, declared that “changing technology has reduced the value of propinquity”³⁵ and called for the early withdrawal of U.S. troops stationed in Asia and Europe. The U.S. Air Force propounds the concepts of “global mobility” and “global strike.” The former refers to commencing operations anywhere in the world, in the shortest time possible, while the latter refers to the ability to strike within hours or minutes regardless of where the “important target” is located.

On the other hand, there are also those who feel that the U.S. has remained un-liberated from the tyranny of distance. Webb argues that distance has an impact on the power to strike military logistics and enemies from a remote location, and is still an important factor affecting military operations today.³⁶ Webb asserts that the Loss of Strength Gradient still holds great significance, and argues for the necessity of forward deployment bases even today, with the advancements that have been made in transportation and projection capabilities. The first reason for that lies in the competitive nature of war. Even if we have the edge in new transportation and force projection technologies, the opponent will develop technologies such as cruise missiles and submarines to obstruct us and destroy our predominance. Secondly, Webb explains that as major powers are unable to sustain, forever, the large relative power required to overcome distances, the U.S. should focus on forward deployment bases.³⁷ Mearsheimer points out, “The principal impediment to world domination is the difficulty of projecting power across the world’s oceans onto the territory of a rival great power. The United States, for example, is the most powerful state on the planet today. But it does not dominate Europe and Northeast Asia the way it does the Western Hemisphere, and it has no intention of trying to conquer and control those distant regions, mainly because of the stopping

³¹ Office of the Press Secretary, “President Speaks at VFW Convention: President’s Remarks to Veterans of Foreign Wars Convention, Dr. Albert B. Sabin Cincinnati Cinergy Center,” The White House President George W. Bush, August 16, 2004, <http://georgewbush-whitehouse.archives.gov/news/releases/2004/08/20040816-12.html>., accessed on August 20, 2009.

³² Kieran Webb, “The Continued Importance of Geographic Distance and Boulding’s Loss of Strength Gradient,” *Comparative Strategy* 26 (4) (July 2007), p. 296.

³³ Andrew F. Krepinevich, Jr., “The Pentagon’s Wasting Assets: The Eroding Foundations of American Power,” *Foreign Affairs* 88 (4) (July–August 2009), p. 18.

³⁴ Wohlstetter, “Illusions of Distance,” pp. 242–255.

³⁵ Doug Bandow, “Quick and Full Disengagement,” Cato Institute, August 23, 2004, http://www.cato.org/pub_display.php?pub_id=2795., accessed on July 12, 2009.

³⁶ Webb, “Geographic Distance and Loss of Strength Gradient,” pp. 295–310.

³⁷ *Ibid.*

power of water.”³⁸

The concept of “Sea Basing” exists in the U.S., and represents not only recreating ground bases on fleets deployed to the coasts and landing ground battle support and troops on these bases, but rather, points to the active use of such bases as a replenishment ground and a space for repairing equipment, and for gathering and training troops.³⁹ Strong concerns that the U.S. Armed Forces may not be able to secure access to ground bases in the future underlie the “Sea Basing” concept.⁴⁰ It also demonstrates that we have not yet managed to overcome ocean distances.

(3) Distance and Air Power

Then, does the development of air power, which is not influenced by the seas, render the Loss of Strength Gradient principle irrelevant? Showing proof to the contrary, the 1995 Bosnian air strike and 1999 Kosovo war demonstrated clearly that it is difficult for air power alone to be effective against ground forces. Ground forces that have been struck have been successful in defending themselves against air strikes. The Serbian army hid in mountains and forests, or used decoys to escape mostly unscathed from NATO air strikes.⁴¹

Biddle explains that the low-cost victory in the Iraq war in 2003 was not a consequence of the paralysis of the Iraqi army by air strikes and the speed of the advancing army.⁴² The perception of air power also differs according to geographical conditions, as in this case. American and English air commanders once put too much faith in strategic bombing. In contrast, although the Germans acknowledged the value of strategic bombing, they were unable to position it as the only mission of air power. This was because, unlike U.S. and U.K. which were separated from the battlefield by the sea, the German air force, which had a contiguous battlefield on land and focused on providing support for ground battle, needed to stand up against invasions from a real and constant land.⁴³ In addition, in 1982, U.K. failed to gain air mastery over the Falkland Islands, and was unable to make effective air strikes on Argentina. The Roland anti-aircraft missile was deployed to Stanley, and the

³⁸ Mearsheimer, *Tragedy of Great Power Politics*, p. 41.

³⁹ “Fleet Response Plan,” GlobalSecurity.org, <http://www.globalsecurity.org/military/ops/frp.htm>.

⁴⁰ Williamson Murray, *Thoughts on Sea Basing in the Twenty-first Century*. Tomoyuki Ishizu, trans. Kyoichi Tachikawa, Tomoyuki Ishizu, Narushige Michishita, Katsuya Tsukamoto, ed. *Series Gunjiryoku no Honshitsu 2: Sea Power [Series, The Nature of Military Power 2: Sea Power]* (Tokyo: Fuyo Shobo Shuppan Corporation, 2008), pp. 325–355.

⁴¹ Webb, “Geographic Distance and Loss of Strength Gradient,” 306; Benjamin S. Lambeth, *Jissen ni Miru Gendai no Air Power: Wangan senso to Kosovo funso [A Practical Approach to Modern Air Power: Gulf War and the Kosovo Conflict]*, Hiroyuki Shindo, trans. Tomoyuki Ishizu, Kyoichi Tachikawa, Narushige Michishita, Katsuya Tsukamoto, ed. *Shirizu Gunjiryoku no Honshitsu 1: Air Power [Series, The Nature of Military Power 1: Air Power]* (Tokyo: Fuyo Shobo Shuppan Corporation, 2005), p. 258.

⁴² Stephen Biddle, “Statement by Dr. Stephen Biddle Associate Professor of National Security U.S. Army War College Strategic Studies Institute before the Committee on Armed Services United States House of Representatives First Session, 108th Congress on Operation Iraqi Freedom : Outside Perspectives” October 21, 2003, http://www.globalsecurity.org/military/library/congress/2003_hr/03-10-1biddle.html, accessed on June 11, 2009.

A detailed analysis of the factors contributing to the victory in the Iraq war can be found in the following article: Shigeo Kikuchi “*Iraku no jiyu — Sakusen no beigun no toransufomeshon ni taisuru eikyo [Operation Iraqi Freedom and Its Implications for US Military Transformation]*,” *Boueikenkyusho Kiyo [NIDS Security Studies]*, 8 (3), March 2006, pp. 1–19.

⁴³ Williamson Murray, “The Luftwaffe Before the Second World War: A Mission, A Strategy?” *Journal of Strategic Studies* 4 (3) (September 1981), 261–270, cited from Murray, Knox, Bernstein, *The Making of Strategy*, pp. 23–24.

British Aerospace Sea Harrier had to fly at a safe altitude of 20,000 feet, at which air strikes are not possible.⁴⁴

Even if, for example, airplanes and missiles have rendered distance meaningless, the impossibility of concluding a war or gaining victory in a battle by air power alone means that distance has retained a degree of significance. Lambeth comments on the reason for the one-sided victory of the multinational army in Operation Desert Storm. He says that while technological prowess was important, it was not a deciding factor. Better training, motivation, strength, command, tactical sophistication, and the daring implementation of operations were equally important factors contributing to victory.⁴⁵ General Tommy Franks, Commander of the United States Central Command during the Iraq war also commented that there were people in the Department of Defense who thought that it would be possible to easily conquer Baghdad with just one division of ground troops and strong air support, and that he had wanted to sweep away such foolish thoughts.⁴⁶ More than anything, even airplanes are constrained by the tyranny of distance, given the premise that aircraft carriers or air bases that can be used by airplanes exist in the vicinity of the target for the purpose of conducting an air strike.

Furthermore, it is said that the essence of war itself has now changed. Rupert Smith, a retired soldier from the British Army, observes that the large-scale interstate industrial wars among states that took place against the background of the industrial societies that were born out of industrial revolutions are no longer taking place. On the other hand, wars amongst the people such as the confrontations and battles seen in Iraq and Afghanistan exist and continue to take place on a daily basis.⁴⁷ In such battles, operations to protect the masses are given greater focus than kinetic military operations. For example, the counterinsurgency operations conducted by the U.S. Armed Forces in Iraq and Afghanistan, soldiers do not kill, wound, or destroy their enemies; rather, they render assistance to civilians and win over their hearts in order to isolate the insurgents. In other words, such “hearts and minds campaigns” are touted to be the key to operational success.⁴⁸ In such operations, it is difficult to distinguish civilians from the insurgents and conduct aerial raids, or to win over public sentiment with air strikes; hence, the role of air operations is diminished. Among believers in the Revolution in Military Affairs (RMA) in the U.S., there are many who feel that overseas bases will become unnecessary if it is possible to attack potential enemies around the world from U.S. mainland or waters. These people think that it is possible to win most battles with strong air power. However, it is not possible to win over public sentiment with military technology. In order to gain direct contact with local civilians and win them over, an army with strong ties to the people will play a significant role. Besides physical proximity, the question of how emotional proximity balance can be achieved is also increasingly being raised with respect to military operations. The need to directly inject ground troops into regions of conflict has not been lost. Murray warns, “In the current atmosphere within the Washington Beltway and throughout all too much of the American defense establishment, it has become all too easy to dismiss geography and history from the calculations of

⁴⁴ Max Hastings and Simon Jenkins, *The Battle for the Falklands* (London: Pan Books, 1997), pp. 184–185.

⁴⁵ Lambeth, *Jissen ni Miru Gendai no Air Power [A Practical Approach to Modern Air Power]*, p. 250.

⁴⁶ Tommy Franks, *American Soldier* (New York: Harper Collins, 2004), 373, cited from Kikuchi, *Operation Iraqi Freedom and Its Implications for US Military Transformation*, pp. 3–4.

⁴⁷ Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (New York: Alfred A. Knopf, 2007).

⁴⁸ *Ibid.*, pp. 279–280.

the ‘revolution in military affairs.’ Yet, both history and geography will have their revenge on US military forces, strategy, and policy in the next century.”⁴⁹

3. The Relationship Between Distance and Allies

Allies are the best means of overcoming distance. Military operations require a massive amount of logistical support, such as in replenishing supplies. In order to enable forward deployment strategy, it is vital to secure continuous replenishment based upon cooperation with allies. Does the U.S. need allies if it were able to move quickly and easily from its home grounds to regions of conflict around the world, and secure the capability to continue the battle and carry out military operations in the long term? The U.S. is continuing to place an emphasis on ally policies even now. Does this not support the fact that even a major military power like the U.S. has been unable to overcome distance and needs the cooperation of its allies? According to Murray, the injection of military strength from North America will give rise to difficult issues in the future and strategic reality will take a turn for the worse in the event that the U.S. Armed Forces are made to withdraw from its overseas bases.⁵⁰ The QDR2010 also stated that “In the future, U.S. forces conducting power projection operations abroad will face myriad challenges,” and stipulated the need to strengthen the deterrence and defeat of aggression in anti-access environments. Furthermore, the report calls for the development of the joint air-sea battle concept (hereafter, “air-sea battle”), the extension of long-range strike capabilities, the enhancement of America’s forward deployment posture, and the strengthening of base infrastructure.⁵¹

As a result of the loss of strength gradient effect, long-range strikes — in particular strikes that involve movements over oceans — require greater power than that put in by the enemy, as compared to ground strikes close by.⁵² It is not possible to carry out long-range strikes without sufficient power. The existence of bases and stopping points can make up for that loss of power. Boulding argued that the establishment of forward deployment bases can improve the Loss of Strength Gradient.⁵³ He showed that the establishment of bases and stopping points can reverse the Loss of Strength Gradient at a certain distance. As shown in Figure 3, the strength of Country A would normally fall by HEH’ as it moves further away from the home ground, and occupies an inferior position in the area to the right of intersection E. However, by erecting a transit base in an ally country, Country A will be able to increase its strength to G as it moves closer to Country B. Consequently, it will be able to maintain a distance at which it can have military superiority over Country B.

⁴⁹ Williamson Murray, *Some Thoughts on War and Geography*. Colin S. Gray, Geoffrey R. Sloane, ed. *Geopolitics, Geography and Strategy* (Frank Cass: London, 1999), p. 216. Masashi Okuyama, trans. (Tokyo: Gogatsu-Shobo, 2010), p. 127.

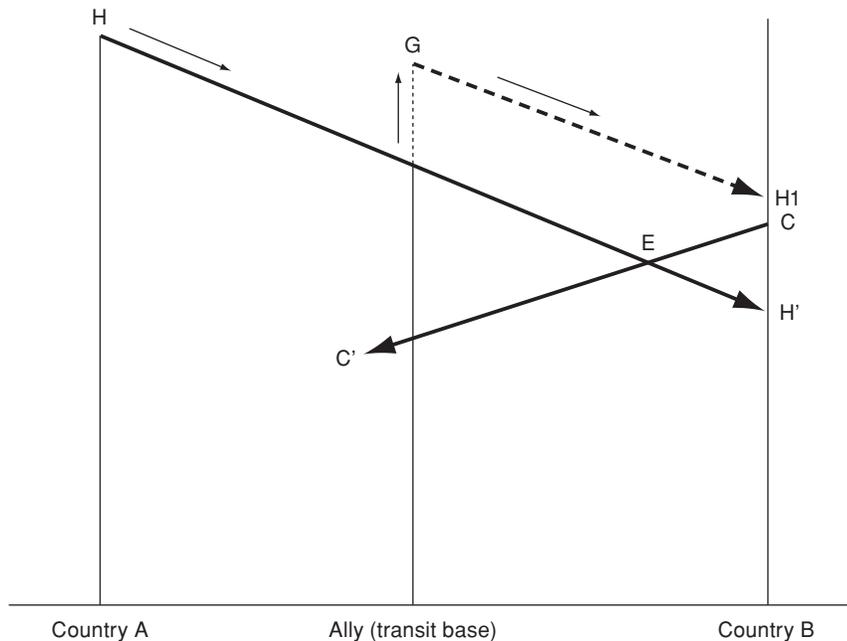
⁵⁰ Murray, *Thoughts on Sea Basing in the Twenty-first Century*, p. 354.

⁵¹ U.S. Department of Defense, *Quadrennial Defense Review Report* (February 2010), pp. 31–34.

⁵² Even on land, separation by steep mountains, lakes, rivers, and deep forests would create the same conditions to be overcome as for oceans.

⁵³ Boulding, *Conflict and Defense*, p. 262.

Figure 3: Allies, and the restoration of home strength



Mahan asserted that countries that attempt to control important waters that are far away from the home country have to secure strategic locations in the aforesaid waters. According to Mahan, strategic locations that are appropriately chosen form bases. Such bases may be of secondary importance when considered from the perspective of their relationship with the home country, but are primary bases in the areas concerned.⁵⁴

At the “2+2” meeting of the Japan–U.S. Security Consultative Committee held on 5 January 2006, Japan and U.S. put together the United States–Japan Roadmap for Realignment Implementation, which reviews the military strength posture of the U.S. forces in Japan. The Roadmap laid out concrete measures for the relocation of approximately 8,000 personnel under the 3rd Marine Expeditionary Force and approximately 9,000 family members from Okinawa to Guam by 2014.⁵⁵ Although there were many discussions as to whether the U.S. Armed Forces would be able to retain the same levels of deterrence as they had while the troops were stationed in Okinawa, upon the relocation of the Marine Corps to Guam, we could say that the question rests on the extent to which the U.S. Armed Forces is able to make up for the loss of strength arising from the distance between Guam and Okinawa.

As shown in Figure 4, the military strength of the U.S. Armed Forces would normally fall by HH1 as it moves further away from the United States. However, it was able to increase its strength from O to O’ through the establishment of a USFJ base in Okinawa. By moving a part of the Marine

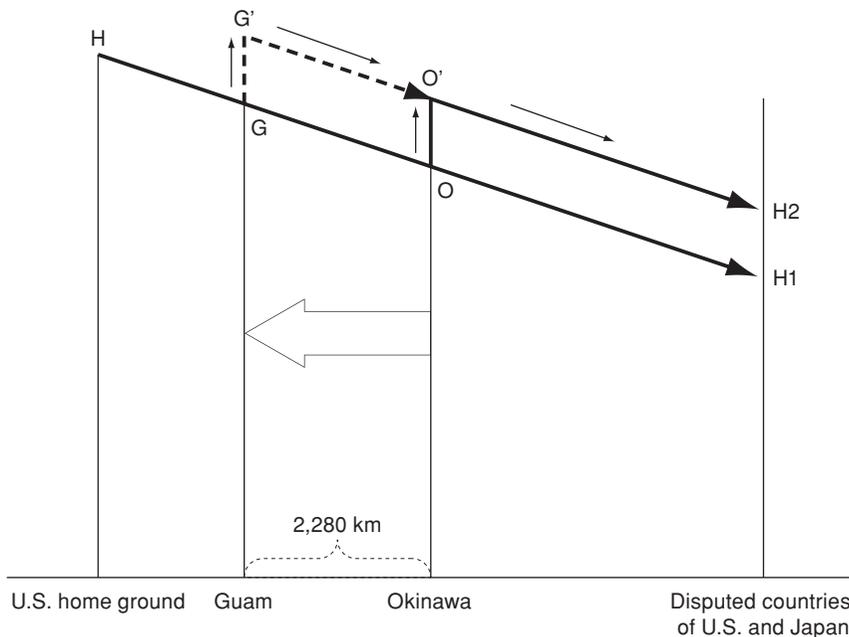
⁵⁴ Toshihide Yamauchi, ed. *Senryakuron Taikei 5: Mahan [Theories of Strategy 5: Mahan]* (Fuyo Shobo Shuppan, 2002), pp. 110–111.

⁵⁵ Ministry of Foreign Affairs of Japan, *United States-Japan Roadmap for Realignment Implementation (Provisional Translation)*, May 1, 2006, http://www.mofa.go.jp/mofaj/kaidan/g_aso/ubl_06/2plus2_map.html, August 20, 2009.

Corps backward to Guam, a straight-line distance of approximately 2,280km backward, it would need to increase its strength from G to G' through ways such as increasing its strength on Guam or improving on its military technologies, in order to maintain the same military strength that it had while stationed in Okinawa.

An environmental evaluation report released by the United States Department of Defense on 28 July 2010 stated that it would be difficult to complete the relocation to Guam by 2014, and that there was a strong likelihood that the implementation of the project would be postponed.⁵⁶

Figure 4: Differences in deployment of the U.S. Navy in Guam and Okinawa



In operations involving movements over long distances, the key to the success of the operation is dependent on whether or not replenishments for supplies can be procured locally. The Boer War (1899–1902) is a good example demonstrating the importance of procuring replenishments for supplies at forward deployment bases and in distant lands. Mahan notes that transportation in the Boer War was “an incident unprecedented, and in its success unsurpassed, in military history.”⁵⁷ The British had to cross oceans and transport animals, equipment, and replenishments in the same way as they did soldiers. Ultimately, they realized that it was a good idea to procure things locally, in the forward deployment regions. Of the 519,000 horses and 151,000 donkeys required for war, they procured 159,000 horses and 45,000 donkeys from South Africa.⁵⁸ Most of the cattle were acquired in South Africa, and 150,000 of these were depleted in the first 15 months.⁵⁹ Large quantities of food

⁵⁶ *Asahi Shimbun*, July 28, 2010 (evening edition).

⁵⁷ Alfred T. Mahan, *The Story of the War in South Africa 1899–1900* (London: Sampson Low, Marston, 1900), p. 85.

⁵⁸ Webb, “Geographic Distance and Loss of Strength Gradient,” p. 297.

⁵⁹ *Ibid.*, p. 139.

were purchased locally. In addition, the British procured much of their transportation equipment locally, and stored the coal used to fuel cars and ships locally.

The reason for the unchanging alliance policy on the part of U.S. and its continued posting of its troops overseas despite costs and dangers lies in its inability to respond quickly to various forms of conflict and contingencies from its home ground. In short, U.S. has not yet adequately overcome the barriers posed by the vast Pacific and Atlantic Oceans. However, the existence of allied air bases and fuel replenishment bases near the strike targets made air strikes more effective. The speedy transportation of soldiers and resources, as well as the procurement and replenishment of resources locally or near the bases, are vital to the operations of the ground forces; this underscores the fact that the Loss of Strength Gradient has not lost its significance.

In the Gulf War (1990–1991), U.S. transported 9.7 million tons of supplies by water and air. However, the value of supplies that had been built up on the front beforehand was high. They relied on resources procured from Southwest Asia, or resources that had been collected near the region beforehand. Countries in the Gulf provided fuel. Three-quarters of the 6.1 million tons of fuel was transported from Gulf countries to Northeast Saudi Arabia via the United States Marine Transportation Command.⁶⁰ The U.S. Armed Forces supplied 2 million gallons of drinking water every day.⁶¹ An estimated 22,000 vehicles were contracted from civilian suppliers within Saudi Arabia. In particular, 1,000 heavy transport vehicles were needed to transport tanks and armored personnel transport vehicles. As the U.S. Army and Marine Corps had only 146 vehicles, the shortfall was made up by leases from the locals. Lieutenant-General Gus Pagonis, the officer in charge of the replenishment of supplies, commented that if these supplies could not have been procured locally, they would not have met with success in the Gulf.⁶² In addition, the supply of fuel transportation vehicles, refrigeration vehicles, bulldozers, trailers, buses and moving command post vehicles also relied on local leases.⁶³ Ammunition for the air force had already been stored in depots in Oman, Turkey, and Diego Garcia.⁶⁴ Other prepositioned resources in Oman included shelters, tents, generators, and water purifiers. Prepositioning ships were available in Diego Garcia, and these proved to be of use in providing supplies to the first contingent that was dispatched. These vessels transported 5.5 million gallons of jet fuel, ammunition, 3,000 landmines, machine guns, and mortars. In addition, 16 baking ovens, cranes, refrigeration cars, forklifts, 6,000 sets of sleeping bags, uniforms, washing machines, clothing, cots, blankets, tents, printers, and radios were also transported.⁶⁵

In Operation Iraqi Freedom (2003), tanks and airplanes were estimated to require as much as 2 million gallons of fuel per day over a two-week period. The U.S. Armed Forces had begun preparations for the construction of infrastructure two years before in expectation of entering into

⁶⁰ James K. Matthews and Cora J. Holt, *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm* (Honolulu: University Press of the Pacific, 2002), p. 13.

⁶¹ *Ibid.*, pp. 284–285.

⁶² William G. Pagonis, *Moving Mountains: Lessons in Leadership and Logistics from the Gulf War* (Boston: Harvard Business School Press, 1992), pp. 203–204.

⁶³ Webb, “Geographic Distance and Loss of Strength Gradient,” p. 298.

⁶⁴ James A. Winnefield, Preston Niblack, and Dona J. Johnson, *A League of Airmen: U.S. Air Power in the Gulf War* (Santa Monica: RAND, 1994), p. 232.

⁶⁵ *Ibid.*

war with Iraq. At the request of the army, Kuwait National Petroleum Company had laid down pipelines near the border. As a result, the army succeeded in stockpiling 7.3 million gallons of fuel.⁶⁶ Unlike the Gulf War or the Iraq war, the British Army could not establish forward deployment bases or procure supplies locally in a war that was carried out on a solitary island far off in the seas of Argentina, as in the Falklands War. The “projectile power” that Nitze had coined previously has to include these forms of logistical support.⁶⁷

4. The Tyranny of Distance in the Defense of Offshore Islands

Unlike the U.S. Armed Forces, which belongs to a country fenced in by the Pacific and Atlantic Oceans, and for which many military operations involve expeditions to far-off regions across vast oceans, Japan occupies a narrow territory and bases its national defense on an exclusively defense oriented policy. As such, does the tyranny of distance affect the operations of Japan’s Self-Defense Forces?

The need for Japan’s Self-Defense Forces to cross several states and vast oceans, like the U.S. Armed Forces, arose after the Gulf War, when it became involved in the dispatch of troops for international cooperation activities. As it built up experience through numerous overseas dispatches, and with the strengthening of the joint operation of the Ground, Maritime and Air Self-Defense Forces, the Self-Defense Forces gained operational capabilities — even the overseas dispatch that it had originally been hesitant about — speedily and smoothly, as evidenced by the dispatch of troops to Haiti. However, these movements over distances were different from operations that required superiority in home strength at the point of engagement as shown by the Loss of Strength Gradient.

Japan’s territory stretches from North to South in an elongated shape, and the troops of the Ground Self-Defense Force are distributed more or less evenly throughout the country. For that reason, although there would be a need to move troops located in Kyushu and Honshu north in the event that there is a threat to the north, for instance, that could be dealt with by basically moving within the mainland, using overland, oversea, and air transportation as well as transport agencies.

However, blanks areas continue to exist in defense as a result of the tyranny of distance — the defense of offshore islands. For instance, the islands of Okinawa Prefecture span a vast sea area of approximately 400km north to south, from Iwo Jima on the northern tip of the prefecture to Hateruma Island in the south, and approximately 1,000km from Kitadaito Island in the east to Yonaguni Island in the west. Sakishima is comprised of the Yaeyama islands and the Miyako islands; of the 44 islands, 20 are inhabited, and approximately 10,000 people reside on the four islands of Miyako, Ishigaki, Iriomote, and Yonaguni alone. More importantly, although Sakishima is separated from Kyushu by approximately 1,400km and from Okinawa Island by approximately 300 to 500km, it is close to the coastal areas of China, and Yonaguni Island is located approximately 128km from Taiwan. As demonstrated by previous studies, in consideration of the fact that conflicts arise easily between neighboring countries⁶⁸ and that resource and territorial problems actually plague the

⁶⁶ Gregory Fontenot, E. J. Degen, and David Tohn, *On Point: The United States Army in Operation Iraqi Freedom* (2004), <http://www.globalsecurity.org/military/library/report/2004/onpoint/ch-4.htm>, accessed on July 12, 2009.

⁶⁷ Paul H. Nitze, “Deterring Our Deterrent,” *Foreign Policy* 25 (Winter 1976–77), p. 207.

⁶⁸ Refer to footnotes number 17–24 for examples of earlier studies.

regions around this area, this is not a region that can be neglected with regard to defense.

In 1992, China independently instituted a Law on the Territorial Sea and claimed the South China Sea as its own. The gradual change of the strategy of the People's Liberation Army Navy from coastal defense to defense of the far seas in recent years has made its stand even clearer. It is believed that the People's Liberation Army Navy is unmistakably simulating its strategy between the First Island Chain (the island chain linking the Nansei Islands, Taiwan, and the Philippines) and the Second Island Chain (the island chain linking the Bonin Islands and Guam).⁶⁹ Area denial capability is targeted at the restriction of the freedom of movement of the U.S. Navy in the area between the coast of China and the Second Island Chain.⁷⁰ The background to that is touted to be the ongoing military construction aimed at anti-access/area denial (A2/AD).⁷¹ The PLA Navy is putting in efforts to strengthen its submarine force by introducing modern kilo-class submarines from Russia and actively constructing new models of domestically produced submarines, as well as driving forward its efforts to build up marine combat vessels with a high level of air defense capability and anti-ship missile capability. It is also strengthening its landing craft and replenishment vessels, and the force stands at approximately 890 vessels and a total tonnage of 1.32 million tons.⁷² In March 2010, it enforced the Law on Island Protection which claims territorial rights not only on the Senkaku Islands but also on the continental shelf in the waters of Okinawa and constantly monitored the areas around Senkaku with surveillance boats.⁷³ After 2004, unusual activities by the PLA Navy in this region became more pronounced. On 22 April 2010, 10 vessels of PLA Navy passed through the waters between Miyako and main islands of Okinawa, and carrier-borne helicopters made proximate flights close to the Marine Self-Defense Force's escort ships.⁷⁴ The party paper *Study Times* (dated 26 April), issued by the Party School of the Central Committee of the Chinese Communist Party, the agency responsible for nurturing party cadres, contained an article declaring that the future scope of expansion for the PLA Navy should not be limited to nearby waters, but should extend to the northwest areas of the Pacific Ocean in efforts to grasp control of the seas.⁷⁵

The objectives of the PLA Navy's maritime activities are: (1) "to intercept naval operations by enemies in waters as far as possible from the country in order to defend Chinese territory and territorial waters," (2) "to develop military capabilities to deter and prevent Taiwan's independence," (3) "to acquire, maintain, and protect maritime rights and interests," and (4) "to defend the sea lanes of communications for China."⁷⁶ In order to achieve these objectives, it is becoming increasingly aggressive in its interpretation of its military strategy of proactive defense.⁷⁷ Are the strengthening of China's military force in recent years, as well as increased activity by the PLA Navy in the South China Sea and Pacific Ocean, attempts at locating its boundary of equal strength further away? If we

⁶⁹ The National Institute for Defense Studies, *East Asian Strategic Review 2010* (The National Institute for Defense Studies, 2010), p. 116.

⁷⁰ Krepinevich, "Pentagon's Wasting Assets," pp. 18–21.

⁷¹ U.S. Department of Defense, *Quadrennial Defense Review Report*, pp. 31–34.

⁷² Japan Ministry of Defense, *Defense of Japan 2009* (Gyousei, 2009), pp. 47–63.

⁷³ *Yomiuri Shimbun*, May 14, 2010.

⁷⁴ *Asagumo*, April 29, 2010.

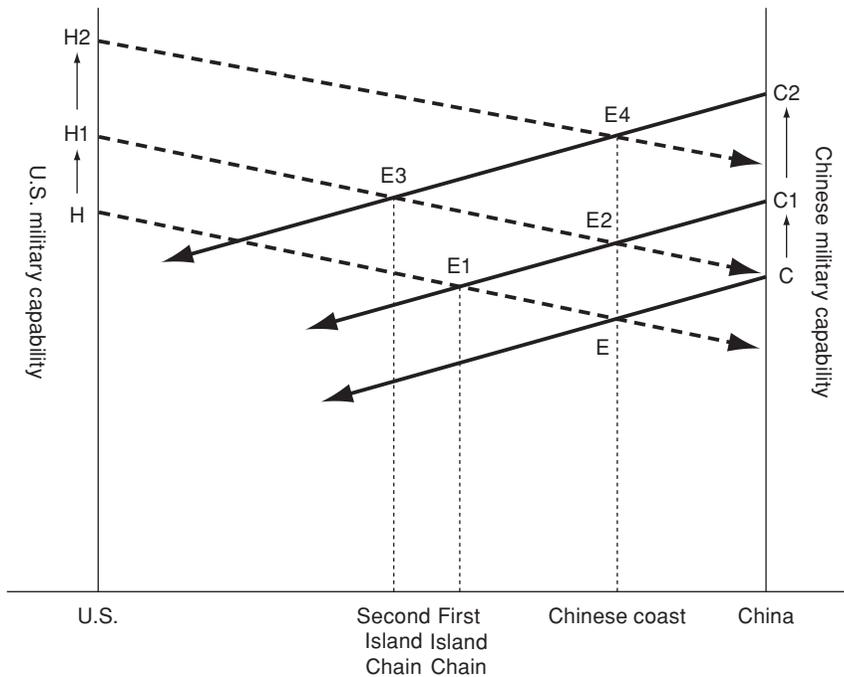
⁷⁵ *Nikkei*, May 6, 2010 (evening edition).

⁷⁶ Japan Ministry of Defense, *Defense of Japan 2009*, p. 55.

⁷⁷ The National Institute for Defense Studies., *East Asian Strategic Review 2010*, pp. 118–119.

were to compare the current and future situation for the West Pacific against Figure 2, we would be able to explain the situation with Figure 5. In order to expand its scope of power to the First Island Chain and then to the Second Island Chain, China has to strengthen its naval force from C to C1, and then to C2. To avoid pushing the boundary of equal strength backward and to retaliate against China, which has the advantage of distance in the West Pacific, U.S. also has to increase its naval force from H to H1, and then to H2. The boundary of equal strength, which had been located at E initially, moves repeatedly to E1, E2, E3, and E4; at the same time, the two countries continue to expand their naval forces.

Figure 5: Anticipated structure of U.S.–China arms race in the Western Pacific



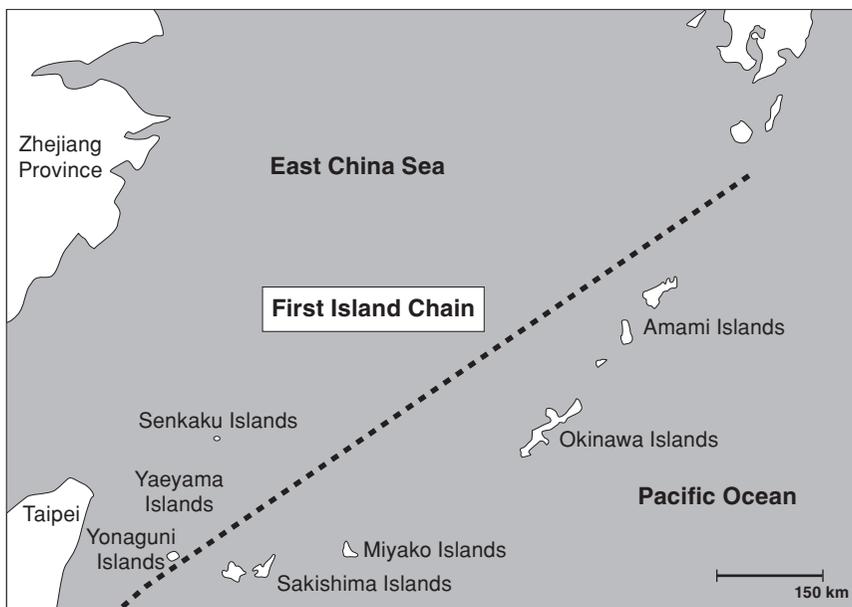
According to Xu Guangyu, a senior advisor at the China Arms Control and Disarmament Association, national boundaries are categorized as geographical boundaries and strategic boundaries. Strategic boundaries shift in tandem with national strength, and it is possible to expand the geographical boundary if the strategic boundary is effectively controlled over a long period of time.⁷⁸ The operational concept of “air-sea battle” that the U.S. Marine Corps and Air Force are jointly developing can be viewed as a means for countering such moves by China. Air-sea battle is based on the idea of combining navy and air force capabilities across air, sea, space, and cyber spaces, in order to gain superiority over an enemy that has anti-access and area denial capabilities. It

⁷⁸ Guangyu Xu, *In pursuit of an ideal three-dimensional border strategy*, PLA Daily, 3 April 1987. Cited from Shigeo Hiramatsu, *Chugoku no Senryakuteki Kaiyo Shinshutsu*[*China's Strategic Advance into the Oceans*] (Keiso Shobo, 2002), pp. 15–18.

is not a plan to engage in war with China, or to contain it.⁷⁹ However, the two countries are expected to clash in the future in their efforts to extend their boundary of equal strength.

As shown in Figure 3, if we consider the fact that transit bases have the effect of moving the incline of the Loss of Strength Gradient upwards, then the waters between Sakishima and Okinawa and Miyako Islands on the First Island Chain will become a geographical point of vital importance for the PLA Navy's operations in the northwestern part of the Pacific Ocean. However, despite the fact that approximately 10,000 people reside on the four Sakishima islands of Miyako, Ishigaki, Iriomote, and Yonaguni, no Self-Defense Forces are stationed in areas south of the main islands of Okinawa. As such, in times of contingency, they would have to evacuate residents and protect the territories while being forced to move through the air and seas which are fraught with tough climate and oceanographic conditions.

Figure 6: Nansei Islands and First Island Chain

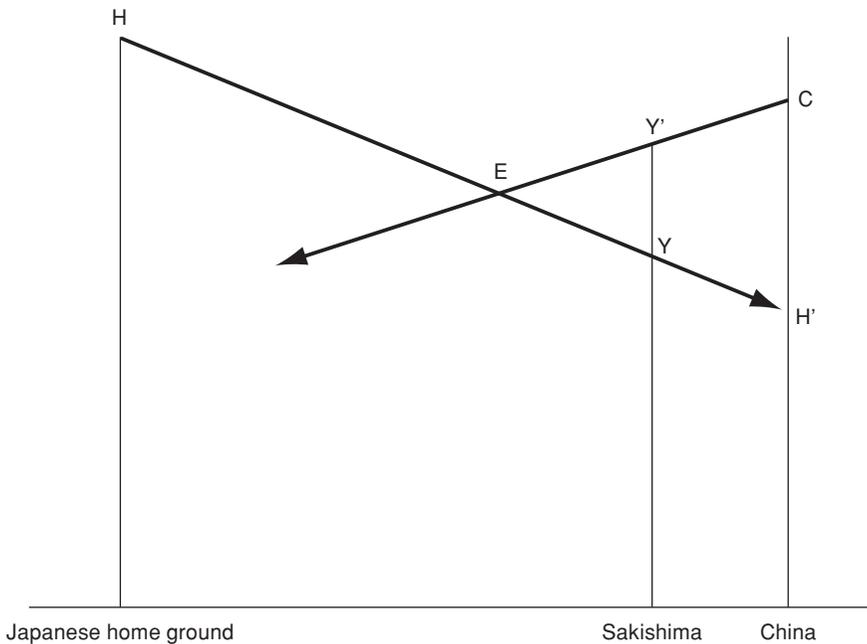


*Location of First Island Chain is approximate.

⁷⁹ Krepinevich's report points out the surfacing of deep threats to America's power projection capabilities in the West Pacific and Persian Gulf, and states China and Iran as the countries. Refer to Andrew F. Krepinevich, *Why AirSea Battle?* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010) and Jan van Tol with Mark Gunzinger, Andrew F. Krepinevich, Jr., and Jim Thomas, *AirSea Battle: A Point-of-Departure Operational Concept* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010).

Our analysis now reveals that distance continues to influence military operations even now, with the advances that have been achieved in technology, as well as the fact that countries that are closer to the point of engagement are using distance to their advantage in military operations. However, if China were to invade the Nansei Islands, several scenarios are possible. For example, the Nansei Islands serve as a gateway for the PLA Navy’s easy entrance into the West Pacific. Moreover, should China attack Taiwan, the Islands could also serve as a point of transit in the detour route and force base. They could also serve as an outpost line after China occupies Taiwan and the Senkaku Islands. The occupation of Sakishima Islands for these objectives is thus not inconceivable. As shown in Figure 7, if an armed conflict occurs at or near Sakishima (at YY’), China will have the advantage in terms of distance. Injecting military force from Kyushu or Okinawa Island will pose many difficulties with regard to collection of information, command and control, securing maritime and air advantages, and sustaining replenishment.

Figure 7: Relationship between LSG and offshore islands



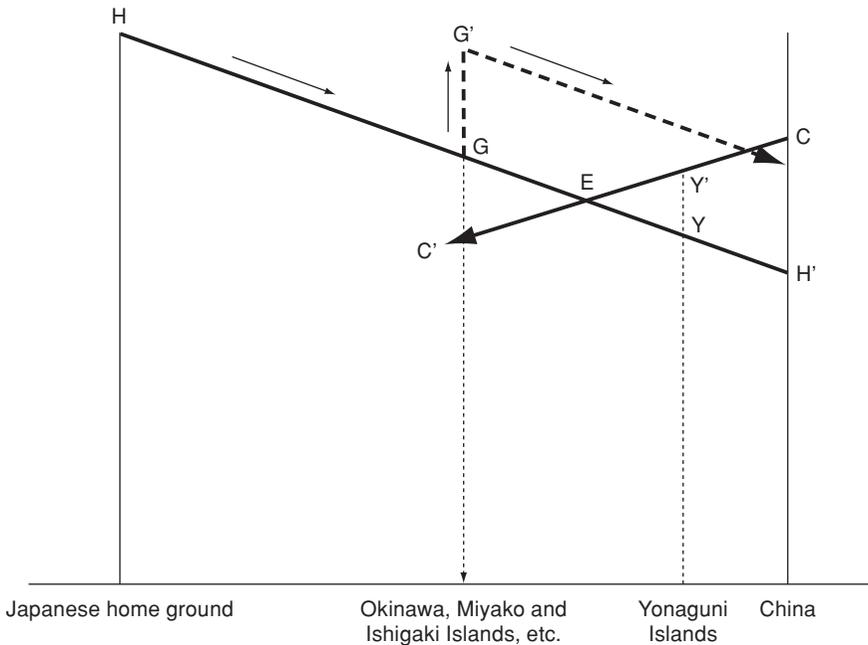
In *Nihon ni Tarinai Gunjiryoku*, Kensuke Ebata talked about the three elements that are necessary for power projection capability. These are, (1) the ability to dispatch the required scale of national troops (or the troops of member states in collective security organizations such as NATO) to the destination, (2) command and control capabilities, with long-distance communications functions to enable local operations, and (3) logistical (logistics replenishment) capability, in order to sustain local operations.⁸⁰ Should U.S. shrink from direct confrontation with China and not come to Japan’s aid, Japan will lack all three of these elements and be forced to conduct operations under

⁸⁰ Kensuke Ebata, *Nihon ni Tarinai Gunjiryoku [Inadequate Military Power for Japan]*, (Seishun Shuppansha, 2008), pp. 174–175.

tough conditions.

Sakishima lies closer to China’s coast than to Okinawa Island. Considering the fact that it would be difficult to procure the necessary supplies for operations locally in the event of a contingency, there is a need to post troops and replenishment bases on the four Sakishima islands regularly from times of peace, in order to serve as a force base. This would apply in particular to Miyako or Ishigaki islands, which are the closest to Okinawa Island. Alternatively, facilities enabling the smooth operation of the Self-Defense Forces in times of contingency should be established. There is also a need to enhance home strength on Okinawa Island, which could become a transit base for Sakishima from Kyushu.⁸¹ By doing so, in the event that Yonaguni Island or the waters around it become points of conflict, for example, it would then be possible to increase military strength from G to G’, and to maintain dominance of military force in the areas of conflict (location YY’). Stationing ground line troops not only improves rapid response to contingencies, but can also serve as a form of deterrence against the PLA Navy’s maritime activities.

Figure 8: LSG and the need to strengthen the defense of offshore islands



⁸¹ Based on the Mid-Term Defense Program released in March 2010, the Ground Self-Defense Force had reorganized the First Combined Brigade on Okinawa as the 15th Expeditionary Brigade. The First Combined Brigade, which was the main force, was strengthened to become the 51st Infantry Regiment. The scale of the troops was increased from the approximately 1,800 personnel it contained when it was the First Combined Brigade, 2,100 personnel. This expeditionary brigade is an offshore expeditionary brigade organized in consideration of the geographical characteristics of the Nansei Islands. (*Asagumo*, April 29, 2010)

Conclusion

Even with the technological advances that we have made today, distance remains a significant influence on military operations. In that sense, Boulding's Loss of Strength Gradient is still an important principle and can be applied to military operations.

In order to project military strength onto distant lands, aimed at the use of military force, higher costs are required with longer distances, and the efficacy of military operations drop to the same extent. To maintain the same degree of home strength even at the point of engagement, large military strength and support infrastructure must exist nearby in order to replenish the force that is depleted in movement. However, it is most important to station military force regularly at areas where battles are anticipated, in order to save time for mobilization. This is probably the most effective means of maintaining home strength. In that sense, the passive presence of forward deployed troops remains an important form of deterrence and a way of responding to contingencies. In the future, the integration of such military strength with the "air-sea battle" concept propounded by the U.S., a Japanese ally, would be ideal for generating synergy.

Even if we were not to explain offshore island strategies, the barriers posed by oceans and distances have to be overcome. All forms of military operations, such as the collection of information, command and control, troop mobilization, securing continued replenishment, and the protection and evacuation of residents, are expected to be fraught with difficulties. However, these should not be neglected to give rise to a blank in Japan's defense, and it is important to consider policies for the defense of offshore islands in peace time. At the very least, for full awareness in and around the offshore islands, the enhancement of intelligence, surveillance, and reconnaissance capabilities is vital.⁸²

⁸² The Mid-term Defense Program (FY2011 to FY2016), approved by the Cabinet on December 17, 2010, laid out the stationing of GSDF coastal surveillance troops on the offshore islands in the southwestern region, as well as the implementation of projects for the new alignment of troops responsible for first motion. It also laid out the deployment of portable warning radars in the southwest regions (<http://www.mod.go.jp/j/approach/agenda/guideline/2011/chuuki.html>, accessed on June 23, 2011).