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THESIS

DOES CHINA NEED A “STRING OF PEARLS”?

by

Martin E. Conrad

September 2012

Thesis Advisor:

Christopher Twomey

Second Reader:

Anshu Chatterjee

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DOES CHINA NEED A “STRING OF PEARLS”?

Martin E. Conrad
Captain, United States Air Force
B.A., University of California at Berkeley, 2003

Submitted in partial fulfillment of the
requirements for the degree of

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**NAVAL POSTGRADUATE SCHOOL
September 2012**

Author: Martin E. Conrad

Approved by: Christopher Twomey
Thesis Advisor

Anshu Chatterjee
Second Reader

Dan Moran
Chair, Department of National Security Affairs

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ABSTRACT

Is China trying to build a “String of Pearls” in the Indian Ocean? My hypothesis is that China is not looking to build large overseas military bases in the Indian Ocean. With the revolution in military affairs and improvements in C4ISR over the last twenty years, international military bases are no longer as critical to intelligence collection and force projection as they were during the 20th century. This reduces the necessity of overseas bases to primarily serve as logistics hubs—which can be contracted out to host countries and reduce/eliminate the need to establish large overseas military bases.

This thesis attempts to prove this hypothesis by examining improvements in military capabilities that include satellites, open source intelligence, cyberspace, and unmanned vehicles. With these improvements established, this thesis examines three comparative case studies involving states that have decided to reduce their international maritime presence over the last twenty years. Finally, Chinese perceptions and behaviors are examined to determine whether China is operating according to a post-Mahan international force projection theory.

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I. INTRODUCTION

A. MAJOR RESEARCH QUESTION

Is China trying to build a “string of pearls” in the Indian Ocean? Although there have been many different variations on the concept of “string of pearls,” according to the original *Energy Futures of Asia* report, it is defined as developing “strategic relationships along the sealanes from the Middle East to the South China Sea in ways that suggest defensive and offensive positioning, not only to protect its energy interests, but also to serve broader security objectives”¹ (see Figure 1). Such strategic relationships include building both commercial and military facilities. According to *Energy Futures of Asia*, “China is financing and building a civilian and naval port in Gwadar, Pakistan... China is building a container port facility in the old Bangladesh port of Chittagong, and China may be seeking much more extensive naval and commercial access to Bangladesh.”² The critical issue is trying to understand the Chinese intentions in the Indian Ocean.

On one hand, the improvements in intelligence collection and dissemination over the last twenty years mean large international military bases are no longer as critical to force projection and intelligence collection as they were during the 20th century. This reduces the function of overseas bases to primarily serve as logistics hubs—which can be contracted out to host countries and reduce/eliminate the need for China to establish a large overseas military presence in the Indian Ocean. Thus, my question: Does China believe it needs to build a series of overseas military bases in order to accomplish its strategic national and international objectives? Or, is it possible that military technology today, and China in particular, might be operating on different international force projection theories and strategies than the Mahan model. Alfred Thayer Mahan, a United States naval officer, developed the Mahan model at the end of the 19th century. His most

¹ Juli A. MacDonald, Amy Donahue, and Bethany Danyluk, *Energy Futures in Asia* (Washington, DC: Booz Allen Hamilton, Nov. 2004), iii.

² MacDonald, Donahue, and Danyluk, *Energy Futures in Asia*, 15.

important work, *The Influence of Sea Power upon History, 1660–1783* (1890), discussed how in order for a state to become powerful it had to control the sea and trade through sea power.

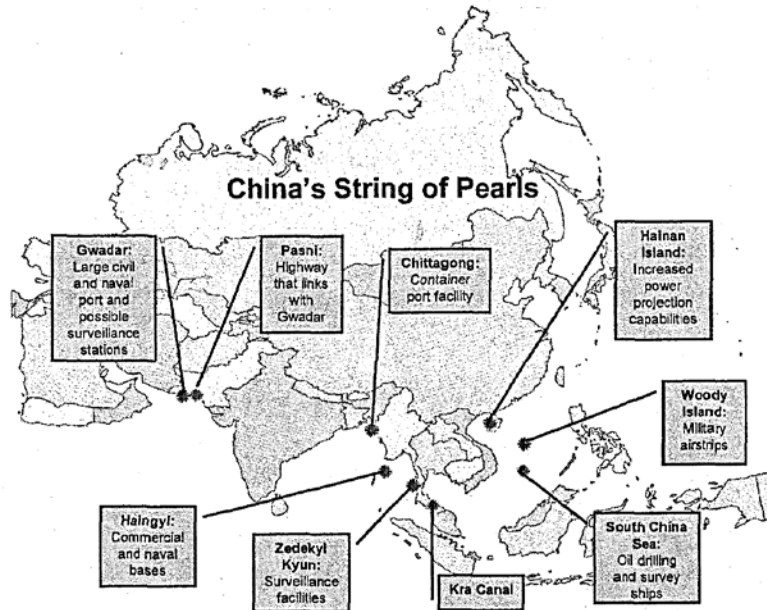


Figure 1. String of Pearls³

B. IMPORTANCE

My research purpose here is to reexamine China's strategy, which is often understood as creating a string of pearls in the Indian Ocean. Most analyses of Chinese objectives in the international maritime environment are based on the ideas and theories that the United States, Soviet Union, and other Great Powers used during the 20th century. In the maritime realm, many of these theories were based on the work of A. T. Mahan, who argued for an expansive overseas presence in order to secure and control trade routes.⁴ Another reason for the development of overseas bases was as a catalyst for colonialism.⁵ In order to accomplish these objectives, it meant building a military

³ MacDonald, Donahue, and Danyluk, *Energy Futures in Asia*, 17.

⁴ A.T. Mahan, *The Influence of Sea Power Upon History, 1660–1783* (Cambridge: University Press, 1987).

⁵ Bernard Brodie, *Sea Power in the Machine Age* (Princeton: Princeton University Press, 1944).

network of bases throughout a country's maritime trading region. Some policy makers continue to rely on this theory and similar theories of force projection to determine China's objectives:

The growing dependence on long-haul sealanes and offshore energy resources mean that energy strategies increasingly will have a defensive military component, particularly with a naval focus...If competition for energy resources increases, states will likely develop offensive components to their energy strategies, with the intent of targeting other's countries energy security.⁶

Other advocates of this viewpoint are James Holmes and Toshi Yoshihara. In their book, *Chinese Naval Strategy in the 21st Century: The Turn to Mahan*, the authors assess that China will use Mahan as a central pillar in their maritime expansion: "This study contends that Alfred Thayer Mahan's writings and theories on sea power furnish an indispensable framework for understanding China's emerging maritime strategy."⁷

With the revolution in military affairs (RMA) and subsequent advances in technology, however, is it possible that China might be operating on international force projection theories and strategies that are different from the Mahan model? If this were the case, it would mean that policymakers would need to factor in a new theoretical framework to determine future Chinese international actions, and create policy and plans that reflect this theory. The focus in this thesis is to help provide a different framework that could be used to explain current policy questions related to China's activities in the Indian Ocean and evaluate Chinese actions to see if they are consistent with this. For example, why has China not continued to militarize its joint port facility in Gwadar, Pakistan, and what are China's intentions in building a port in Chittagong?⁸ How can we explain this within the larger context of strategy? Such explorations are necessary for the U.S. forcing policy as it confronts new post-cold-war realities.

⁶ MacDonald, Donahue, and Danyluk, *Energy Futures in Asia*, 26.

⁷ James R. Holmes, Toshi Yoshihara, *Chinese Naval Strategy in the 21st Century* (New York: Routledge, 2008), 5.

⁸ "Is Chittagong one of China's 'string of pearls'?" *BBC News*, May 17, 2010, <http://news.bbc.co.uk/2/hi/business/8687917.stm>

C. PROBLEMS AND HYPOTHESES

There are two main elements in my argument. First, I show that China is not engaging in policy, as the string of pearls strategy would predict. This is relatively easily done. Second, I explain *why* that is not the case. I lay out hypotheses for this and examine related cases and Chinese perceptions of their own strategic situation. While several previous articles have challenged the string of pearls theory of Chinese international maritime expansion, this thesis offers an explanation of why China might consider large international military bases less efficient than other methods of achieving their political, economic, and military objectives. The most important issues that are raised here are why China's international behavior does not parallel that postulated in the string of pearls theory concerning China's expansion in the Indian Ocean? Based on this variation from the predicted behavior, does this mean that the string of pearls theory is flawed, based on faulty assumptions, and/or maybe outdated? If so, is there another framework to examine and explain Chinese international maritime behavior and provide a better tool for prediction in the future?

My hypothesis is that the improvements in C4ISR over the last twenty years means international military bases are no longer as critical to force projection as they were during the 20th century, and that this in turn explains China's strategic behavior. This reduces the necessity of overseas bases to primarily serve as logistics hubs—which can be contracted out to host countries and reduce/eliminate the need to establish large overseas military bases.

International military bases were necessary for three key military reasons: reducing uncertainty (intelligence), force projection (rapid reinforcements), and logistics. In “Chinese Overseas Basing Requirements for the 21st Century,” Christopher Yung offers a similar list of reasons for why some Chinese military individuals advocate for overseas bases.⁹ These include: (1) logistics, (2) uphold international law, (3) maintain its role in the international arena, and (4) protect Chinese shipping lanes. Items 2, 3, and 4 require military force, and military force requires intelligence.

⁹ Christopher D. Yung, “Chinese Overseas Basing Requirements for the Twenty First Century,” National Defense University (Apr. 2012), 3.

In examining these three reasons more in-depth:

—Reducing uncertainty: With improvements in intelligence collection and dissemination intelligence collection can be done from a country's home territory with the same level of clarity that once required large, intelligence-gathering, overseas operations (cyber reconnaissance, satellites, and unmanned vehicles).

—Force Projection: Countries always seek to maximize the effect of their reinforcements by positioning them in areas of the higher threat, thus giving them the shortest response time. With advances in military intelligence and technology these forces can be deployed to high threat areas quicker since they will have more warning than in the 20th century (cyber-attacks, unmanned vehicles, better indications and warning).

—Logistics: In the 20th century, countries had to rely on their own overseas military bases to ensure that vital supplies would always be available. These supplies ranged from military supplies like shells and bullets to more mundane items like food and water. This was especially important because in various areas of the world there were no friendly or stable governments available to assist military or civilian vessels. Since the end of the 20th century, the international maritime arena has changed. Many countries are now more stable and available to assist with basic logistics provided financial compensation is offered. Logistics can be contracted to foreign countries to ensure supplies are readily available for military sea and air forces; however, since these are primarily resupply areas, there is no need for a significant military presence. An example of this logistics hub concept would be the 1990 Memorandum of Understanding between the United States and Singapore regarding the use of facilities in Singapore. During the 1990s, the United States typically stationed around 150 military and civilian members in Singapore. Today, "COMLOG WESTPAC has approximately 90 military and civilians assigned and is the largest command in Singapore."¹⁰ Even with this small military presence, however, the facilities at Singapore support a large number of United States naval and air force units:

¹⁰ United States Navy, "Singapore Welcome Abroad Packet," <http://www.clwp.navy.mil/Welcome%20Aboard.pdf>.

Bilateral military access agreements allow the United States to operate resupply vessels from Singapore and to use a naval base, a ship repair facility, and an airfield on the island-state. The U.S. Navy also maintains a logistical command unit—Commander, Logistics Group Western Pacific—in Singapore, which serves to coordinate warship deployment and logistics in the region. As part of the agreements, squadrons of U.S. fighter planes are rotated to Singapore for a month at a time, and naval vessels make regular port calls. Changi Naval Base is the only facility in Southeast Asia that can dock a U.S. aircraft carrier.¹¹

This logistics hub concept allows the issue of logistics to be addressed without having to establish overseas military bases. At the same time, intelligence and military force projection can be accomplished in new ways that do not require overseas military bases.

D. LITERATURE REVIEW

Overall, the literature concerning the concept of the string of pearls and the future development of Chinese maritime power projection can be divided into two broad groups. The first group of literature looks at the rise of China and its increasing military power and assesses that China is laying the groundwork towards a future of international military bases similar to the United States in the second half of the 20th century. The second group of literature looks at the rise of China and assesses that China will continue to develop maritime military capabilities for limited force projection, but that this will not involve creating overseas military bases. However, there is a gap in the literature relating to the strategic philosophy of why China would not build a string of pearls. My thesis attempts to fill this critical gap in strategic philosophy by explaining why China will not build international military bases as part of a string of pearls.

Previous articles in the second group of literature mainly cite China's lack of capability and resources to adequately expand and defend military bases in the Indian Ocean. They do not focus on the idea that with the revolution in military affairs the reasons for overseas military bases might have become outdated. Are modern overseas military bases an outdated military concept? If so, has China recognized this and decided

¹¹ Emma Chanlett-Avery, "Singapore: Background and U.S. Relations," *Congressional Research Service* (Washington, D.C.: Feb. 2011), 5.

not to build them? My thesis develops this strategic shift in military thought to add to, and possibly explain the reasons why China is not and will not develop overseas military bases.

The current debate about a string of pearls [SOP] centers on the question of Chinese military intentions. As the *Quadrennial Defense Review Report* in 2010 stated, “China has shared only limited information about the pace, scope, and ultimate aims of its military modernization programs, raising a number of legitimate questions regarding its long term intentions.”¹² The first group of literature examines this military data and assesses that China will develop international military bases for a variety of reasons including force projection, resource security, and national prestige. The primary advocates for this viewpoint is a report by Booz Allen Hamilton entitled *Energy Futures of Asia*, prepared for the Department of Defense in 2004.¹³ This is the first time the phrase *string of pearls* was used, and it encapsulated a trend of different academic and journalist viewpoints that saw the rise of China’s economy and military modernization as a first step towards greater regional ambition. Noted pundit and strategic commentator Robert Kaplan also supports this viewpoint, noting that the ports China is establishing in the Indian Ocean will be converted to military bases:

The Chinese government has already adopted a ‘string of pearls’ strategy for the Indian Ocean, which consists of setting up a series of ports in friendly countries along the ocean’s northern seaboard. It is building a large naval base and listening post in Gwadar, Pakistan.¹⁴

Kaplan has also stated that the reason China wants to resolve the Taiwan dispute is to shift its focus towards the Indian Ocean. Some publications state that China has developed 12 so-called “pearl” facilities so far.¹⁵ Supporters of the SOP theory often point to statements made by some Chinese military members as evidence to support their

¹² Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: Feb. 2010), 31.

¹³ MacDonald, Donahue, and Danyluk, *Energy Futures in Asia*.

¹⁴ Robert D. Kaplan, “Center Stage for the Twenty-first Century: Power Plays in the Indian Ocean,” *Foreign Affairs* (Mar.-Apr. 2009). <http://www.foreignaffairs.com/articles/64832/robert-d-kaplan/center-stage-for-the-21st-century>.

¹⁵ Christian Bedford, “The View from the West: String of Pearls: China’s Maritime Strategy in India’s Backyard,” *Canadian Naval Review* 4, no. 4 (Winter 2009), 37.

theory: “Zhao Nanqi, former director of the General Logistics Department of the People’s Liberation Army, proclaimed in 1993, ‘We can no longer accept the Indian Ocean as an ocean only of the Indians.’”¹⁶ This narrative is also adopted by some journalists as a way to frame any Chinese activity in the Indian Ocean. Examples include the *Washington Times*,¹⁷ the BBC,¹⁸ and some defense journals.¹⁹ Additionally, recommendations for United States policy have been based on this theory of Chinese expansion into the Indian Ocean for concepts as different as strategic engagement²⁰ to increasing United States Air Force counter-sea capability.²¹

Other journalists and academics also expand the SOP theory and link it to a broader conspiracy:

China and Iran are constructing a series of strategically placed harbors—their strings of salt water pearls—partially for independent strategic reasons but equally to ensure maritime commerce in oil, gas, other licit resources, and illicit technologies between both nations can continue uninterrupted.²²

In his book, *The Great Wall at Sea* Bernard, Cole does not explicitly use the term *string of pearls*, but offers a rationale and evidence that supports the general theory:

China’s maritime strategy is linked inextricably to continued economic growth in the twenty-first century, which in turn depends on reliable foreign sources of energy.... Chinese military personnel have been

¹⁶ Kaplan, “Center Stage for the Twenty-first Century: Power Plays in the Indian Ocean.”

¹⁷ “China Builds Up Strategic Sea Lanes,” *Washington Times*, Jan. 17, 2005, <http://www.washingtontimes.com/news/2005/jan/17/20050117-115550-1929r/>.

¹⁸ “Pakistan Launches Strategic Port,” *BBC News*, Mar. 20, 2007, http://news.bbc.co.uk/2/hi/south_asia/6469725.stm.

¹⁹ David Eshel, “2011 Flashpoints: Asia,” *Defense Update*, Dec. 20, 2012, http://www.defense-update.com/analysis/2010/20122010_analysis_string_of_pearls.html.

²⁰ Christopher J. Pehrson, “String of Pearls: Meeting the Challenge of China’s Rising Power Across the Asian Littoral,” Master’s Thesis, Air University, 2006.

²¹ Lawrence Spinetta, “The Malacca Dilemma – Countering China’s ‘String of Pearls’ with Land-Based Airpower,” Master’s Thesis, Air University, 2006, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA476931>.

²² Jamsheed K. Choksy, “A Sino-Persian Grab for the Indian Ocean?” *Small Wars Journal*, Jul. 2011, 1.

reported in Burma, building and improving maritime facilities...reports of Chinese activities at what may be electronic monitoring facilities on the Cocos and Hangyi Islands.²³

Cole also embeds the concept of an expansionist Chinese navy in a recent historical context,

The PLAN offers China's leaders a flexible, ready instrument for applying power, and Beijing has not hesitated to use it: witness the 1974, 1988, 1995, and 1998–99 actions in the South China Sea and the 2008–2010 operations in the Gulf of Aden. Offshore defense is a maritime strategy with clear offensive implications.²⁴

However, Cole assesses that before China can significantly expand into the Indian Ocean, some limitations concerning distance and logistics need to be resolved: “A more ambitious goal is defense to the energy-rich Southwest Asian and East African littorals. The PLAN does not possess the platforms or experience to defend these SLOCs, which stretch more than 5,000 nm.”²⁵ This suggests that Cole agrees with the foundational logic of the Booz Allen study, but assesses that China will first need significant time to develop its maritime capability before being able to accomplish this objective.

The second group of literature looks at the rise of China and its increasing military power, and assesses that China will continue to develop maritime military capabilities for limited force projection, but that this will not involve creating overseas military bases. Daniel Kostecka for instance, cites the lack of concrete evidence illustrating China's attempting to build military bases in the Indian Ocean, “Despite the furor it has generated, the string of pearls does not represent a coordinated strategy on the part of China, and there is no substantive evidence in Chinese sources or elsewhere to support the contentions of commentators.”²⁶ In another article, he examines the lack of military progress at Gwadar, Pakistan, and concludes, “China will not pursue further

²³ Bernard D. Cole, *The Great Wall at Sea* (Annapolis, MD: Naval Institute Press, 2010), 181.

²⁴ Cole, *The Great Wall at Sea*, 183.

²⁵ Cole, *The Great Wall at Sea*, 156.

²⁶ Daniel L. Kostecka, “Places and Bases,” *Naval War College Review* 64 (2011): 61.

involvement in Gwadar.”²⁷ Other academics also point to how complicated it would be to convert commercial ports into naval bases: “Even if China’s leaders were contemplating militarizing these ‘pearls,’ there are serious doubts about the feasibility of such a scheme.”²⁸ Journalist accounts in the last few years have begun to question whether a string of pearls is more illusion than reality. Examples include *Asia Times* reporting on the dilapidate state of the port at Gwadar²⁹ or China’s intensions in the Seychelles.³⁰ Other authors examine Chinese soft power and make a counter-intuitive argument that as China becomes more powerful, it will have less necessity for military expansion. Instead it will be able to rely on its increased diplomatic and economic power to achieve its objectives.³¹

This second group of literature is less developed than the first group of literature. The reason for this is that it has taken a few years to determine what would occur in areas where China was investing, such as Gwadar. Only recently has evidence indicated that the theoretical conversion of these areas to military bases has not occurred.

The goal of my thesis is to advance a different strategic perspective about why China does not need a string of pearls. Currently, most anti-string of pearls arguments revolve around a lack of Chinese capabilities, but they do not address a potential shift in Chinese strategic military thinking. My thesis illustrates that the Chinese are no longer using the strategic perspective offered by Mahan. Instead, the Chinese military has developed a new military power projection strategy based on the new capabilities that have emerged from the revolution in military affairs, and this new strategy has made large, overseas military bases obsolete.

I accomplish this by examining advances in the following areas: satellite imagery, open source intelligence, unmanned vehicles, and cyber capabilities. Many authors have

²⁷ Daniel L. Kostecka, “A Bogus String of Pearls,” *Proceedings* 137 (Apr. 2011): 48–52.

²⁸ Ashley S. Townshend, “Unraveling China’s ‘String of Pearls,’” *Yale Global Online* (Sept. 2011).

²⁹ Peter Lee, “China Drops the Gwadar Hot Potato,” *Asia Times*, May 28, 2011.

³⁰ Maseeh Rahman, “Chinese plans in Seychelles revive Indian fears of encirclement,” *The Guardian*, Mar. 22, 2012.

³¹ Fravel, M. Taylor. “Power Shifts and Escalation: Explaining China’s Use of Force in Territorial Disputes,” *International Security* 32 no. 3 (2008): 44–83.

examined these advances and linked their conclusions to how this could affect future tactical military capability. In *The U.S. Intelligence Community*, author Jeffrey Richelson covers the advances in commercial satellite imagery and open source intelligence to describe how this has advanced intelligence collection to a new level.³² In *Wired for War*, P. W. Singer examines the role that unmanned vehicles have come to play in war.³³ In *Cyber War*, Richard Clarke discusses how cyber can now perform many objectives that previously required a kinetic attack—and that cyber can “end the conflict before it begins.”³⁴ There is a gap, however, in the literature that links these advancements to changes in a country’s international military posture and foreign policy. These case studies are used to demonstrate how these advancements have led to international force reduction for the United States, Britain, and Israel during the last twenty years. This thesis concludes by assessing Chinese perceptions about the utility of overseas bases and their perceptions of force projection in the 21st century

E. METHODS AND SOURCES

In order to answer my research question—Are modern overseas military bases an outdated military concept? If so, has China recognized this and decided not to build them? I will use a methodology that involves an analysis of comparative case studies and direct evaluation of Chinese expressed perceptions and behaviors. The three comparative case studies will involve states that decided to reduce their international military presence during the last twenty years. The reason these states reduced their international presence will be illustrated as a reaction to the technological advances of the revolution in military affairs and the corresponding understanding that military capability is measured differently, “in terms of capabilities rather than numbers.”³⁵ These three case studies are: the United States decision to substantially reduce the number of troops stationed in South

³² Jeffrey T. Richelson, *The U.S. Intelligence Community*, 6th ed. (Boulder, CO: Westview Press, 2012).

³³ P. W. Singer, *Wired for War* (New York, NY: Penguin Books, 2009).

³⁴ Richard A. Clarke, *Cyber War* (New York, NY: Ecco, 2010), 105.

³⁵ Jim Garamone, “In Korea, Think Capabilities, Not Numbers, General Says,” *American Forces Press Service* (Sept. 2004), <http://www.defense.gov/news/newsarticle.aspx?id=25210>.

Korea, the British decision to reduce the number of troops and forces in the Falkland Islands after the mid-1980s, and the Israeli decision to withdraw its troops from southern Lebanon.

In order to evaluate Chinese perceptions and behaviors and determine whether they agree with this thesis, I have examined a number of difference sources. I use translated primary sources from Chinese intellectuals, leaders, and military officers. I obtained these sources through the CIA Open Source Center.³⁶ The Open Source Center translates documents from Chinese and other languages into English. I also use Xinhua documents that have been translated and publically released in English.³⁷ Examples of primary documents include “Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century,”³⁸ along with other sources.³⁹ Additionally, I examine secondary sources that analyze these primary documents in the larger context of the revolution in military affairs, Chinese future military and diplomatic planning, and observed Chinese military modernization. Examples of these compilation sources include *The Dragon’s Quantum Leap*,⁴⁰ which discusses China’s advancing cyber capabilities and philosophy, and *The Great Wall at Sea*,⁴¹ which discusses China’s maritime advancements. I will also utilize online academic sources like the Jamestown Foundation’s China Brief.⁴² Other primary sources referenced concerning the RMA and Chinese perceptions are Chinese government publications such as China’s “White Paper on National Defense.” Additionally, I will look at U.S. government reports that analyze China such as the Office of Secretary of Defense “Military and Security Developments

³⁶ Open Source Center, Central Intelligence Agency, <https://www.opensource.gov>.

³⁷ Xinhua News Agency, Chinese Central Government, <http://www.xinhuanet.com/english>.

³⁸ Xu Qi, “Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century,” *China Military Science* (2004): 50. <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA519353>.

³⁹ “New Remote-Sensing Satellite on the Job,” *China Daily*, July 31, 2012, Open Source Center CPP20120731968047.

⁴⁰ Timothy L. Thomas, *The Dragon’s Quantum Leap* (Fort Leavenworth, KS: FMSO, 2009).

⁴¹ Bernard D. Cole, *The Great Wall at Sea: China’s Navy Enters the 21st Century*. 2nd edition. Naval Institute Press, 2010.

⁴² Jamestown Foundation, *China Brief*, <http://www.jamestown.org/programs/chinabrief/>.

Involving the People's Republic of China.” Finally, I examine China's military modernization through translated primary sources and secondary sources such as Dennis Blasko's *The Chinese Military Today*.

F. THESIS OVERVIEW

The following five chapters of this thesis are broken down as the following: the second chapter examines the conventional wisdom surrounding the string of pearls theory and Chinese nationalist expansionist theories, offering rebuttals to each viewpoint. The third chapter expands on technological improvements. This chapter looks at the revolution in military affairs (RMA) and how the advances in technology have altered the battlefield. This chapter focuses on the ability to gather large amounts of intelligence with a minimal footprint outside of a host nation. This can be done through satellite and space systems, open source intelligence, unmanned vehicles, and cyber reconnaissance and warfare. This chapter also looks at how force projection can now be accomplished with fewer overseas forces.

The fourth chapter examines historical cases illustrating the changes that have resulted from the RMA. Specifically, this chapter examines the reduction in overseas manpower and footprints, and how this is related to the RMA. The fifth chapter focuses on Chinese perceptions concerning the RMA and whether these perceptions support the hypothesis that the improvements in C4ISR significantly reduce the need for large overseas military bases. The sixth chapter offers a conclusion and assesses the implications presented in this thesis.

If this thesis is correct, what are some assessments for the future of Chinese maritime activities? First, China could probably continue to invest in space, cyber, and unmanned vehicles. One possible example of unmanned vehicle development is the Chinese announcement that it will begin using unmanned aerial vehicles instead of manned planes to patrol its maritime environment.⁴³ Second, these new technologies could lead to new military strategies concerning intelligence collection and force

⁴³ “UAVs to replace manned aircraft in marine surveillance,” *People's Daily Online*, Sept. 1, 2012, <http://english.peopledaily.com.cn/90786/7932405.html>.

deployment. These new strategies could accomplish the same military objectives from within China, which previously would have required overseas military forces. These new strategies could focus on space and cyber as the first contested areas of warfare with traditional kinetic forces being relegated to a secondary role. Finally, if this thesis is accurate, Chinese military maritime forces will continue to develop overseas places in foreign countries that can be used as logistics hubs, but would refrain from developing any large, overseas military bases.

II. THE “STRING OF PEARLS” CONVENTIONAL WISDOM

A. INTRODUCTION

The second section examines two slightly different variants of the convention wisdom that China is planning to build a string of pearls. The first version of the conventional wisdom argues that the Mahan strategic model is still relevant today and that China will continue to follow this model to increase its military power internationally. The second version assesses that China is attempting to restore its great power status and is therefore trying to attain all the symbols it associates with being a great power, foreign bases being one of those. This second version has less to do with the strategic significance of the Mahan model and is more focused on the PRC government convincing the Chinese domestic audience—as well as the international audience—that China is now a great power. Both of these arguments justify China looking at establishing large, overseas military bases, but differ in their strategic reasons for why China will take this step.

These two theories will be disputed by examining the Chinese debate about Mahan and how there is currently no single view on how Mahan should be interpreted. A second factor against China building a string of pearls is the cost and complication of building overseas military bases in the 21st century.

While overseas places such as Gwadar can be used for limited HUMINT or passive intelligence gathering, this is unlike active intelligence gathering. Active intelligence gathering would require a larger military base with military personnel to conduct operations like flying reconnaissance aircraft or basing reconnaissance military vessels at the port. However, with the new capabilities brought online by the revolution in military affairs, it no longer makes sense to collect intelligence via overseas bases—for a variety of reasons. The first reason is the high cost associated with deploying military personnel and equipment to various different locations around the world, providing logistical support to them, and protecting them and their equipment. The problem is that the intelligence collected via this method is scattered and incomplete, and provides a

marginal return on investment. The second reason is that intelligence collection is more effective with the new capabilities that can now be utilized from a state's own country. These capabilities include satellites that can provide imagery over a wide area and cyber espionage. Both of these new capabilities provide more complete, accurate, and timely information than most intelligence forces stationed at overseas bases.

B. STRING OF PEARLS THEORY

1. Official Guidance and Maritime Strategy

The first string of pearls theory assesses that China still believes in the Mahan model, and is using it as a template to guide its maritime expansion in the 21st century. This theory argues that advances in intelligence and force projection are still not important enough to offset the advantages of overseas military bases. In order to assess this hypothesis, the argument is broken down into the following sections: First, official Chinese guidance and quotes from senior Chinese leaders supporting this hypothesis are presented, along with Chinese maritime strategy. This is followed by how Mahan is mentioned in Chinese academic and military literature. The paper then looks to the specific mention of overseas bases in Chinese literature and commentary by other observers. The first theory presentation concludes with evidence that, although China has not built a string of pearls yet, it is on the cusp of changing its policy and breaking with tradition. Finally, I explain why this theory is incorrect due to a lack of Chinese consensus on what Mahan means and the cost of building overseas military bases in the 21st century.

When Chinese sources discuss the PLA's maritime goals and objectives, they often point to official remarks and policy statements to illustrate the expanding interests of China over the last decade. In "On Maritime Strategy Access," Liang Fang, a senior captain in the PLAN—who has a doctorate in strategic studies from National Defense University, and is also an instructor at the same location—points to the guidance President Hu Jintao gave regarding the maritime realm and China's navy,

It is a must to improve the strategic capabilities of maritime security and protection, to defend the nation's sovereignty of the territorial sea and

maritime rights and interests, and to protect the security of the nation's developing strategic access for the maritime industry, the maritime shipping, and the energy resources.⁴⁴

Later on in the book, Liang Fang illustrates how this broad official guidance is to be translated into increasing naval forces and naval missions in the maritime realm by citing a speech from President Hu Jintao: "To construct a powerful people's Navy well-matched to the status of the nation and adaptable to the requirements of the PLA's historical mission in the new phase of the new century."⁴⁵ Other Chinese observers point to more bellicose rhetoric from senior Chinese military leaders to confirm China's Mahanian string of pearls aspirations. As Robert Kaplan quotes in 2009, "Zhao Nanqi, former director of the General Logistics Department of the People's Liberation Army, proclaimed in 1993, 'We can no longer accept the Indian Ocean as an ocean only of the Indians.'"⁴⁶ Kaplan also presents evidence that China has decided that India is China's future greatest threat, "Zhang Ming, [is] a Chinese naval analyst... 'India is perhaps China's most realistic strategic adversary,' Zhang has written. 'Once India commands the Indian Ocean, it will not be satisfied with its position and will continuously seek to extend its influence, and its eastward strategy will have a particular impact on China.'"⁴⁷

Besides providing an idea for a Mahan strategy, Liang Fang also outlines the geographic and political constraints that China will face as it seeks to expand in the maritime realm, "Access for China to enter and exit from the ocean is obstructed by a ring-shaped island chain, which makes China under the control of others to a certain extent and makes it very possible to be intercepted by the enemy in wartime."⁴⁸

Other Chinese sources look to the future and see the maritime and littoral areas as the locations where power will be most intensely contested. "Contention for sea territory will become a new trend of littoral conflicts, and mankind will enter a geopolitical

⁴⁴ Liang Fang, *On Maritime Strategic Access [Haishang Zhanlue Tongdao Lun]* (China: 2011), 9, Open Source Center CPP20120621318001001.

⁴⁵ Fang, *On Maritime Strategic Access*, 64.

⁴⁶ Kaplan, "Center Stage for the Twenty-first Century," 16.

⁴⁷ Kaplan, "Center Stage for the Twenty-first Century," 16.

⁴⁸ Fang, *On Maritime Strategic Access*, 10.

turbulence period ... homeland defense will move forward from coastal defense to maritime defense.”⁴⁹ Andrew Erickson examines these issues percolating in the Chinese press, and observes new academic and military debates beginning to question old ideals:

There is no question that within China the issue of overseas basing and the stationing of PLA troops abroad is being robustly debated. An examination of the open press in China illustrates that there is an unofficial line of thought suggesting the need for Chinese overseas facilities.⁵⁰

However, while there is a debate in the Chinese literature, there is still no agreement about what the correct future strategic plan should be. This lack of consensus will be further explored later in this chapter. Additionally all of the overseas basing debate is still unofficial and Chinese official government statements continue to agree with the party line that China does not establish overseas bases.

2. A “Cult of Mahan” in Chinese Thinking?

The next question is how Mahan is discussed in Chinese literature. This paper focuses on Chinese sources that show support for the Mahan version of military warfare. The first piece of evidence of a possible “Cult of Mahan” is a Chinese CCTV eight-part documentary released in late 2011 and focused on sea power. In the documentary, “Towards the Sea,” Part Four is devoted almost entirely to discussing Mahan, “The documentary (Part Four) cites Alfred Thayer Mahan’s book *The Influence of Sea Power Upon History* to say that a nation’s prosperity, development, and security is ‘closely tied to its sea power,’ because ‘not only does sea power determine victories in sea and land battles, but it also determines the course of history.’”⁵¹

The documentary goes on to describe how Japan and the United States embraced Mahan and became powerful in the 20th century, while China ignored Mahan and

⁴⁹ “China: Rise Of New Maritime Powers and Coastal Conflict,” *China Military Science* (May 2010): Open Source Center CPP20110218563001.

⁵⁰ Andrew Erickson, “Chinese Overseas Basing Requirements for the Twenty First Century,” *China Brief* 9, no. 19 (2009).

⁵¹ “OSC Report: PRC TV Documentary Emphasizes Sea Power, South China Sea Resources,” *CCTV*, (Feb. 2012): Open Source Center CPP20120221061002

suffered a century of humiliation. Liang Fang also quotes Mahan multiple times, providing legitimacy for her arguments for a strong navy: “Mahan once pointed out that it is necessary to have two strategic elements to control a commercial route, one is a mobile navy, and the other is a port near the route to serve as the base for naval operations.”⁵²

Other Chinese authors have concluded that Mahan’s philosophy is still being followed by all the powerful navies of the present day: “Up to the present, all maritime powers in the world continue to follow the thinking expressed by “On Sea Power” and pursue a maritime offensive strategy and a military line from the sea to the land.”⁵³

This emphasis in Chinese sources has led many Chinese watchers to conclude that China has decided Mahan is the gold standard, including James Holmes:

American theorist’s oft-cited description of command of the sea as “that overbearing power on the sea which drives the enemy’s flag from it, or allows it to appear only as a fugitive.” Indeed, this bellicose-sounding phrase is by far the most common Mahan quotation to appear in Chinese commentary.⁵⁴

Such authors cite evidence showing Chinese leaders believe that Mahan is still the strategic building block for a navy.

James Holmes also sees Beijing’s 2004 White Paper confirming his hypothesis, “Beijing’s 2004 Defense White Paper instructs the armed forces to ‘strengthen the capabilities for winning both command of the sea and command of the air.’ This remains the clearest statement of China’s Mahanian outlook.”⁵⁵ In fact, Holmes concludes his introduction to his book with the following statement, “This study contends that Alfred Thayer Mahan’s writings and theories on seas power furnish an indispensable framework for understanding China’s emerging maritime strategy.”⁵⁶

⁵² Fang, *On Maritime Strategic Access*, 64.

⁵³ “China: Rise Of New Maritime Powers and Coastal Conflict,” *China Military Science* (2010): Open Source Center CPP20110218563001.

⁵⁴ James Holmes and Toshi Yoshihara, “A Chinese Turn to Mahan?” *China Brief* 9, no. 13 (2009).

⁵⁵ Holmes and Yoshihara, “A Chinese Turn to Mahan?”

⁵⁶ James Holmes and Toshi Yoshihara, *Chinese Naval Strategy in the 21st Century – The Turn to Mahan* (New York, NY: Routledge, 2008), 5.

Robert Kaplan goes even further, stating that both rising powers in the Pacific have found Mahan to be their guiding light, “The Influence of Sea Power Upon History, 1660–1783, which argued that the power to protect merchant fleets had been the determining factor in world history. Both Chinese and Indian naval strategists read him avidly nowadays.”⁵⁷

While Kaplan acknowledges that technology advances have created changes in the economic and military realms, he dismisses these as insignificant factors: “Although recent technological advances and economic integration have encouraged global thinking, some places continue to count more than others.”⁵⁸ Instead, Kaplan focuses on where the sea lines of communication are and bases his military theories around the control of specific geographic key maritime nodes: “Even today, in the jet and information age, 90 percent of global commerce and about 65 percent of all oil travel by sea.”⁵⁹

3. From Mahan Strategy to Chinese Overseas Military Bases

With Mahan philosophy incorporated in the Chinese military and academic community, the next step is to ascertain whether this is beginning to affect the Chinese perception on building overseas military bases. Liang Fang acknowledges the importance of overseas military bases: “Maritime Bases Must Be Relied Upon To Ensure The Security Of Strategic Maritime Passages...According to the law of distance attenuation in geography, the greater the distance from the target being controlled, the weaker the ability to control it; conversely, the stronger it is.”⁶⁰

Liang goes on to state that if the Chinese military wants to continue to operate far from the Chinese coast, it is imperative to establish overseas military bases. “When a country’s navy operates in battlefields far from the country, the necessity to acquire

⁵⁷ Kaplan, “Center Stage for the Twenty-first Century,” 16.

⁵⁸ Kaplan, “Center Stage for the Twenty-first Century,” 16.

⁵⁹ Kaplan, “Center Stage for the Twenty-first Century,” 16.

⁶⁰ “China: Controlling Strategic Maritime Passages,” *China Military Science* (Feb. 2011) : 135–142, Open Source Center CPP20110228563001.

permanent positions in those regions is inevitable; whether or not the navy's activities are effective is closely tied to these positions.”⁶¹

Outside observers also see Chinese discussions and actions, and conclude that China is strategically planning to develop overseas military capabilities. “Some assessments, many coming out of Indian think tanks and defense organizations, state unequivocally that the objective of China's string of pearls strategy is to dominate the Indian Ocean Region.”⁶² The *Asia Times* newspaper is one of the most outspoken sources when it comes to discussing China's string of pearls. “The clout of China—which many within the Indian defense establishment unabashedly declare as the greatest long-term threat to India's security—continues to grow, and the manifestations of this power are largely sea-based.” In an article from 2006, the *Asia Times* lists all the different projects China is working on in the Indian Ocean and ties them all together into a plan for China to militarily dominate India in the Indian Ocean:

Gwadar port has a far-larger significance in China's scheme of things. It is said to be the western-most pearl in China's “string of pearls” strategy (this is a strategy that envisages building strategic relations with several countries along sea lanes from the Middle East to the South China Sea to protect China's energy interests and other security objectives), the other “pearls” being naval facilities in Bangladesh, Myanmar, Thailand, Cambodia and the South China Sea.⁶³

The BBC has, over the years, also presented various articles that illustrate China's growing intentions in the Indian Oceans. The first article in 2007 looked at developments in Gwadar. “The port is said to be part of Chinese naval expansion along the Asian and African coasts called the ‘string of pearls’ initiative, according to a U.S. Department of Defense report.”⁶⁴ This was followed in 2009 by reports that China was thinking of establishing an overseas military base in the Indian Ocean. “A senior Chinese naval

⁶¹ “China: Controlling Strategic Maritime Passages,” *China Military Science* (Feb. 2011): 135–142, Open Source Center CPP20110228563001.

⁶² Erickson, “Chinese Overseas Basing Requirements for the Twenty First Century.”

⁶³ Sudha Ramachandran, “China's pearl loses its luster,” *Asia Times*, Jan. 21, 2006, http://www.atimes.com/atimes/South_Asia/HA21Df03.html.

⁶⁴ “Pakistan Launches Strategic Port,” *BBC News*, Mar. 20, 2007, http://news.bbc.co.uk/2/hi/south_asia/6469725.stm.

officer has suggested that China establish a permanent base in the Gulf of Aden to support its anti-piracy operations. Rear Admiral Yin Zhou's proposal was posted on the defence ministry website."⁶⁵ In 2010, the BBC examined developments in Chittagong:

The Indians fear that although these deep sea ports will be for trade, China could call them in for military or strategic purposes if oil becomes scarce. 'When you put together all these jigsaw puzzles it becomes clear that Chinese focus in Indian Ocean is not just for trade,' says Professor Kondapalli. 'It is a grand design for the 21st Century.'⁶⁶

In late 2011, the BBC looked at developments in the Seychelles and Nepal, and again linked it to a larger Chinese military strategy, going so far as to title the article *The New Great Game*. "But while it could not stop the Seychelles hosting China's new base, India drew the line earlier this year when Nepal—landlocked between the two giants—contemplated accepting \$3bn (£2bn) worth of Chinese investment."⁶⁷

There are also variations and expansions on the string of pearls theory. Robert Kaplan has assessed that once China resolves the Taiwan problem it can quickly move on to China's real objective—the Indian Ocean. "One reason that Beijing wants desperately to integrate Taiwan into its dominion is so that it can redirect its naval energies away from the Taiwan Strait and toward the Indian Ocean."⁶⁸ Another article published in the *Canadian Naval Review* in 2009 mentions unconfirmed reports that China was building a submarine base in the Maldives. "It is also widely reported that in 2005 China signed a deal with then-President Abdul Gayoom to construct a submarine base in the Maldives."⁶⁹ *Asia Times* indicates that China has shifted its string of pearls strategy and now wants to start by building military bases in Pakistan, and then shift to naval bases:

While Pakistan wants China to build a naval base at its southwestern seaport of Gwadar in Balochistan province, Beijing is more interested in

⁶⁵ "China floats idea of first overseas naval base," *BBC News*, Dec. 30, 2009, <http://news.bbc.co.uk/2/hi/8435037.stm>.

⁶⁶ Mukul Devichand, "Is Chittagong one of China's 'string of pearls'?" *BBC News*, May 17, 2010, <http://news.bbc.co.uk/2/hi/business/8687917.stm>.

⁶⁷ Andrew North, "India and China, the new Great Game," *BBC News*, Dec. 12, 2011, <http://www.bbc.co.uk/news/world-asia-16149397>.

⁶⁸ Kaplan, "Center Stage for the Twenty-first Century," 16.

⁶⁹ Bedford, "The View from the West: String of Pearls," 38.

setting up military bases either in the Federally Administered Tribal Areas (FATA) of Pakistan or in the Federally Administered Northern Areas (FANA) that border Xinjiang province.⁷⁰

In conclusion, various sources view China's maritime developments and discussions of Mahan strategy as evidence that China has future intentions to build maritime overseas military bases.

4. An Approaching Shift in Chinese Foreign Policy?

The hypothesis of a string of pearls is based on an economically vibrant China that is looking to secure additional international economic resources. Part of this theory relies on the idea that China's phenomenal growth will continue at its current pace; however, economic studies indicate that China might be reaching an economic plateau in the near future.⁷¹ Additionally the string of pearls theory assumes that as China's economic and security interests grow, it will change its policy on overseas bases when necessary. To support this theory, Chinese observers point to what happened with the acquisition of China's first aircraft carrier to illustrate how quickly China's viewpoint can change concerning military matters. "People's Liberation Army Navy (PLAN) held a naval review to mark the sixtieth anniversary of its founding and—after years of studied denials—the PLA leadership has more or less openly stated that it wants to acquire aircraft carriers."⁷² Now there are reports in the official media that discuss building additional carriers: "Another assessment in China's official media suggests that China should develop several overseas bases and build three or four aircraft carriers."⁷³

According to the string of pearls theory, China is in the process of making a similar change to its policy of overseas bases. This change in Chinese policy began with

⁷⁰ Amir Mir, "China seeks military bases in Pakistan," *Asia Times*, Oct. 26, 2011, http://www.atimes.com/atimes/South_Asia/MJ26Df03.html.

⁷¹ Barry Eichengreen, Donghyun Park, and Kwanho Shin, *When Fast Growing Economies Slow Down: International Evidence and Implications for China* (Cambridge, MA: National Bureau of Economic Research, Mar. 2011), <http://www.nber.org/papers/w16919>.

⁷² Holmes and Yoshihara, "A Chinese Turn to Mahan?" http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=35172.

⁷³ Michael S. Chase and Andrew S. Erickson, "Changes in Beijing's Approach to Overseas Basing?" *China Brief* 9, no. 19 (2009), http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=35536.

the anti-piracy deployments as a convenient way to break the taboo of talking about overseas bases without sounding expansionist or hegemonic. “PLAN experience with anti-piracy operations in the Gulf of Aden that began in December 2008 appears to have sparked a debate over the efficacy of continuing to adhere to China’s oft-stated and longstanding policy of refraining from establishing any overseas military bases.”⁷⁴

From their expansionist theory, one would expect to see the Chinese media unofficially discuss the overseas bases concept to see what type of reaction would occur from the international community. “Global Times—the offshoot of People’s Daily—PLA Air Force (PLAAF) Colonel Dai Xu openly advocated the development of overseas bases to ‘safeguard commercial interests and world peace.’”⁷⁵ If the international community reacted with alarm then China could always say that it was only the position of one military member and repeat the phrase that China does not build overseas military bases. China could also try to frame the issue around its anti-piracy deployments to gain support for its position that it needs overseas bases in order to continue to participate and help the international community,

It is an international practice for naval fleets on long voyage missions to replenish at the nearest port of coastal countries. China will consider using suitable ports in Seychelles and other countries for the replenishment and rest of naval fleets in light of their needs in escort and long voyage missions. Such practice is transparent, and there is no need to worry.⁷⁶

The string of pearls theory also expects that while China might initially be building commercial facilities in Gwadar and other Indian Ocean ports, this is really just a first step towards building a military base. The idea is that once China has established these initial supply points, it will slowly upgrade them until one day they will have all the aspects of a military base. These advocates point to comments like those from Li Jie, a senior captain in the PLAN discussing future international operations: “At that time, we shouldn’t emphasize those traditional principles anymore. In the future, China may

⁷⁴ Chase and Erickson, “Changes in Beijing’s Approach to Overseas Basing?”

⁷⁵ Chase and Erickson, “Changes in Beijing’s Approach to Overseas Basing?”

⁷⁶ “Foreign Ministry Spokesperson Liu Weimin’s Regular Press Conference on December 13, 2011,” *Chinese Foreign Ministry website*, <http://www.fmprc.gov.cn/eng/xwfw/s2510/2511/t887527.htm>

consider upgrading the function of overseas support points.”⁷⁷ Another example is comments from Han Xudong, a professor at National Defense University, “China should firstly focus on ‘going out’ and then discuss the establishment of overseas naval bases. It’s necessary for China to have its own overseas navy bases to safeguard its expanding interests abroad.”⁷⁸

C. PROBLEMS WITH THE STRING OF PEARLS THEORY

1. Mahan’s Many Different Meanings

Many problems are involved with the string of pearls theory and the Mahan philosophical model on which it is based. These problems include Chinese debate about Mahan, complications in building a string of pearls, the idea of “places not bases,” and new technology. First, there is a wide variety of opinion when trying to interpret how Chinese thinkers view Mahan. James Holmes examines the data and determines that there are two probable reasons for the lack of a unified Mahan theory in Chinese writings. The first reason is, “PLAN thinkers may still be translating, reading, and digesting his theories and considering how to apply them to Chinese foreign policy goals.”⁷⁹ While the second reason is, “Chinese navalists may simply be using Mahan to lobby for a big navy composed of expensive, high-tech platforms.”⁸⁰ There is also the theory developed in this thesis that the revolution in military affairs has resulted in overseas military bases becoming less important.

When examining Chinese literature, even more variations on Mahan are observable. In one Chinese article from AMS, “China: Geothinking on Land-and-Sea Integration,” one author highlights the fact that Mahan’s writing were primarily concerned with controlling the open ocean, and that China is more concerned with limited maritime defense: “The sea power Mahan talked about is not the control of the legal waters of one’s own nation, but the occupation and control of the open sea.

⁷⁷ “Time not yet ripe for China foreign bases,” *Global Times Online*, Dec. 20, 2011, <http://www.globaltimes.cn/NEWS/tabid/99/ID/689244/Time-not-yet-ripe-for-Chinas-foreign-bases.aspx>

⁷⁸ “Time not yet ripe for China foreign bases,” *Global Times Online*.

⁷⁹ Holmes and Yoshihara, “A Chinese Turn to Mahan?”

⁸⁰ Holmes and Yoshihara, “A Chinese Turn to Mahan?”

China...does not seek to control the open sea.”⁸¹ Other authors look at the development of the United Nations and international law and determine that the conditions Mahan described are no longer relevant. “Sea power in the age of globalization is a kind of ‘governmental power,’ and what is different is that it does not involve exclusive control, but is rather a kind of co-governance.”⁸² Other authors mention how Mahan deals with objective concepts, and it is important to interpret Mahan according to the circumstances of today which might be different. “Haiquan [sea power] is an objective reality, which different countries at different historical stages and against different backdrops will understand in different ways.”⁸³ Other Chinese authors wonder if their contemporaries are focusing too much on Mahan: “With the strengthening of people’s sense of the ocean, some people worship the sea power theory of Mahan and come to the conclusion that becoming a major sea power is the inevitable route of rising as a major power. This idea has some truth to it, but an in-depth analysis is needed.”⁸⁴

Finally, another author cited the limited objectives of China and ruled out Mahan’s goal of dominating maritime trade. “China’s goal for its national development in the next 50 years will be a ‘medium-developed country,’ which was set by Comrade Deng Xiaoping. Consistent with this goal, China’s sea power should only be limited sea power.”⁸⁵ The conclusion that can be reached from this variety of official literature is that the Chinese military has not reached a definite conclusion of whether Mahan’s theories are still relevant. Right now, both the pro-Mahan and anti-Mahan sides are using military journals to propose their theories and dispute their opponents’ theories. Three different futures are possible: Pro-Mahan forces win the debate and China begins to build overseas bases. Anti-Mahan forces win the debate and China continues to work

⁸¹ “China: Geostrategic Thinking On Land-And-Sea Integration,” *China Military Science*, Apr. 16, 2012: 57–62, Open Source Center CPP20120416563001.

⁸² “PRC: Scholar Proposes ‘New Concept of Sea Power’ for China in Globalization Age,” *Shijie Zhishi*, Aug. 16, 2011, Open Source Center CPP20110930671001.

⁸³ Zhang Wenmu, “PRC Book Excerpt: *On China’s Sea Rights and Sea Power*” (Beijing: Ocean Press, 2010), Open Source Center CPP20110103786001001.

⁸⁴ “China: Geostrategic Thinking On Land-And-Sea Integration” *China Military Science*, Apr. 16, 2012: 57–62: Open Source Center CPP20120416563001 .

⁸⁵ Wenmu, “PRC Book Excerpt: *On China’s Sea Rights and Sea Power*,” 28, Open Source Center CPP20110103786001001.

within the international framework to accomplish its objectives while developing new capabilities including cyber and space. Finally, the debate could continue for the foreseeable future, resulting in a number of different policies being pursued depending on the international environment.

2. Complications and Cost Overruns

Other problems with the string of pearls are the complications and cost overruns that would accompany such a large strategic plan. With multiple bases in multiple countries thousands of miles away from China, coordination and construction would be very difficult. Additionally, such a large undertaking with limited oversight would prove fertile ground for Chinese and host country corruption, which would further driving up costs. Two pieces of evidence point to this issue. The first piece of evidence is a speech made by Gen. Liu Yuan that described the corruption in the People's Liberation Army in December 2011. "No country can defeat China," Liu told about 600 officers in his department in unscripted comments to an enlarged party meeting on the afternoon of December 29, according to sources who have verified notes of his speech. "Only our own corruption can destroy us and cause our armed forces to be defeated without fighting."⁸⁶ This problem has been directly linked to challenges in securing links to overseas basing in the cancellation of a contract for navigational channel buoys from China by the Gwadar Port Authority in March 2010, due to perceived corrupt practices,

According to the complaints, the GPA ordered installation of 17 new channel buoys at an exorbitant cost of Rs 67 million. The cost of each buoy was Rs 3.94 million against the market price of Rs 1.65m (inclusive of solar light). Notwithstanding the exorbitant prices, there was no need to replace the channel buoys since the technical life of the buoys is 16 years, and the current buoys were placed in the Gwadar port channel in 2007.⁸⁷

Finally, China would have to deal with local bureaucracies and red tape from each of these different countries, which would further complicate and delay any plan. China is

⁸⁶ John Garnaut, "Rotting from Within," *Foreign Policy Webpage*, Apr. 16, 2012, http://www.foreignpolicy.com/articles/2012/04/16/rotting_from_within.

⁸⁷ "GPA scraps contract to buy navigation channel buoys from China," *Transparency International – Pakistan webpage*, Mar. 5, 2010, <http://www.transparency.org.pk/news/newsdetail.php?nid=52>.

already encountering many of these problems as it attempts to develop the commercial potential of Gwadar. One of the most significant problems is the violence occurring in the surrounding community. “According to official data, there were 187 bomb blasts, 275 rocket attacks, eight attacks on gas pipelines, 36 attacks on electricity-transmission lines and 19 explosions on railway lines in 2005. At least 182 civilians and 26 security force personnel died in the province during 2005.”⁸⁸

In addition to the violence, cost overruns became a growing source of tension. “Pakistan has now raised the cost of Chinese participation to U.S.\$3 billion in addition to the \$1.5 billion yearly payment, which China has refused, saying it is steep, and in breach of the terms of the contract.”⁸⁹

Another complication with the string of pearls idea is that it does not make military sense. As Andrew Erickson pointed out:

Due to geographical location, if the Chinese stationed naval and air forces on the “String of Pearls” sites, these forces would easily be vulnerable to Indian air and missile attacks. Some Indian analysts have pointed out that Chinese naval and air forces would find themselves consistently at a numerical disadvantage to Indian military forces which can, owing to their proximity, more easily concentrate their forces...the stationing of Chinese military forces at the “String of Pearls” sites would isolate these forces at great distances from China—which would make them unavailable for a hypothetical maritime conflict with the United States or one of China’s other rivals in East Asia.⁹⁰

This quote identifies an important strategic reason why China would not establish a string of pearls. By placing a significant amount of forces in the Indian Ocean, China is effectively isolating them from any type of military support. If a conflict with the United States or India were to break out, these forces would be unlikely to be able to repel a United States carrier task force or a prolonged Indian attack. This would result in the Chinese having to make a decision to either sacrifice the forces in place—to hold out as long as possible—or abandon the base before a conflict began. Both of these scenarios

⁸⁸ Ramachandran, “China’s pearl loses its luster.”

⁸⁹ Ramachandran, “China’s pearl loses its luster.”

⁹⁰ Erickson, “Chinese Overseas Basing Requirements for the Twenty First Century.”

point to the problem of having a base located geographically far from its homeland with no strong military ally in the region that could offer support. This is a similar situation to what happened to the United Kingdom with its Singapore base at the beginning of World War II.⁹¹ In the Singapore case, Britain ended up losing the military base, along with wasting a military division and two naval ships that could have been more effective elsewhere.

D. CHINESE NATIONALISM AND GREAT POWER STATUS

The second string of pearls theory has less to do with the strategic significant of the Mahan model and is more focused on Chinese nationalism. This theory is based on the idea that China wants to reclaim its place as a “great power,” and judges its great power status by comparing its military capabilities to other great power nations. According to this theory, since other great power nations like the United States, Russia, Great Britain, and France have overseas bases and aircraft carriers, China should also seek to acquire these symbols of great power legitimacy. This theory can be divided into a historical past section, a small-vs.-big countries section, and a modern-day great power section.

The first section looks at the historical narrative the Chinese government has created concerning its maritime role and how it establishes a baseline for modern-day Chinese military power projection goals. In many different articles and news reports, China’s military aspirations are often compared to what China was capable of in the past, specifically Zheng He’s seven voyages. “At the beginning of the 15th century, Zheng He’s seven voyages to the Western Seas went as far as the western coast of Africa. China’s sea influence reached its zenith at that time. Following this, China suddenly completely withdrew from the seas.”⁹² Zheng He’s voyages are used as a baseline for how far China has to go to regain its rightful position in the international arena.

⁹¹ Raymond Callahan, “The Illusion of Security: Singapore 1919–1942,” *Journal of Contemporary History* 9, no. 2 (April 1974), 69–92.

⁹² “PRC Article Details History of China’s Gradual Loss of Naval Supremacy” *Zhongguo Guojia Dili*, Oct. 7, 2010, Open Source Center CPP20110520702002.

These stories also provide China a historical claim and legitimacy for the future if they try and reestablish military places or bases in the Indian Ocean. “Yin Zhuo, a prominent spokesman on naval matters, made his suggestion to establish a permanent base in the area ... During the 15th Century, Chinese naval explorers reached the East African coast, visiting Mogadishu and Malindi.”⁹³ The next historical incident that China uses to frame its current ambitions is the Cold War. In different articles, Chinese scholars examine the United States policy of containment against the USSR and compare it to what they perceive the United States is attempting to accomplish. “Faced with the new situation of an ascendant China and a trend toward ocean development, the United States is currently building an alliance like that used during the Cold War period to contain the Soviet Union.”⁹⁴

Besides utilizing its history to build a case for increased maritime activity and possible overseas bases, China also frequently states that, as a “large country,” it should have more rights in the international arena than a smaller country. China bases its claim as a maritime great power based on its extensive access to the sea. “China is a large nation of land as well as a large nation of ocean with an “ocean territory” of around 3 million square kilometers, coastlines of 18,000 kilometers, and more than 6,500 coastal islands. These determine the status of China as a world maritime power.”⁹⁵

Chinese authors have recently begun to utilize the idea that in the international relations, other countries that are smaller in size or population should not try and tell larger countries what to do. “The recent Sino-Philippine dispute over Huangyan Island [Scarborough Reef] attracted the world’s attention, because it was a rare case of territorial sovereignty dispute between a small country and a large country.”⁹⁶ Thus, by using the terms “small country” and “large country,” China evokes the idea that it should have more rights in the international arena than most of the maritime countries surrounding it.

⁹³ “China floats idea of first overseas naval base,” *BBC News website*, Dec. 30, 2009.

⁹⁴ “PRC Scholar Examines U.S.-China Marine Geopolitics, Strategy in Globalization” *Taipingyang Xuebao*, 25 Dec 2010, Open Source Center CPP20110511671002.

⁹⁵ Fang, *On Maritime Strategic Access*, 10.

⁹⁶ “PRC Article Accuses U.S. of Using SCS Sovereignty Rows to Contain China,” *Zhongguo Qingnian Bao Online*, Jul. 13, 2012, Open Source Center CPP20120713787017.

Finally, China looks to other great power countries to figure out the symbols of being a Great Power. China does this by looking at the United States as the ultimate display of what a great power should be. Thus, China looks to what the United States has accomplished in the maritime realm and seeks to begin to build similar power:

The nine world powers that have appeared in the world in modern times are all sea powers. These nations attach extremely great importance to maritime rights. In particular, the importance attached to maritime rights by the United States is more than any other country can compare with.⁹⁷

One of the ways that China can increase its maritime military is to eventually build overseas bases. Since the United States already has overseas military bases, the Chinese assess that the United States has no right to complain. “Setting up overseas military bases is not an idea we have to shun; on the contrary, it is our right. Bases established by other countries appear to be used to protect their overseas rights and interests.”⁹⁸ Other Chinese officials are more direct about the hypocrisy of Western nations telling China it should not build overseas military bases. “The Western countries built military bases to expand their influence and protect national interests. They don’t have the qualifications to point fingers at China.”⁹⁹

E. PROBLEMS WITH THE CHINESE NATIONALISM ARGUMENT

The idea, that the only way China can become a Great Power is by building overseas military bases, is flawed. One counterargument is that overseas military bases are an outdated concept to measure Great Power status. This is apparent when examining the trend in Great Powers and international bases over the last twenty years. If China were to look at the United States, it would see that the United States is, overall, reducing and eliminating more overseas military bases than it is creating. The best example of this is the United States’ shrinking presence in South Korea.

⁹⁷ “PRC Academic Urges Strong Measures to Defend China’s Maritime Rights,” *Liaowang*, Jul. 25, 2011, Open Source Center CPP20110803787001.

⁹⁸ Erickson, “Chinese Overseas Basing Requirements for the Twenty First Century.”

⁹⁹ “Time not yet ripe for China foreign bases,” *Global Times Online*.

Instead, China can demonstrate that it is becoming a Great Power in other ways. One of these is with its technological development. China has been sending individuals into space. Another way to show it is a Great Power would be to land a man on the moon. Other ways to demonstrate its Great Power status are with Olympics medals, urban development, and quality of life improvements.

A problem with China developing overseas bases is that it could also lead to balancing behavior in Asia against China. While nationalism and Great Power status are goals of China, another goal is to maintain a stable economy and international environment. China benefits from the current political and economic system and it would have to carefully consider the impact that establishing an overseas military base would have on its international relations.

Chinese authors can also find other military ways to demonstrate their great power status besides just building overseas military bases. One of these is to build new advanced weapon systems. “China must vigorously increase its military modernization. In particular, it must enhance the strength of the navy and develop aircraft carrier, submarine, aircraft, and missile technologies to take control of the sea supremacy that has been monopolized by the United States.”¹⁰⁰

F. CONCLUSION

In conclusion, there are two primary variants of the string of pearls theory that contest this thesis that China will not build large overseas military bases. The first variant is the string of pearls theory that states China’s maritime strategic objective is to build a series of military bases in the Indian Ocean to protect its energy security and offer better force projection. However, there are significant problems with this theory, including the logistical complications and military vulnerability that such a process would entail. The second variant is that China will seek to build international military bases as a symbol that it has finally achieved “Great Power” status. While this is a possibility, there are other less costly and more effective ways for China to show its great power status.

¹⁰⁰ “PRC Scholar Examines U.S.-China Marine Geopolitics, Strategy in Globalization” *Taipingyang Xuebao*, Dec. 25, 2010, Open Source Center CPP20110511671002.

Another theory as to why China will not develop overseas military bases—developed in the remainder of this thesis—is that large overseas military bases are an outdated military concept. Instead, China will focus on more effective ways of projecting military power and collecting intelligence. These more effective ways are focused around the revolution in military affairs and include developing their cyber, space, and unmanned vehicles capabilities.

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III. REVOLUTION IN MILITARY AFFAIRS

“Warfare is not just a matter of hurling mass and energy at one’s enemies; it is also about gaining an ‘information edge.’”¹⁰¹

A. INTRODUCTION

Chapter III examines how the revolution in military affairs resulted in the same military objectives being accomplished with fewer military personnel and a smaller overseas footprint. The advancements in military technology have resulted in large military overseas bases becoming less important to accomplishing a state’s military objectives. This results in countries like the United States reducing the amount of overseas personnel and closing some overseas military bases. For a state like China, which does not have overseas military bases, new technology provides a better alternative to accomplish its military objectives rather than establishing overseas military bases or a “string of pearls.” In fact, Chapter IV discusses how some Chinese military leaders now view cyber and space as two of the most important war fighting domains. The new technology that has changed the nature of intelligence collection and force projection are satellites, open source intelligence, unmanned vehicles, and cyber capabilities.

One of the most important advances in satellite technology in the last twenty years is GPS. “Because GPS makes weapons more accurate, the military needs fewer warheads and fewer personnel to take out targets.”¹⁰² The Chief of Staff of the United States Air Force General Schwartz emphasizes how satellites have changed modern warfare. “Global positioning has transformed an entire universe of warfighting capability. Our dependence on precision navigation in time will continue to grow.”¹⁰³ Another important advantage of satellites is the imagery capability that they provide.

¹⁰¹ John Arquilla, “From Blitzkrieg to Bitskrieg: The Military Encounter with Computers,” *Communications of the ACM* 54 (2011): 58.

¹⁰² Dan Elliott, “Glitch shows how much military relies on GPS,” *Air Force Times*, June 1, 2010, http://www.airforcetimes.com/news/2010/06/ap_gps_060110w/.

¹⁰³ Michael Hoffman, “Schwartz warns against dependence on GPS,” *Air Force Times*, Jan. 23, 2010, http://www.airforcetimes.com/news/2010/01/airforce_schwartz_012310/.

Open source intelligence has also provided the capability to collect intelligence that was previously available only with military planes and ships stationed in overseas military bases. As the former head of the CIA Michael Hayden said, “Open source intelligence is widely recognized as both an essential capability and a formidable asset in our national security infrastructure.”¹⁰⁴ In fact, after September 11, open source intelligence was considered so important it was one of the key areas of focus for the Director of National Intelligence. As Director Hayden explains, “In fact, we saw the establishment of the Open Source Center as one of the three most important objectives for the ODNI in its first year.”¹⁰⁵ While the Foreign Broadcast Intelligence Service (FBIS) had existed before the Open Source Center was created, Director Hayden felt that FBIS’s reach could be expanded and the information could be available to more government agencies than in the past.

Unmanned vehicles have enabled better collection of intelligence and kinetic strikes that previously could have been done only with manned reconnaissance aircrafts and fighter jets. Combining these capabilities in smaller aircraft reduces the military people and logistics needed to deploy to overseas bases. In fact, the unmanned capability has been assessed to save the United States from deploying at least 1,000 permanent positions to the Middle East immediately after September 2001:

Satellite relays allow Predator pilots in the U.S. to operate the armed UAV in combat in the Middle East. A conservative estimate indicates that this then-new reachback method saved the Defense Department the time, cost, and effort of moving roughly 1,000 personnel—and all their attendant equipment—from the United States to the theater.¹⁰⁶

Post September 11, fewer than 10 Predator Combat Air Patrols would have been operational. Now there are over 50 Combat Air Patrols. Hence, the savings in overseas personnel and equipment is now probably significantly greater than 1,000 personnel.

¹⁰⁴ Michael Hayden, “Director’s Remarks at the DNI Open Source Conference 2008,” Sept. 12, 2008, <https://www.cia.gov/news-information/speeches-testimony/speeches-testimony-archive-2008/directors-remarks-at-open-source-conference.html>.

¹⁰⁵ Hayden, “Director’s Remarks..”

¹⁰⁶ Walter J. Boyne, “How the Predator Grew Teeth,” *Air Force Magazine website* (July 2009), <http://www.airforce-magazine.com/MagazineArchive/Pages/2009/July%202009/0709predator.aspx>.

Finally, cyber capabilities provide states the ability to collect large amounts of intelligence and project force in ways that were not possible in the past. A good example of this force projection capability would be how the French were unable to fly their fighter jets due to a computer virus attack. “The aircraft were unable to download their flight plans after databases were infected by a Microsoft virus.”¹⁰⁷ Without their flight planes the pilots could not determine where their objective was and so were unable to accomplish their training mission.

Satellites, open source intelligence, unmanned vehicles, and cyber capabilities have changed the nature of warfare. Countries can now accomplish significant intelligence gathering without deploying or by deploying small groups of people. Force projection can now be accomplished in ways that were unavailable twenty years ago. Due to these advances, overseas military bases are no longer an important part of a country’s national security.

B. BEFORE THE RMA – LIMITED INTELLIGENCE CREATED REQUIREMENTS FOR OVERSEAS MILITARY BASES

One of the key components of any military, today or in the past, has always been intelligence. It is important for a country to know what the capabilities and intentions of its neighbors and adversaries are. This is important because if the political situation deteriorates and conflict becomes likely, the side with the better intelligence will generally have a higher likelihood of victory. Indeed, when generals are determining battle plans and campaign strategies, knowing the enemy’s strengths and weaknesses is vitally important.

In the past, militaries spent significant capital trying to gather intelligence, if it could be gathered at all, attempting to reduce the “fog of war.” Two of the most important components of intelligence were enemy capabilities and intentions. Capabilities were always the easier to identify because capabilities involve physical assets: how many troops does the enemy have, how many tanks, and how many ships? In

¹⁰⁷ Kim Willsher, “French Fighter Plan Grounded by Computer Virus,” *The Telegraph*, Feb. 7, 2009, <http://www.telegraph.co.uk/news/worldnews/europe/france/4547649/French-fighter-planes-grounded-by-computer-virus.html>.

addition to knowing what the enemy had, it was also important to know where the enemy had these forces placed. For example, was the enemy marshaling them for an attack? Intentions were more difficult to determine, as these usually related to plans and objectives. The best way to obtain these was through espionage agencies that could steal the battle plan or a source that could intercept communications and relay them back to his headquarters, which was not easy.

Due to this uncertainty, states kept massive amounts of force on their peripheries or in their overseas territories. With limited knowledge of what was over the horizon and primitive communication equipment, militaries had to be ready for conflict on short notice. Due to limited technology during the 20th century, the costs of increased knowledge were substantial in terms of manpower and equipment. Before satellites, unmanned vehicles, and cyber - reconnaissance of the surrounding area, identification of possible enemy forces relied on scouts, planes, or boats. These were all significantly restricted in the area they could cover by both human and machine limitations. Due to the nature and danger of the activities, reconnaissance usually involved limited forces. Planes could only scout for a limited amount of time before the pilot would have to return due to human fatigue or shortage of fuel. A similar situation was involved for boats. While scout teams could survive for longer on reconnaissance missions, their main limitation was the speed and distance the human body could cover in a set time period, which also significantly depended on the terrain.

A good example of these reconnaissance limitations would be the Battle of Midway during World War II. One of the first problems was strategic uncertainty. Where in the Pacific were the Japanese planning to attack? After the Battle of the Coral Sea, the United States was initially incognizant as to where the next significant Japanese attack would take place.¹⁰⁸ Magnifying this problem was the limited amount of intelligence sources available to the United States Navy: “Most of the traditional sources of intelligence—reconnaissance, prisoner interrogations, and captured documents—were

¹⁰⁸ “Battle of Midway, 4–7 June 1942: Combat Intelligence Released as of 14 July 1942,” *Department of the Navy website*, <http://www.history.navy.mil/faqs/faq81-11.htm>.

denied to the Navy. The only source available was communications intelligence.”¹⁰⁹ The Navy did not have access to any of the other types of information because the maritime environment and Japanese advance had not allowed the Allies to capture any ships, bases, or the people who could normally provide information. Eventually, with the use of COMINT, the navy was able to discover that Midway was going to be the next objective of the Japanese. However, the Allies were extremely lucky in being able to figure out the location of the Japanese attack. For example, “On May 28th, the Japanese changed the cipher system, and no further comint [communications intelligence] was produced until after the Battle of Midway.”¹¹⁰ If the Japanese had changed their cipher system two weeks earlier, the United States would not have been able to figure out where the Japanese were going to attack.

The next “fog of war” issue was more tactical and operational. After the United States Navy knew the general location of the next attack, the problem was to actually find the Japanese fleet. Indeed, before and during the battle, both sides had difficulty locating the opposing Navy. This frequently resulted in fighters and bombers not being used to their full potential. For example, one group of United States Navy planes were never able to locate their target:

Unaware of the enemy’s change of course, one group of carrier-based fighters and dive bombers searched along the reported track to the southeast until shortage of gas forced them to abandon the search and go in to Midway. Some were forced down at sea when they ran out of gas.¹¹¹

It is important to note that these reconnaissance limitations also led to force projection limitations because fighters and bombers were unable to locate their targets. Hence, during these types of conflicts in earlier eras, it was necessary to have significant military forces in the area to ensure that the military objectives, sinking the other side’s carriers, could be accomplished.

¹⁰⁹ “Battle of Midway, 4–7 June 1942”

¹¹⁰ “Battle of Midway, 4–7 June 1942.”

¹¹¹ “Battle of Midway, 4–7 June 1942.”

C. POST-RMA – SATELLITE INTELLIGENCE PROVIDES INTELLIGENCE AND CAPABILITIES, REDUCING THE NEED FOR OVERSEAS BASES

Due to the RMA and improvements in technology, the 21st century has witnessed a complete change in the capability to gather intelligence and project force over long distances. One of the most significant changes has been the invention and deployment of satellites. “Satellite technology has become an indispensable part of modern society - being used for everything from mapping and weather forecasts to communications.”¹¹² Satellites have enabled countries to collect intelligence that previously was not obtainable due to the distances involved and the denial of over-flight privileges. Satellites have also enabled reconnaissance collection that was only available via manned aircraft stationed in overseas bases, “the Department of Defense (DoD)... developed ‘remote sensing’ devices that would permit the gathering of accurate information on capabilities of potential enemies without entailing the risks of manned over flights or of covert agents.”¹¹³ By helping reduce the fog of war, satellites have reduced the necessity to keep overseas bases always on alert against a possible surprise attack. Additionally, by offering a replacement for some airborne intelligence collection, it has enabled countries to reduce their overseas military footprints. While satellites have been around for decades, before the 1990s, it was only the United States and the Soviet Union that had access to large amount of satellite imagery intelligence. The limitations of access to satellite imagery for other countries become apparent when examining the Military Satellite tables from the Military Balance (See Figure 2).¹¹⁴ Excluding the United States, Russia, and NATO, in 1997, only four other countries had military satellites operating in space. Of these four other countries, China’s satellites had an expected orbit time of less than three weeks, and Israel’s satellite had an expected orbit of only two years. Additionally, all of these countries had launched their satellites after 1987.

¹¹² Laura Margottini, “Microsatellites ‘pose global threat,’” *BBC website*, July 19, 2007, <http://news.bbc.co.uk/2/hi/technology/6902800.stm>.

¹¹³ “Satellite Surveillance: Domestic Issues” *Congressional Research Service (CRS)*, (Washington DC: Jan. 2011), 1, <http://www.fas.org/sgp/crs/intel/RL34421.pdf>.

¹¹⁴ International Institute for Strategic Studies (IISS), *The Military Balance 1997* (London: Routledge, 1997), 306.

306 Military Satellites

	Designation/Name Launch Date	Purpose/ Operator	Capabilities	Orbit/ Lifetime	Remarks
CIS/Russia continued	Generation 3 Zenit		Remote Sensing	LEO	
	Resurs-F			± 30 days	
	Periodic				
	Generation 4 Yantar	EW/Recce	Cameras, film-return capsule;	LEO	
	Kometa	Photo	topographic capability with	44 days	
	Periodic	Recce	10m resolution	2 months	
	Generation 5	Remote	Panchromatic, 3m resolution	LEO	
	Periodic	Sensing		± 300 days	
	Generation 6/7	Remote		LEO	
	Periodic	Sensing		6-8 weeks	
France	Tselina-2	Elint/		LEO	
	Mar 1993-May 1997	Sigint		3 years	
	Tselina-D	Elint/		LEO	
	Nov-Dec 1992	Sigint			
France	Hélios 1	Remote	1m multispectral resolution;	LEO	With Ge, It and Sp
	Jul 1995	Sensing	revisit time 48hrs for 1 sat	5 years	
	Cerise	EW/		LEO	Military research satellite
China	Jul 1995	Recce		2.5 years	
	Fanhui Shi Weixing	Remote		LEO	
	(FSW) 1, 2	Sensing		FSW 1:	
UK	Periodic: short			7-10 days	
	mission durations			FSW 2:	
				15-18 days	
UK	Skyenet 4A	Comms	As Skynet 4B	GEO	
	Jan 1990			7 years	
	Skyenet 4B		3 X-band 7.25-8.40 GHz;		
UK	Dec 1988		4 SHF channels; 2 UHF 305-		
			315/250-260 MHz up/down		
			transponders; hardened		
UK			against EMP; has anti-		
			jamming devices		
			As Skynet 4B		
UK	Skyenet 4C				
	Aug 1990				
Israel	Offeq 3	EW/Recce	Resolution 2m	LEO	
	Apr 1995			2 years	

Abbreviations

CIA	Central Intelligence Agency (US)	NAV	Navigation
Comms	Communications	NAVSTAR	Navigation Satellite
DSCS	Defence Space Communications		Timing and Ranging
	Satellite	NRO	National Reconnaissance
EHF	Extra High Frequency		Office (US)
Ellip	Elliptical	NSA	National Security Agency
EW	Early Warning		(US)
GEO	Geostationary orbit	SAT	Satellite
GEOSY	Geosynchronous	SHF	Super-High Frequency
GPS	Global Positioning System	UFO	UHF Follow-On
LEO	Low-earth orbit	UHF	Ultra-High Frequency

Figure 2. National Military Satellites in 1997¹¹⁵

Legend

SSO = Sun Synchronous Orbit / Recce = Reconnaissance / Surv = Surveillance

ELINT = Electronic Signals Intelligence / Sigint = Signals Intelligence

USPU = Type of Russian satellite

¹¹⁵ IISS, *The Military Balance* 1997, 306.

Compare this to the 2003 Military Balance Military Satellite Table (Figure 3), where six different countries have operational military satellites.¹¹⁶ The numbers next to the satellite names represent the number of satellites in each group. Orbit time has been eliminated from tables after 1997. One item to notice is that China has expanded its satellite capabilities to include reconnaissance, communication, and navigation.

PRC	ZY-2	2	Recce/surv
	Feng Huo	Several	Comms
	Beidou (BNTS)	2	Navigation
NATO	NATO 4	1	Comms
Israel	OFEQ-5	1	Recce/surv
Japan	IGS-1a/b/c/d	4	Recce/surv
Italy	Sicral	1	Comms
UK	Skynet 4	3	Comms
France	Helios	2	Recce/surv

Figure 3. National Military Satellites in 2003¹¹⁷

Finally, the substantial increase in satellite capability over the last ten years can be witnessed from the Military Balance's 2011 Military Satellite Table. There are so many nation-state satellites in orbit that the institute decided to break down the data by functionality. For simplicity, this section focuses on imagery satellites. By examining Figure 4, it is apparent that many different nations have found imagery satellites to be worth the investment. In 1997, besides the United States and Russia, only two other states had the capability to take images from space for an extended period of time: France and Israel. Yet by 2011, this capability significantly expanded—in both new countries being added to the list and the quantity of satellites countries are able to maintain in orbit (See Figure 4). This additional capability allows national level decision makers additional

¹¹⁶ IISS, *The Military Balance 2003* (London: Routledge, 2003), 230.

¹¹⁷ IISS, *The Military Balance 2003* (London: Routledge, 2003), 230.

intelligence to make more informed decisions on how many forces they need to have overseas and what developing threats are occurring.

Intelligence, Surveillance and Reconnaissance					
China	<i>Haiyang 1B</i>	1	LEO	2007	<i>Haiyang 2 and 3 series planned</i>
China	<i>Yaogan Weixing</i>	12	LEO	2007–10	remote sensing
China	<i>Zhanguo Ziyuan (ZY-2)</i>	2	LEO	2002–04	recce/surv; remote sensing

Table 37 **Selected Operational Military Satellites 2011**

Country	Designations	Quantity	Orbit	Launch	Description and Remarks
China	<i>Shi Jian-6</i>	8	SSO	2004–10	4 pairs of 2 (A&B; C&D; E&F; G&H) reports of poss ELINT/SIGINT roles
France	<i>Helios-1A/2A/2B</i>	3	SSO	1995–2009	optical recce; partnership with Belgium, Germany, Italy & Spain
Germany	<i>SAR-Lupe (1-5)</i>	5	LEO	2006–08	surv
India	<i>RISAT-2</i>	1	LEO	2009	surv
Italy	<i>Cosmo (Skymed)</i>	4	LEO	2007–10	surv
Israel	<i>Ofeq-5,7& 9</i>	3	SSO/LEO	2002–10	recce/surv
Israel	<i>TecSAR 1 (Polaris)</i>	1	LEO	2008	recce
Japan	<i>IGS-1/3/4/5</i>	4	SSO	2003–09	optical recce
Russia	<i>Liana (Lotos-S)</i>	1	LEO	2009	To replace <i>Tselina</i> + US-PU systems
Russia	<i>Tselina-2</i>	1	LEO	2007	recce/surv; ELINT
Taiwan	<i>RocSat-2</i>	1	SSO/LEO	2004	recce/surv

Figure 4. National Military Satellites in 2011¹¹⁸

Additionally, before 1991, satellite imagery intelligence was mainly used at the national level and not available for tactical use. This changed, however, in the early 1990s: “Beginning with Desert Shield in 1991, however, these national-level systems began to be adapted to tactical use in Iraq, Bosnia, Kosovo, Afghanistan, and elsewhere.”¹¹⁹ Allowing satellite imagery to be used at the tactical level gave regional commanders more situational awareness of their potential battlespace, leading to the ability to reposition forces based on a better understanding of the threat in each area. With better information, decision makers were able to reduce forward deployed troops in order to better manage their forces.

So what does this additional and better imagery mean in respect to overseas military bases? This capability now means that information you could previously obtain only via reconnaissance flights, or with soldiers on the ground, can now be done

¹¹⁸ IISS, *The Military Balance 2011* (London: Routledge, 2011), 480.

¹¹⁹ “Intelligence, Surveillance, and Reconnaissance (ISR) Acquisition: Issues for Congress,” CRS (Washington, DC: Dec. 2011), 2, <http://www.fas.org/sgp/crs/intel/R41284.pdf>.

remotely. This led to some countries discontinuing some deceptive practices that no longer work in the 21st century. For example, “In August 2006, the British Ordnance Survey...announced that it would end an 80-year program of falsifying maps...had been made obsolete by high resolution satellite imagery and sources available on the Internet.”¹²⁰ They also provide countries like the United States the ability to track an adversary’s military forces such as submarines.¹²¹ Overall, the improved capabilities and quantity of satellite systems has allowed better and more comprehensive intelligence collection for many countries that previously had little access to overhead imagery, thus reducing the fog of war and the footprint of overseas manned collection platforms.

Satellites, however, can be used for more than just imagery. Satellites can also be used to transmit data and imagery information around the world. This is an important part of the Predator and Reaper operations. Satellites allow the Predator and Reaper the ability to be controlled from halfway around the world. This increased capability has led to dramatic changes in how the United States strategically deploys forces around the world. One example of this is the reduced footprint required to track and eliminate Al-Qaeda. Due to the flexibility that satellite communications provide the remote piloted unmanned aerial program has become the most effective weapon against Al Qaeda. “United States intelligence officials call unmanned aerial vehicles, often referred to as drones, their most effective weapon against Al Qaeda.”¹²²

Another way that satellites have led to changes in a country’s geostrategic behavior is the use of navigation and Global Positioning System (GPS). The GPS system was created by the United States military and “provides users with positioning, navigation, and timing (PNT) services.”¹²³ The military utilizes GPS to help planes, vehicles, missiles, and soldiers determine where they are when conducting operations during war and peace. It is considered one of the most important aspects of modern

¹²⁰ Lowenthal, *Intelligence*, 79.

¹²¹ Peter J. Brown, “U.S. satellites shadow China’s submarines,” *Asia Times Online*, May 13, 2010, <http://www.atimes.com/atimes/China/LE13Ad01.html>.

¹²² “Predator Drones and Unmanned Aerial Vehicles (UAV),” *New York Times*, Jul. 30, 2012, http://topics.nytimes.com/top/reference/timestopics/subjects/u/unmanned_aerial_vehicles/index.html.

¹²³ “GPS Overview,” *United States Government*, <http://www.gps.gov/systems/gps/>.

military warfare. “Everything that moves uses it,” said John Pike, director of Globalsecurity.org... “It is so central to the American style of war that you just couldn’t leave home without it.”¹²⁴ GPS has also allowed for a reduction in military weapons and personnel to accomplish force projection like bombing a bridge, “Because GPS makes weapons more accurate, the military needs fewer warheads and fewer personnel to take out targets.”¹²⁵ The reliance of the United States military on GPS was displayed when a software glitch in January 2010 resulted in, “A problem that rendered as many as 10,000 U.S. military GPS receivers useless for days.”¹²⁶ In fact, the Air Force Chief of Staff General Schwartz recommended that the United States start to develop alternatives to GPS in case the system was jammed: “It seemed critical to me that the joint force reduce its dependence on GPS aid.”¹²⁷

In fact, the capabilities that GPS provides are considered so essential to modern military capabilities that both Russia and China have created their own satellite constellations called GLONASS and Beidou.¹²⁸ One of the reasons cited for each country developing their own satellite navigation capability is the concern that the United States could turn off GPS in the event of a conflict. “But what is also behind the battle for control of navigation technology is a fear that the United States could use its monopoly—the system was developed and is controlled by the military, after all—to switch off signals in a time of crisis.”¹²⁹

Given this background, what are the implications for the development of overseas bases? Before data transmission capability in satellites, military forces required more manpower-intensive communications methods. A military unit would need to have a

¹²⁴ Dan Elliott, “Glitch shows how much military relies on GPS,” *Air Force Times*, Jun. 1, 2010, http://www.airforcetimes.com/news/2010/06/ap_gps_060110w/.

¹²⁵ Elliott, “Glitch shows how much military relies on GPS.”

¹²⁶ Elliott, “Glitch shows how much military relies on GPS.”

¹²⁷ Michael Hoffman, “Schwartz warns against dependence on GPS,” *Air Force Times*, Jan. 23, 2010, http://www.airforcetimes.com/news/2010/01/airforce_schwartz_012310/.

¹²⁸ Jeremy Page, “Beijing Launches Its Own GPS Rival,” *Wall Street Journal*, Dec. 28, 2011, <http://online.wsj.com/article/SB10001424052970203479104577123600791556284.html>.

¹²⁹ Andrew E. Kramer, “Russia Challenges the U.S. Monopoly on Satellite Navigation,” *New York Times*, Apr. 4, 2007, http://www.nytimes.com/2007/04/04/business/worldbusiness/04gps.html?_r=1.

communications troop for smaller units and a communications shop for larger military units. With new data transmission, this information can be passed remotely or with less manpower necessary to pass information between different military units overseas and stationed in the home country. GPS and global navigation allows for the reduction in military forces needed to conduct reconnaissance at overseas. With global navigation assistance, units have a better idea of their location, which previously would have required reconnaissance flights or scouts.

D. POST-RMA – OPEN SOURCE INTELLIGENCE EXPANDS OVERSEAS COLLECTION WHILE MINIMIZING A MILITARY FOOTPRINT

Another significant technological change has been the proliferation of open source intelligence on the Internet and in the mass media. While not all of this information is accurate and deception is always a possibility, enough relevant and important information has begun to change the perception of how intelligence can be collected. “One intelligence veteran observed that during the cold war 80 percent of the information about the Soviet Union was secret and 20 percent was open, but in the post-cold war period the ratio had more than reversed for Russia.”¹³⁰ This intelligence is available both on the Internet and from other sources such as newspapers and military journals. However, this is true for more than just collection on states. “The former head of the CIA’s bin Laden unit commented that ‘open source’ information contains 90% of what you need to know.”¹³¹

Open source intelligence “refers to intelligence collected from publicly available sources. In the intelligence community (IC), the term ‘open’ refers to overt, publicly available sources (as opposed to covert or clandestine sources)”¹³² One example is the initial pictures of the Chinese J-20.¹³³ Other examples include the United States drone

¹³⁰ Lowenthal, *Intelligence*, 81.

¹³¹ Richelson, *The U.S. Intelligence Community*, 322.

¹³² “Open Source-Intelligence,” *Wikipedia*, http://en.wikipedia.org/wiki/Open-source_intelligence#cite_note-2.

¹³³ David Axe, “Is This China’s First Stealth Fighter?” *Wired Danger Room Blog*, <http://www.wired.com/dangerroom/2010/12/is-this-chinas-first-stealth-fighter/>.

war in Yemen¹³⁴ and a North Korean jet crash in China.¹³⁵ The last example, of the North Korean jet crash, would have been very difficult for anyone outside of China or North Korea to have figured out, were it not for the open source reporting. Open source intelligence is different today due to the range and scope of available information. Previously, information might eventually be compiled into a Jane's book and eventually released. Now, however, an event that happens halfway across the world can be instantly disseminated across the intelligence community, and "it makes information far more accessible, sometimes more timely, and easier to disseminate. That means that more people can be more informed in a shorter amount of time."¹³⁶ It also creates the ability to quickly share information that previously would have been available only to classified audiences:

By using open-source information, we can distribute it more widely among our customers in the State Department than we could if it was classified. Not everyone who works with the State Department has top-secret clearance," says James Bell, acting director of the Office of Research at the State Department's Bureau of Intelligence and Research.¹³⁷

One example of this increased availability is the creation of Open Source Center run by the Direction of National Intelligence that was created in 2005. Additional open source intelligence allows intelligence analysts more information that gives them the ability to create timely and more knowledgeable products than was possible in the past. Don Burke, who works at the CIA Directorate of Science and Technology, provides a useful anecdote: "When he began at CIA in 1988, Burke says, there were no personal computers on analysts' desktops."¹³⁸ Another strong supporter of open source intelligence is the CIA Director Michael Hayden: "Take the recent Russia-Georgia

¹³⁴ Bill Roggio, "U.S. airstrike kills 2 AQAP operatives in eastern Yemen," *Long War Journal*, http://www.longwarjournal.org/archives/2012/05/us_airstrike_kills_2_2.php.

¹³⁵ "North Korean Fighter Jet Crash," *Economist*, Aug. 19, 2010, http://www.economist.com/blogs/banyan/2010/08/north_korean_fighter-jet_crash.

¹³⁶ Alex Kingsbury, "Spy Agencies Turn to Newspapers, NPR, and *Wikipedia* for Information," *U.S. News*, Sept. 12, 2008, <http://www.usnews.com/news/national/articles/2008/09/12/spy-agencies-turn-to-newspapers-npr-and-wikipedia-for-information>.

¹³⁷ Kingsbury, "Spy Agencies Turn to Newspapers, NPR, and *Wikipedia* for Information."

¹³⁸ Kingsbury, "Spy Agencies Turn to Newspapers, NPR, and *Wikipedia* for Information."

conflict or Pakistan's political upheaval. Finished intelligence delivered to policymakers on those subjects routinely integrated open sources and analyses based on open sources, including mainstream media, video, and blogs."¹³⁹

Another example of the importance of open source intelligence is the ability to reduce the effectiveness of concealment. First, satellite imagery resolution has improved significantly over the past twenty years. Previously when satellite resolution was a few feet building a decoy was easy because the imagery could not tell the difference. With better cameras on satellites and unmanned vehicles it makes imagery deception much more difficult to effectively pull off. Stealth and EMCON (Emissions Control) have also become less effective at deception due to increased sensitivity of detection systems and new methods. One of the ways that stealth is being defeated is due to increased processing power, as Admiral Jonathan Greenert explains in the July 2012 issue of *Proceedings*:

Stealth ships and aircraft are designed to have a small radar or infrared electromagnetic signature at specific frequencies. The frequency ranges at which stealth is designed to be most effective are those most commonly used by active radar or passive infrared detection systems. At lower frequencies detections do not normally provide the resolution or precision necessary for accurate targeting. Using more powerful information-processing, however, military forces will be able to develop target-quality data from these lower-frequency passive infrared signals or active-radar returns.¹⁴⁰

Another example of new methods that will defeat stealth is due to cell phone towers and signals that indicate when and where an object is blocking a signal.¹⁴¹

Open source intelligence has allowed the reduction of intelligence-collecting personnel and resources on overseas military bases. Previously, some of the information collected by open source intelligence would have been available only via reconnaissance flights or naval patrols. However, with open source intelligence, the completion of a new

¹³⁹ Hayden, "Director's Remarks at the DNI Open Source Conference 2008."

¹⁴⁰ Admiral Jonathan W. Greenert, "Payloads over Platforms," *Proceedings* 123, no. 7 (Jul. 2012), <http://www.usni.org/magazines/proceedings/2012-07/payloads-over-platforms-charting-new-course>.

¹⁴¹ Bill Sweetman, "Stealth Threat," *Popular Science* (Dec. 2001), www.popsci.com/military-aviation-space/article/2001-12/stealth-threat.

bridge or airport is available without having to utilize the same resources. Thus, overseas bases can reduce the manpower and vehicles previously required to collect the same amount of intelligence.

E. POST-RMA – UNMANNED VEHICLE CAPABILITIES PROVIDE INCREASE ISR AND FORCE PROJECTION WHILE MINIMIZING OVERSEAS BASES

Unmanned vehicles represent another significant change in intelligence collection, reducing uncertainty and shrinking the footprint of reconnaissance overseas. Additionally, UAVs are also starting to play a force projection role. This section begins by looking at unmanned aerial vehicles (UAVs) and their ISR capabilities, focusing on both the United States and international developments. Maritime unmanned vehicles and their ISR capabilities are also examined. Finally, unmanned vehicles' force projection capabilities are assessed. The goal is to demonstrate how unmanned vehicles are reducing the intelligence and force projection footprint overseas by reducing the manpower and manned platforms required to accomplish the same objectives along with their logistical trail.

The explosion in unmanned aerial vehicle use has significantly changed modern warfare. This is illustrated by the vast amount of capability brought online over the last decade. "The number of deployed UAS has increased from approximately 167 aircraft in 2002 to over 6,000 in 2008."¹⁴² Israel is usually credited with beginning the current UAV evolution,¹⁴³ but the real changes have happened with the advancements due to the RMA. "Although UAS have a long history, only in the last 10–15 years have advances in navigation, communications, materials, and other technologies made a variety of current UAS missions possible."¹⁴⁴ The best example to start discussing UAVs is with the most popular: "The most commonly used UAV systems, Predators and Reapers, are designed for tactical use. The Predator flies at altitudes up to 25,000 feet; the Reaper 50,000 feet.

¹⁴² "ISR Acquisition," CRS (Washington, DC: Dec. 2011), 10, <http://www.fas.org/sgp/crs/intel/R41284.pdf>.

¹⁴³ "U.S. Unmanned Aerial Vehicles," CRS (Washington, DC: Jan. 2012), 2, <http://www.fas.org/sgp/crs/natsec/R42136.pdf>.

¹⁴⁴ "U.S. Unmanned Aerial Vehicles," CRS, 6.

Both have an endurance of 24 hours.”¹⁴⁵ Another important UAV system is the RQ-4 Global Hawk, a strategic ISR system. The Predator¹⁴⁶ and Reaper¹⁴⁷ have revolutionized warfare in a number of ways that have a direct impact on the amount of personnel the military has to deploy overseas to accomplish its objective. The two most important technical developments are duration and control. With UAVs like the Predator, it is now possible to provide an area with ISR for as long as 20 hours. Previously, most ISR missions could be flown for only 12 hours. As Air Force General Deptula has stated, “With the nominal 12-hour limitation on a human in the cockpit removed, the potential of RPA to range great distances and maintain sensors and precision weapons over an area of interest for longer periods of time created a powerful tool.”¹⁴⁸

Thus, if the objective of a mission were to provide ISR coverage of a certain area for 20 hours, this would have required two different manned planes and two different sets of pilots in the deployed base. However, with the Predator, this can be done with one plane. While there still has to be a pilot at the deployed base to perform take-offs and landings, the majority of the flight is controlled by a pilot back in the United States. Meanwhile, the pilot at the deployed base can perform take offs and landing for multiple planes, which previously would have required multiple people. This leads to the second important technical development: control. Until the beginning of the 21st century, it would have been almost impossible to control a plane from halfway across the world. With modern communications technology, however, a Predator, Reaper, or many other UAVs can be controlled from theoretically anywhere in the world as long as the infrastructure has been built. Thus, once a Predator is in the air, a pilot at Creech Air Force Base in Nevada can control it, pilot it, and allow it to accomplish its intelligence mission. This remote control means most pilots do not have to be deployed in overseas locations to accomplish the mission. It also saves many others from deployment. The

¹⁴⁵ “ISR Acquisition,” *CRS*, 10.

¹⁴⁶ “MQ-1B Predator,” *United States Air Force webpage*, <http://www.af.mil/information/factsheets/factsheet.asp?fsID=122>.

¹⁴⁷ “MQ-9 Reaper,” *United States Air Force webpage*, <http://www.af.mil/information/factsheets/factsheet.asp?fsID=6405>.

¹⁴⁸ David A. Deptula, “Unmanned Future,” *Armed Force Journal* (Jun. 2011), <http://www.armedforcesjournal.com/2011/06/6462802/>.

sensor operator is also able to remain in the United States. The mission intelligence coordinator (MIC) is also able to remain stateside. Additionally, since most of a UAV squadron or Wing is still stateside, most of the other personnel remain stateside, including members of the squadron leadership. The only people that have to still deploy at a similar rate are the maintenance crews.

Overall, this provides a significant reduction in manpower that would otherwise need to be deployed to overseas bases. This also creates additional reductions. With fewer people deployed, it reduces the amount of logistical support an overseas base requires—these individuals no longer need a room to live in, food to eat, and clothes to wear or wash. This reduction in personnel can then lead to either smaller bases or fewer overseas bases to accomplish the same intelligence mission.

This same reduction in personnel also applies to strategic ISR and objectives. A good example of a strategic ISR asset is the RQ-4: “The RQ-4 Global Hawk is a high-altitude, long-endurance unmanned aircraft system with an integrated sensor suite that provides intelligence, surveillance and reconnaissance, or ISR, capability worldwide.”¹⁴⁹ The Global Hawk has a range of 8,700 nautical miles, which allows it to accomplish intelligence missions that were previously unattainable. According to General Deptula, “An RQ-4 ...could take off from Beale Air Force Base, Calif., be over the Korean peninsula 18 hours later, maintain its presence there for eight hours and then land at its Pacific base. That’s global reach.”¹⁵⁰ This obviously has significant implications for the amount of manpower required at overseas bases. Normally, if the United States wanted to conduct an 8-hour ISR mission on North Korea, it would require either a U-2¹⁵¹ or an RC-12. Both of these would need to be based in South Korea in order to maximize the amount of time they could conduct their ISR mission. Since both of these planes would be stationed in an American military base in South Korea, it would require hanger space for these aircraft along with maintenance personnel, security personnel, POL storage, and

¹⁴⁹ “RQ-4 Global Hawk,” *United States Air Force website*, <http://www.af.mil/information/factsheets/factsheet.asp?id=13225>.

¹⁵⁰ Deptula, “Unmanned Future.”

¹⁵¹ “99th ERS Dragon Lady pilot accomplishes combat sortie milestone,” *United States Air Force website*, <http://www.380aew.afcent.af.mil/news/story.asp?id=123252014>.

a long runway. In addition to these resources, there would also need to be logistics provided for the pilot and his support crew. However, the RQ-4 offers the opportunity to reduce most of that infrastructure by having the plane take off from the United States, conduct an 8-hour ISR mission, land in Japan to refuel, take off again, conduct another 8-hour ISR mission, and then return to California for maintenance. (For a list of United States UAVs, see Figure 5 at the end of this chapter.)

Most countries in the world have come to the conclusion, “Deployed by land, naval and air forces, UAVs are seen as an integral part of future force structures, and as key means to deliver effect through their employment as ISR assets or as weapons platforms.”¹⁵² For a list of selected international UAVs see Figure 5 at the end of the chapter.

UAVs have also been employed against United States overseas bases, introducing an interesting twist into the threats that overseas bases now have to take into account. According to the *New York Times* in March 2009, “The American military confirmed on Monday that it shot down an Iranian drone over Iraqi territory last month, in what is believed to be the first time that has happened.”¹⁵³ The article went on to list the Iranian UAV as an Ababil 3 and that it was equipped, “with video camera and transmission equipment, and flown by ground-based pilots.”¹⁵⁴ This adds another concern to any military contemplating establishing overseas military bases. Previously, it was relatively easy to determine whether your base was being observed from the air, but with the advances in UAV technology, the future promises to be more complicated. Some examples of the newest advances occurring in UAV technology include being able to recharge a UAV while it is in the air via laser,¹⁵⁵ thus necessitating fewer landings,

¹⁵² IISS, *The Military Balance 2011*, 23.

¹⁵³ Rod Nordland, “U.S. Says It Shot Down an Iranian Drone Over Iraq,” *New York Times*, March 16, 2009, http://www.nytimes.com/2009/03/17/world/middleeast/17iraq.html?_r=1.

¹⁵⁴ Nordland, “U.S. Says It Shot Down an Iranian Drone Over Iraq.”

¹⁵⁵ Alan Boyle, “Laser beam keeps robo-plane buzzing for two days straight,” *MSNBC website*, July 12, 2012, http://cosmiclog.msnbc.msn.com/_news/2012/07/12/12690006-laser-beam-keeps-robo-plane-buzzing-for-two-days-straight?lite.

spoofing a drone to attempt to hijack it,¹⁵⁶ or being able to build your own due to the rapidly decreasing price of the equipment.¹⁵⁷

Unmanned vehicles are also expanding into other realms that will reduce the need for manned reconnaissance platforms and the overseas bases needed to support them. One of the most significant realms is the maritime realm. The oceans are large, and attempting to police even a fraction of the area requires massive amount of POL and manned ships and planes. However, with some of the recent developments in unmanned technology, it is possible that these same objectives will be accomplished with a fraction of the manpower and logistical support. One of these unmanned maritime vehicles is described below:

[A] 36 foot robotic motorboat is called the “Spartan Scout,” which the Navy has spent some \$30 million developing. Guided by a GPS navigation system, the boat can be on its own for up to 48 hours, and speed up to 50 miles per hour. Filled with sensors (including day and night video cameras), Spartan Scout is designed to carry out surveillance, patrol harbors, and inspect any suspicious ships.¹⁵⁸

If these new unmanned maritime vehicles are successful, they will enable the Navy to accomplish its same objectives with fewer ships. This is actually already happening, with Navy Undersecretary Robert Work announcing that the American Navy will soon be reduced to less than 300 ships, referencing increase unmanned capabilities as one reason. In a speech in April 2012, Navy Undersecretary Work illustrated how these new capabilities will replace overseas personnel: “...reduces our land-based posture in Europe while increasing forward-stationed naval forces... Calls for innovative, low-cost, and small-footprint approaches to achieve security objectives in Africa and Latin America.”¹⁵⁹ With fewer ships able to perform the same missions this also saves on fuel

¹⁵⁶ John Roberts, “Drones vulnerable to terrorist hijacking, researchers say,” *Fox website*, June 25, 2012, <http://www.foxnews.com/tech/2012/06/25/drones-vulnerable-to-terrorist-hijacking-researchers-say/>.

¹⁵⁷ “DIY Drones webpage,” <http://diydrones.com/>.

¹⁵⁸ Peter W. Singer, “Wired for War: The Future of Military Robots” (Washington D.C.: Brookings Institute, Aug. 2009), <http://www.brookings.edu/research/opinions/2009/08/28-robots-singer>.

¹⁵⁹ Robert O. Work, “The Role of the Military: Doing What with What?” SSI XXIII Annual Strategy Conference, Apr. 11, 2012, <http://www.strategicstudiesinstitute.army.mil/files/2012-strat-conf-work.pdf>.

costs. This reduces the need to store as much POL around the world, which could also reduce the need for overseas bases. With fewer ships, it also means fewer foreign port calls to refuel and resupply.

Unmanned vehicles have also started to play more of a force projection role. The most obvious example has been the Predator and Reaper. Before the beginning of the 21st century, the technology was not available to allow a remotely piloted plane to dynamically direct a missile or a bomb to reach a target. However, over the first decade of the 21st century, this has happened multiple times in Iraq and Afghanistan.

Previously, using an F-16 or A-10 would require a base for the aircraft to take off and land from, POL to fuel the plane, and life support facilities for the pilot at the base to include food, water, and housing. Additionally, even with all this expenditure, the pilot would be limited to only so long in the air waiting for a target before he would have to return to base. With a UAV, many of these logistical support requirements are reduced or eliminated. A UAV does not need any life support systems after taking off due to most of the mission being flown from the United States. This reduces the space on a base required for housing, feeding, and associated logistical support. Additionally, UAVs are able to loiter in the air for up to 20 hours waiting for a target on less fuel than an equivalent manned platform. This provides longer capabilities and less POL that needs to be supplied at an overseas base. With new and developing force projection capabilities, UAVs are accomplishing the same force projection objectives as manned aircraft, but with fewer military personnel and associated overseas equipment.

The strategic implications of these developments are that the United States and other countries will rely more on unmanned vehicles to conduct overseas operations. This strategic trend began with the use of Predators in Pakistan and has spread to other areas of operations. An example of this new strategic type of warfare would be the operations occurring in Somalia and Yemen. In June, the White House announced that the United States has been conducting military operations in these two areas,

In Somalia, the U.S. military has worked to counter the terrorist threat posed by al-Qa'ida and al-Qa'ida-associated elements of al-Shabaab. In a limited number of cases, the U.S. military has taken direct action in Somalia against members of al-Qa'ida... The U.S. military has also been

working closely with the Yemeni government... Our joint efforts have resulted in direct action against a limited number of AQAP operatives and senior leaders in that country.¹⁶⁰

While there was no specific mention of unmanned vehicles in these attacks, many different news sources assessed that unmanned vehicles were the platform being used to carry out these military strikes. “The report does not elaborate, but ‘direct action’ is a military term of art that refers to a range of lethal attacks, which in the case of Yemen and Somalia include attacks by armed drones.”¹⁶¹ These two operations combine with other reports¹⁶² that show the dramatic increase in drone strikes in areas that previously would have required military ground forces or an air campaign to accomplish the same objectives. By shifting to unmanned vehicles to collect intelligence and strike targets, it has substantially reduced the need for large overseas bases. Instead, the only forward deployed assets required are Predators and Reapers and their support staff. Alternatively, these assets, with their long loiter time and slow fuel consumption, could be launched out of bases that are already established in the area, such as Djibouti.

F. POST-RMA – CYBERSPACE CAPABILITIES

Cyberspace represents another significant change in intelligence collection, reducing uncertainty and shrinking the footprint of reconnaissance overseas. Also, tools being developed in cyberspace are beginning to play a force projection role. This section begins by looking at cyber space and the capabilities that cyber espionage and cyber reconnaissance have demonstrated. After examining the impact cyber reconnaissance has for states and militaries to acquire intelligence, the section moves on to explore how cyber attack capabilities can accomplish the same objectives that were previously possible only with kinetic strikes. The goal is to demonstrate how cyber capabilities are

¹⁶⁰ “Presidential Letter – 2012 War Powers Resolution 6-Month Report,” *Office of the Press Secretary*, June 15, 2012, <http://www.whitehouse.gov/the-press-office/2012/06/15/presidential-letter-2012-war-powers-resolution-6-month-report>.

¹⁶¹ Robert Burns, “U.S. declassifies attacks in Yemen, Somalia,” *Navy Times*, June 15, 2012, <http://www.navytimes.com/news/2012/06/ap-us-declassifies-attacks-yemen-somalia-061512/>.

¹⁶² Bill Roggio and Alexander Mayer, “Charting the data for U.S. airstrikes in Pakistan, 2004–2012,” *The Long War Journal*, July 29, 2012, <http://www.longwarjournal.org/pakistan-strikes.php>.

reducing the intelligence and force projection footprint overseas by reducing the amount of manpower and manned platforms required to accomplish the same objectives.

The United States military has recognized that cyberspace has become “a warfighting domain”¹⁶³ similar to the ocean, land, air, and space. This has led to strategic changes in the way the United States military conducts operations and is organized. The best example of this is the Department of Defense standing up the Cyber Command organization in May 2010 with the mission to:

Direct the operations and defense of specified Department of Defense information networks and; prepare to, and when directed, conduct full-spectrum military cyberspace operations in order to enable actions in all domains, ensure U.S./Allied freedom of action in cyberspace and deny the same to our adversaries.¹⁶⁴

The creation of Cyber Command has also led to the creation of new military career fields that focus on offensive and defensive operations in cyberspace. Along with the creation of these new career fields has been the creation of advanced technical training courses to ensure military members have the latest information available. The importance of cyberspace and how it can affect traditional military operations was explained by the commander of U.S. STRATCOM Air Force Gen Kevin Chilton:

It’s not a convenience any more, it’s a dependency. We need to recognize that we need this domain and we need these systems to conduct our fight today and tomorrow. We need to recognize that we can fight in this domain just as an air-to-air fighter can fight in the air domain; and we can fight through this domain and affect other domains just as an airplane can drop a bomb on a land domain and create affects across a domain.¹⁶⁵

This move by the United States has led other countries, both friends and foe, to begin to build their own military cyber forces. “Christian Le Miere, senior Asia analyst for Jane’s Country Risk, said: ‘Every major military has to be concerned about cyber war.

¹⁶³ Lani Kass, “A Warfighting Domain,” *USAF Air University website* (Sept. 2006), http://www.au.af.mil/info-ops/usaf/cyberspace_taskforce_sep06.pdf.

¹⁶⁴ “U.S. Cyber Command Fact Sheet,” *Department of Defense*, May 25, 2010, http://www.defense.gov/home/features/2010/0410_cybersec/docs/CYberFactSheet%20UPDATED%20replaces%20May%2021%20Fact%20Sheet.pdf.

¹⁶⁵ Colin Clark, “StratCom Plows Ahead on Cyber,” *DoD Buzz*, June 29 2009, <http://www.dodbuzz.com/2009/06/29/stratcom-plows-ahead-on-cyber/>.

There was maybe some form of taboo [about setting up a dedicated centre], but as soon as the U.S. does it, everyone says ‘we can have one too’.”¹⁶⁶ Both the United Kingdom and South Korea have created their own cyber military forces.¹⁶⁷ China also unveiled its own cyber command in July 2010. “The establishment of the “Information Security Base” (xinxi baozhang jidi), which is headquartered under the PLA General Staff Department, may serve as the PLA’s cyber command. The ‘base’ is reportedly tasked with the mission to address potential cyber threats and to safeguard China’s national security.”¹⁶⁸

Finally, even countries without significant Internet capabilities have decided it is important to establish a cyber capability. A perfect example of this is North Korea. North Korean defector Kim Heung-kwang told a conference about the extent of North Korean cyber units in 2011: “North Korea last year raised the status of its cyber warfare unit under the Reconnaissance General Bureau and increased the number of troops in the unit from 500 to about 3,000.”¹⁶⁹ Some analysts have speculated that North Korea might begin to shift away from conventional attacks on South Korea and move to cyber attacks, which are more difficult to attribute and less likely to result in a conventional South Korean military retaliation.¹⁷⁰

With states and militaries shifting more information online, cyberspace has evolved as an area to gain valuable intelligence about an adversary nation or military. Militaries value efficiency, especially concerning the ability to disseminate information both up and down the chain of command. As computers and the Internet have become more ubiquitous, militaries have migrated more and more of their data online to ensure the ability of rapid dissemination and collaboration. At the same time, many militaries

¹⁶⁶ Tania Branigan, “Chinese army to target cyber war threat,” *Guardian*, July 22, 2010, <http://www.guardian.co.uk/world/2010/jul/22/chinese-army-cyber-war-department>.

¹⁶⁷ Clark, “StratCom Plows Ahead on Cyber.”

¹⁶⁸ Russell Hsiao, “China’s Cyber Command?” *China Brief* 10, no. 15 (July 2010), [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=36658](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=36658).

¹⁶⁹ Jeremy Laurence, “North Korea hacker threat grows as cyber unit grows: defector,” *Reuters*, June 1, 2011, <http://www.reuters.com/article/2011/06/01/us-korea-north-hackers-idUSTRE7501U420110601>.

¹⁷⁰ Laurence, “North Korea hacker threat grows as cyber unit grows: defector.”

have recognized the importance of keeping more sensitive information off the regular Internet and established separate networks like SIPRNET and JWICS. However, even with these steps, there are still many opportunities for an adversary to discover useful intelligence.

There are two primary ways for a military to be most effective at conducting cyber reconnaissance and espionage. The first way is to create a group of individuals whose focus is to penetrate a foreign military network and gain specific information. This is called an Advanced Persistent Threat or APT. “APTs have a level of planning that sets them apart from other cyber threats. Like the plots in the ‘Ocean’s’ movies, they are the work of a team that combines organization, intelligence, complexity and patience.”¹⁷¹ P.W. Singer describes the attributes that distinguish an APT from normal hacking:

Such a team eschews the usual criminal ethic of “grab what you can get” in favor of a disciplined pursuit of specific files. In many cases, the attackers don’t even open the files during a theft, suggesting that their earlier reconnaissance was thorough enough that they didn’t need to double-check. Many analysts believe this discipline suggests the hidden hand of military or intelligence officials, either as team members or advisers, in many APTs.¹⁷²

Although usually very difficult to observe, some of these have been reported in the open press. “These events, known to the public under such names as Moonlight Maze, which may be linked to Russia, Titan Rain, which may involve China,”¹⁷³ and Olympic Games, which might be linked to the United States.¹⁷⁴

The second way for a military to conduct cyber reconnaissance and espionage is to develop a program that automates the spying and exfiltration of data. One of the most reported intrusions representing this type of cyber reconnaissance was with a program called Agent.btz. According to Deputy Secretary of Defense Lynn in 2010, “It began

¹⁷¹ Singer, “The ‘Ocean’s 11’ of cyber strikes,” *Armed Forces Journal*, May 7, 2012.

¹⁷² Singer, “The ‘Ocean’s 11’ of cyber strikes.”

¹⁷³ John Arquilla, “From Blitzkrieg to Bitskrieg” *Communications of the ACM* 54 (Oct. 2011).

¹⁷⁴ David Sanger, “Obama Order Sped Up Wave of Cyberattacks Against Iran,” *New York Times*, June 1, 2012, <http://www.nytimes.com/2012/06/01/world/middleeast/obama-ordered-wave-of-cyberattacks-against-iran.html?pagewanted=all>.

when an infected flash drive was inserted into a U.S. military laptop at a base in the Middle East. The flash drive's malicious computer code, placed there by a foreign intelligence agency, uploaded itself onto a network run by the U.S. Central Command."¹⁷⁵ Lately, increasingly sophisticated computer programs have been reported. These include Duqu, "a reconnaissance tool that researchers say was used to copy blueprints of Iran's nuclear program,"¹⁷⁶ and the larger and more sophisticated Flame virus.¹⁷⁷

Militaries that utilize these new cyber reconnaissance and espionage techniques can gain the ability to collect intelligence that was previously unattainable or required massive amounts of intelligence collection. Cyber reconnaissance reduces the need for traditional reconnaissance in three ways: obtaining technical information on aircrafts or ships that was previously only available by observation, monitoring macro level troop and unit movements, and better ability to locate adversaries in a wartime environment. This helps reduce the need for overseas bases in two different ways. By gaining access to increased information about an adversary a country can reduce the "fog of war." By reducing the uncertainty about overseas locations, it can reduce the amount of forces needed to defend the location to a minimum necessary for routine security. Second, a military is able to gain this information without having to expend resources and manpower outside of the home country. Instead, this intelligence gathering was accomplished by military personnel operating from inside their home country.

Following are some examples that illustrate how force projection via cyber methods can reduce the requirements for military forces overseas by accomplishing the same objective. The first example would be the 2008 War between Russia and Georgia. Assume the military objective is to disable the Georgian government from being able to communicate with its population and the outside world. Before cyber war, this objective

¹⁷⁵ Issac R. Porche III, "A Cyberworm that Knows No Boundaries" (Arlington, VA: RAND, 2011), 21, http://www.rand.org/pubs/occasional_papers/OP342.html.

¹⁷⁶ Nicole Perlroth, "Researchers Find Clues in Malware," *New York Times*, May 30, 2012, http://www.nytimes.com/2012/05/31/technology/researchers-link-flame-virus-to-stuxnet-and-duqu.html?_r=2.

¹⁷⁷ Perlroth, "Researchers Find Clues in Malware."

would need to be accomplished with either saboteurs, fighter jets launching kinetic strikes, or jamming. This would probably require multiple missions to target and destroy this equipment. However, with cyber capabilities, this can be done online with forces still stationed in their home country:

Botnets played a key role during the 2008 Russia–Georgia war, serving Moscow as a strategic multiplier for its military campaign through distributed denial of service (DDoS) attacks. Commercial-grade botnets originating from Russian cyberspace silenced Georgian government websites and independent media, and disabled the government’s ability to communicate to its population.¹⁷⁸

Another example would be the ability to prevent an adversary air force from participating in a conflict. Before cyber capabilities, this would have involved shooting down the planes in the air or bombing them on the ground. With cyber, however, there is now another way to accomplish the same objective: introduce malware into the enemy’s aircraft, preventing the acquisition of the information necessary to fight. This scenario actually occurred to the French in 2009. “The aircraft were unable to download their flight plans after databases were infected by a Microsoft virus they had already been warned about several months beforehand.”¹⁷⁹ Essentially, the Conficker virus accomplished the same objective, grounding French Air Force planes that in the past would have required more conventional methods. In fact, the virus did more than just attack the planes; it also significantly impacted the French military’s communications apparatus. “The French navy admitted that during the time it took to eradicate the virus, it had to return to more traditional forms of communication: telephone, fax and post.”¹⁸⁰

A final example of force projection from the Internet is the Stuxnet computer virus. Stuxnet was a virus that penetrated into Iranian nuclear processing complexes and destroyed centrifuges being used for nuclear enrichment. The *New York Times* reported that it provided an example of an objective that used to require kinetic action

¹⁷⁸ Farwell, “Stuxnet and the Future of Cyber War,” 26.

¹⁷⁹ Kim Willsher, “French Fighter Plan Grounded by Computer Virus,” *The Telegraph*, Feb. 7, 2009, <http://www.telegraph.co.uk/news/worldnews/europe/france/4547649/French-fighter-planes-grounded-by-computer-virus.html>.

¹⁸⁰ Willsher, “French Fighter Plan Grounded by Computer Virus.”

accomplished via cyber actions: “It appears to be the first time the United States has repeatedly used cyber weapons to cripple another country’s infrastructure, achieving, with computer code, what until then could be accomplished only by bombing a country or sending in agents to plant explosives.”¹⁸¹

Commentators have pointed to how this type of attack is much more cost effective than more conventional methods of achieving the same objective: “It is unclear how much the Stuxnet program cost, but it was almost certainly less than the cost of single fighter-bomber.”¹⁸² Others have made direct comparisons to modern military weapons: “German expert Ralph Lagner describes Stuxnet as a military-grade cyber missile that was used to launch an ‘all-out cyber strike against the Iranian nuclear program.’”¹⁸³ Stuxnet also showed how a cyber weapon could be more effective than a traditional bombing attack since it has the capability to find centrifuges that might have been undetected from a conventional attack. “The key to the Stuxnet worm is that it can attack both known and unknown centrifuges.”¹⁸⁴ Cyber weapons like Stuxnet give countries the ability to strike an adversary that is located anywhere in world. Previously, a strike on Iran would have required military forces, including planes based in the Middle East. However, with cyber weapons, these same attack objectives can be accomplished from the United States with no need to deploy military forces to overseas military bases.

G. CONCLUSION

The revolution in military affairs has completely changed the nature of warfare and made large overseas military bases less important in future conflicts and force projection. Satellite imagery, open source reporting, and cyber reconnaissance will allow states to determine possible adversary hostile intent in a more timely and accurate fashion. This enhanced intelligence collection will lead to less surprises on the battlefield and more flexible deployment of forces before a conflict occurs. Additionally, unmanned vehicles could become a deciding factor in a future conflict. As shown in Yemen and

¹⁸¹ Sanger, “Obama Order Sped Up Wave of Cyberattacks Against Iran.”

¹⁸² Farwell, “Stuxnet and the Future of Cyber War” IISS, Jan. 2011, 35

¹⁸³ Farwell, “Stuxnet and the Future of Cyber War,” 23.

¹⁸⁴ Farwell, “Stuxnet and the Future of Cyber War,” 25.

Somalia, unmanned vehicles provide a force multiplier that results in fewer troops and smaller footprints overseas to accomplish the same objectives that required larger military bases.

Just as significant, militaries have come to rely more on satellite capabilities like GPS and cyber capabilities like the Internet. The first shots of a future war will probably involve each side attempting to take control of these assets and denying their adversary the opportunity to utilize them. If one state in a conflict can gain control of space and cyberspace the other side will be at a significant disadvantage in a following conflict. This is one of the reasons that China and Russia are building their own GPS system and launching their own satellites. The losing side would see its overseas military bases reduced to insignificant factors due to their limited information, communications, and logistics support. These overseas bases would thus not play a significant role in the broader strategic conflict. China may well have reached this conclusion, and could plausibly have decided that overseas military bases are not worth the financial investment if they will not play a significant role in a future conflict with India or the United States. Future chapters explain supporting evidence for this, and counterarguments are weak for various reasons.

Table 1. DOD UAS Platforms

Name	Vehicles	Ground Control Stations	Employing Service(s)	Capability/Mission
RQ-4A Global Hawk/BAHS-D Block 10	9	3	USAF/Navy	ISR/Maritime Domain Awareness (Navy)
RQ-48 Global Hawk Block 20/30	15	3	USAF	ISR
RQ-48 Global Hawk Block 40	1	1	USAF	ISR/Battle Management Command & Control
MQ-9 Reaper	54	61 ^a	USAF	ISR/Reconnaissance, Surveillance, and Target Acquisition/EW/Precision Strikes/Force Protection
MQ-1A/B Predator	161	61 ^a	USAF	ISR/Reconnaissance, Surveillance, and Target Acquisition/Precision Strikes/Force Protection (MQ-1C Only- C3/LG)
MQ-1 Warrior/MQ-1C Gray Eagle	26	24	Army	ISR/Reconnaissance, Surveillance, and Target Acquisition/Precision Strikes/Force Protection (MQ-1C Only- C3/LG)
UCAS-D	2	0	Navy	Demonstration Only
MQ-8B Fire Scout VTUAV	9	7	Navy	ISR/Reconnaissance, Surveillance, and Target Acquisition/Air-Submarine Warfare/ASUW/AMW/DMCM
MQ-5 Hunter	25	16	Army	ISR/Reconnaissance, Surveillance, and Target Acquisition/Battle Damage Assessment
RQ-7 Shadow	364	262	Army/USMC/SOCOM	ISR/Reconnaissance, Surveillance, and Target Acquisition/Battle Damage Assessment
A160T Hummingbird	8	3	SOCOM/DARPA/Army	Demonstration
STUAS	0	0	Navy/USMC	ISR/Explosive Ordnance Disposal/Force Protection
ScanEagle	122	39	Navy/SOCOM	ISR/Reconnaissance, Surveillance, and Target Acquisition/Force Protection
RQ-11 Raven	5346	3291	Army/Navy/SOCOM	ISR/Reconnaissance, Surveillance, and Target Acquisition
Wasp	916	333	USMC/SOCOM	ISR/Reconnaissance, Surveillance, and Target Acquisition
STUAS AECV Puma	39	26	SOCOM	ISR/Reconnaissance, Surveillance, and Target Acquisition
gMAV / T-Hawk	377	194	Army (gMAV) Navy (T-Hawk)	ISR/Reconnaissance, Surveillance, and Target Acquisition/Explosive Ordnance Disposal

Source: Weatherington brief.

Note: For comparison purposes, table does not include mini/small, micro, or lighter-than-air UAS.

a. MQ-1 and MQ-9 use the same GCS.

Figure 5. DoD Unmanned Aerial System Platforms¹⁸⁵¹⁸⁵ “U.S. Unmanned Aerial Vehicles,” CRS, 8.

Table 1 Selected UAV holdings 2011

Country	Name	Type	Size	Number	Service
UK	Hermes 450	ISR	Medium	n.k.	Army
UK	Watchkeeper	ISR	Medium	n.k.	Army
UK	MQ-9 Reaper	CISR	Medium	5	Air Force
Asia					
Australia	Heron	ISR	Heavy	8	Army
China	BZK-005	ISR	Heavy	n.k.	Army
China	WZ-5	ISR	Heavy	n.k.	Army
China	ASN-105	ISR	Medium	n.k.	Army
China	ASN-206	ISR	Medium	n.k.	Army
China	CH-1 Chang Hong	ISR	Heavy	n.k.	Air Force
China	Chang Kong-1	ISR	Heavy	n.k.	Air Force
China	Firebee	ISR	Heavy	n.k.	Air Force
India	Nishant	ISR	Medium	14	Army
India	Searcher MkI/II	ISR	Medium	12	Army
India	Heron	ISR	Heavy	4	Navy
India	Searcher MkII	ISR	Medium	8	Navy
India	Searcher MkII	ISR	Medium	n.k.	Air Force
South Korea	Night Intruder	ISR	Medium	n.k.	Air Force
South Korea	Searcher	ISR	Medium	3	Air Force
Malaysia	Eagle ARV	ISR	Heavy	3	Air Force
Malaysia	Aludra	ISR	Medium	n.k.	Air Force
Philippines	Blue Horizon II	ISR	Medium	2	Air Force
Singapore	Hermes 450	ISR	Heavy	n.k.	Air Force
Singapore	Searcher MkII	ISR	Medium	40	Air Force
Sri Lanka	Seeker	ISR	Medium	1	Army
Sri Lanka	Blue Horizon II	ISR	Medium	n.k.	Air Force
Sri Lanka	Searcher MkII	ISR	Medium	2	Air Force
Thailand	Searcher	ISR	Medium	n.k.	Army
Middle East and North Africa					
Egypt	R4E-50 Skyeye	ISR	Heavy	20	Air Force
Egypt	Talodyne-Ryan 324 Scarab	ISR	Heavy	29	Air Force
Iran	Mohajer IV	ISR	Medium	n.k.	Army
Israel	Hermes 450	ISR	Heavy	n.k.	Air Force
Israel	Heron	ISR	Heavy	n.k.	Air Force
Israel	Heron II	ISR	Heavy	4	Air Force
Israel	RQ-5A Hunter	ISR	Heavy	n.k.	Air Force
Israel	Searcher MkII	ISR	Medium	22	Air Force
Jordan	Seeker SBT/L	ISR	Heavy	6	Air Force
Lebanon	Mohajer IV	ISR	Medium	8	Army
Morocco	R4E-50 Skyeye	ISR	Heavy	n.k.	Army

Figure 6. Worldwide Unmanned Aerial System¹⁸⁶ (continued on next page)¹⁸⁶ IISS, *Military Balance 2011*, 22.

Europe					
Azerbaijan	Aerostar	ISR	Medium	3	Army
Azerbaijan	Aerostar	ISR	Medium	4	Air Force
Belgium	RQ-5A Hunter	ISR	Heavy	13	Air Force
Finland	ADS-95 Ranger	ISR	Medium	6	Army
France	Sperwer	ISR	Medium	20	Army
France	Harfang	ISR	Heavy	3	Air Force
Germany	KZO	ISR	Medium	6	Army
Germany	Luna	ISR	Medium	6	Army
Germany	Heron	ISR	Heavy	3	Air Force
Greece	Sperwer	ISR	Medium	2	Army
Italy	RQ-1B Predator	ISR	Heavy	6	Air Force
Netherlands	Sperwer	ISR	Medium	14	Army
Spain	Searcher MkIIJ	ISR	Medium	4	Army
Sweden	Sperwer	ISR	Medium	3	Army
Switzerland	ADS-95 Ranger	ISR	Medium	4	Air Force
Turkey	Falcon 600	ISR	Heavy	n.k.	Army
Turkey	Firebee	ISR	Heavy	n.k.	Army
Turkey	CL-89	ISR	Medium	n.k.	Army
Turkey	Gnat	ISR	Medium	196	Army
Turkey	Heron	ISR	Heavy	10	Air Force
Turkey	Gnat 750	ISR	Medium	18	Air Force

Figure 6 (continued from previous page)

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IV. SUPPORTING CASE STUDIES

A. INTRODUCTION

In this chapter I will use a methodology that involves an analysis of three comparative case studies in order to answer my research question: “Are modern overseas military bases an outdated military concept?” The three comparative case studies will involve states that decided to reduce their international military presence during the last twenty years. The first case study involves the United States reducing its military forces stationed in South Korea. The reason the United States is reducing its forces is that due to the Revolution in Military Affairs it can accomplish more capabilities with less people. One of the most important aspects of this is with increased imagery from satellites providing better intelligence, GPS enabling more accurate force deployment and targeting, and open source intelligence allowing better collection. At the same time North Korea is trying to counter the United States satellite advantage by jamming GPS and regionally denying the United States the ability to access space. North Korea is also trying to counter the United States asymmetrically by creating cyber military units to attack South Korea and the United States.

The second case study involves the British force reduction in the Falkland Islands since 1982. An important point to remember is that the British are not protecting the Falkland Islands for its military usefulness; instead they are stationing military forces there to allow the British citizens the right to self-determination. If there were no British citizens on the Falklands, the British would probably have transferred ownership back to Argentina decades ago. However, Britain has been able to reduce its military footprint due to increases in intelligence capabilities provided by satellites and open source intelligence. Additionally by building RAF Mount Pleasant it has allowed the British to turn the Falkland Islands into a military place as opposed to a military base. Hence the British can station a minimum numbers of troops on the island and rapidly call in reinforcements in case tensions escalate.

The third case involved Israel's occupation of Southern Lebanon. This case illustrates the limitations of the Revolution in Military Affairs when a state confronts non-traditional military objectives like population pacification and an insurgency. As important, this case also illustrates some of the complicating factors that can occur when a country tries to establish a significant military presence outside of its country's borders. The Israel's solve their dilemma by withdrawing from southern Lebanon and creating new technology that can accomplish the same military objectives without a foreign military presence. All of these cases illustrate that large foreign military bases are rapidly losing their utility and are becoming outdated.

All three of these case studies share important similarities with each other, and with China. First, all of these states are powerful regional or international powers. The United States can be termed an international power, while the United Kingdom, Israel, and China are important regional powers. For each case study, the decision to reduce troops was a unilateral decision made by the respective country. Troops were not reduced due to international pressure, a substantial change in budgetary pressure, or a dramatic change in the military threat. Each state initially sent troops into each area for a very specific purpose that remained the same during the entire time frame. In the United States example this was to protect South Korea and deter North Korean military action. In the United Kingdom example this was to protect the Falkland Islands from invasion. In the Israel example the reason for the occupation was to limit attacks on Israel from Lebanon. For each of these cases the decision to reduce troops or withdraw from the area was based on the revolution in military affairs and new technology allowing the same objective to be achieved with fewer personnel.

B. UNITED STATES FORCE REDUCTION IN SOUTH KOREA – ACCOMPLISHING MORE WITH LESS PEOPLE

The first case study will examine the United States reduction in troops and consolidation of bases in South Korea during the time period 2000–2012. This case study will begin with a brief synopsis of United States involvement in South Korea. This will be followed by a description of the reduction in forces and bases that occurred during the last 12 years. With the facts established, the next step will be to refute alternative

hypothesizes for the reason the reduction occurred. These confounding variables include: a reduction in the North Korean threat, United States budget austerity, and the Global War on Terror. With these confounding variables undermined the following section will present evidence for my theory that the reduction in forces was due to the Revolution in Military Affairs and the conclusion that the same objectives of intelligence, force projection, and logistics could be accomplished in support of the mission with significantly fewer forces.

The United States occupied South Korea with the end of World War II, “American forces partitioned the peninsula at the end of World War II, established the ROK as a new nation in 1948, rescued South Korea from invasion in 1950, and deployed as a permanent garrison after the conflict ended in 1953. U.S. troops remain to this day.”¹⁸⁷ After this time period there were two significant reductions in United States troops in South Korea. One occurred in 1971 under the Nixon Doctrine which encouraged the United States allies to become more self-reliant. During the time United States troops were reduced from 63,000 to 43,000.¹⁸⁸ The next significant reduction occurred with the end of the Cold War when President George Bush withdrew an additional 5,000 troops in 1992.¹⁸⁹ Hence during the previous thirty years before 2000 there had only been two significant reductions in forces. The second troop reduction that occurred involved only 5000 troops out of a total of 43,000. Additionally both of these reductions had occurred towards the end of significant conflicts – the Vietnam War and the end of the Cold War.

Then in 2004, the United States announced that it was planning to withdraw 12,000 troops from Korea in the next few years:

Secretary of Defense Donald Rumsfeld authorized a realignment program to reduce and relocate U.S. forces in South Korea. Under the Rumsfeld program, the Pentagon withdrew a 3,600-person combat brigade from the

¹⁸⁷ Doug Badow, “The U.S.-South Korea Alliance,” (Washington, D.C.: CATO Institute, Jul. 2010), <http://www.cato.org/pubs/fpbriefts/fpb90.pdf>.

¹⁸⁸ “U.S. Forces Order of Battle,” *Global Security website*, <http://www.globalsecurity.org/military/ops/korea-orbat.htm>.

¹⁸⁹ Ester Schrader and Barbara Demick, “U.S. Plans to Cut Troops in S. Korea by a Third,” *Los Angeles Times*, Jun. 8, 2004, <http://articles.latimes.com/2004/jun/08/world/fg-troops8>.

Second Division and sent it to Iraq. The Rumsfeld plan called for the U.S. troop level in South Korea to fall from 37,000 to 25,000 by September 2008.¹⁹⁰

Members of both the South Korean and United States military made sure to emphasize that this reduction in force did not equate to a reduction in capabilities, “The Secretary and the Minister expressed their shared commitment to ensure that the redeployment would not weaken the combined deterrent and defensive capabilities of the Alliance and warned that for anyone to perceive such a weakening would be a mistake.”¹⁹¹

From 2005 till 2008 reductions in troops and bases did occur; however, instead of reducing the amount of troops by 12,000 to 25,000 the troop reductions were halted in 2008 by Secretary of Defense Robert Gates leaving 28,500 troops still in South Korea.¹⁹² Even with this smaller change, the end result was a reduction of 8,500 troops, which still represented the largest reduction in forces since 1971. Additionally a number of bases close to the Demilitarized Zone were closed in 2005 and 2006 including Camp Essayons, Camp Falling Water, Camp Jackson, Camp Kwangsari, Camp Kyle, Camp LaGuardia, Camp Page, and Camp Sears.¹⁹³ Although the reduction and consolidation plan has been delayed the trend of reduction in bases continues through the present day. This reduction in bases is apparent when examining the USFK Strategic Alliance 2015 document that was announced in 2010.¹⁹⁴

¹⁹⁰ Mark E. Manyin, “U.S.-South Korea Relations,” *CRS*, Nov. 3, 2010, <http://fpc.state.gov/documents/organization/152040.pdf>.

¹⁹¹ “Joint Communiqué: Thirty-Sixth Annual U.S.-ROK Security Consultative Meeting,” *Department of Defense*, Oct. 2004, <http://www.defense.gov/news/Oct2004/d20041022joint.pdf>.

¹⁹² Manyin, “U.S.-South Korea Relations.”

¹⁹³ “U.S. Forces Korea Facilities,” *Global Security website*, May 7, 2011, <http://www.globalsecurity.org/military/facility/korea.htm>.

¹⁹⁴ General Walter L. Sharp, “USFK Press Conference Transcript,” *United State Forces Korea (USFK)*, Sept. 9, 2010, <http://www.usfk.mil/usfk/speech.press.conference.transcript.497>.

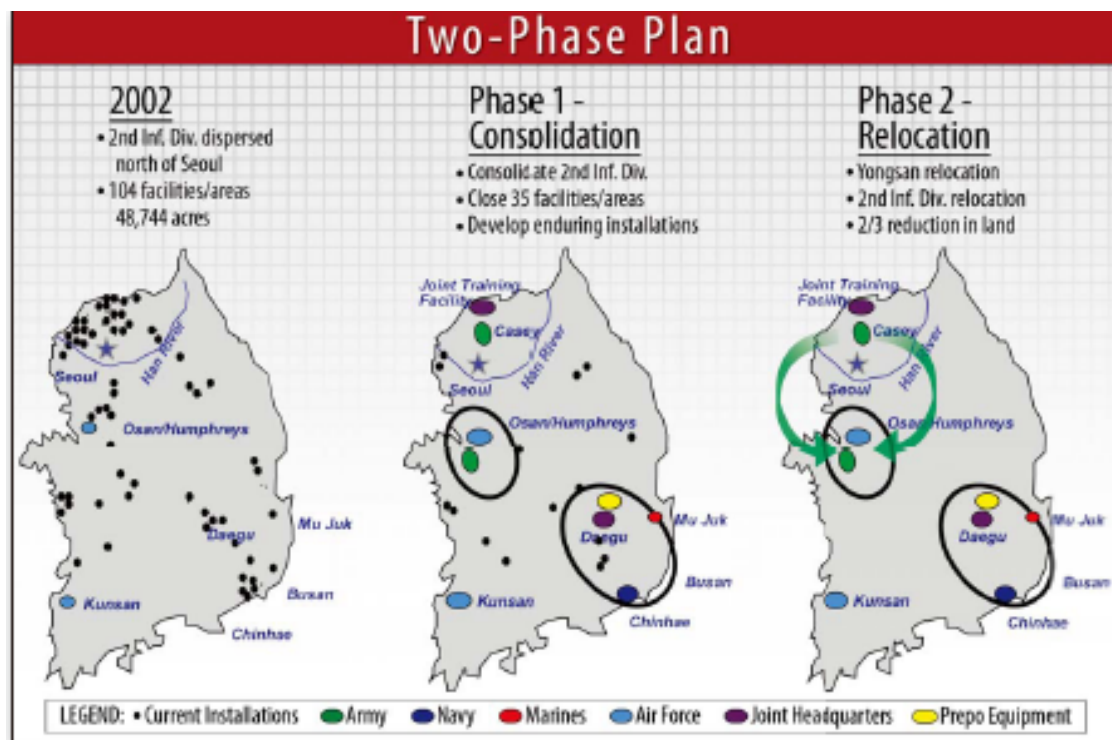


Figure 7. U.S. Base Consolidation Plan in South Korea¹⁹⁵

It is important to note that this base reduction continues despite North Korean military actions like the sinking of the *Cheonan* and shelling of Yeonpyeong Island in 2010. These two incidents represent the most aggressive military action North Korea has taken in the last 20 years.¹⁹⁶

The next step will be to refute alternative hypothesizes for the reason the troop and base reduction occurred. These confounding variables include: a reduction in the North Korean threat, United States budget austerity, and the Global War on Terror. It is important to establish that the reduction in forces and closure of overseas military bases was a unilateral decision made by the United States because of technical advances in military warfare as opposed to some other factor.

The first alternative hypothesis is that the United States is reducing its forces because North Korea is no longer as significant a threat as it was during the 1980s and

¹⁹⁵ "USFK Strategic Alliance 2015 Presentation," *USFK website*, http://www.usfk.mil/usfk/Uploads/120/USFK_SD_SPREAD_10MB.pdf.

¹⁹⁶ Badow, "The U.S.-South Korea Alliance."

1990s. However, this would be incorrect. In fact, there is ample evidence to indicate that since 2000 North Korea has maintained or become more of a threat to South Korea and the United States. One important change that has occurred is that over the previous two decades North Korea had moved more of its million man army closer to the DMZ:

In particular, the percentage of North Korean forces deployed within 100km of the DMZ has significantly increased during the past two decades. Currently, North Korea deploys approximately 65% of its military units, and up to 80% of its estimated aggregate firepower, within 100km of the DMZ. This inventory includes approximately 700,000 troops, 8,000 artillery systems and 2,000 tanks.¹⁹⁷

Other important improvements in North Korean capabilities were displayed in a military parade in November 2010. These include the likely acquisition of Chinese-made ZM-87 anti-personnel lasers which are banned by the United Nations¹⁹⁸ and new air defense weapons, “Jane’s concluded that it represented ‘a major expansion in North Korea’s air defense potential,’ with a radar/guidance system that would be harder to jam.”¹⁹⁹ In addition to the new conventional weapons, North Korea has also shown more aggressive military action with the March 2010 sinking of the South Korean naval vessel the *Cheonan* and the November 2010 shelling of Yeonpyeong Island.²⁰⁰

More important than the conventional capabilities that the North Koreans have developed are the asymmetric capabilities like GPS jamming and cyber capabilities. Over the past two decades North Korea has looked to asymmetric ways as a new strategy to counter the United States and South Korean technological advancement. Over the past two years North Korean GPS jamming has become an increasing concern. In a military exercise in Mar 2011 the United States was forced to cut short a military reconnaissance

¹⁹⁷ “The Conventional Military Balance on the Korean Peninsula,” *IISS*, 2012, <http://www.iiss.org/publications/strategic-dossiers/north-korean-dossier/north-koreas-weapons-programmes-a-net-asses/the-conventional-military-balance-on-the-kore/>.

¹⁹⁸ “Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects,” *United Nations website*, Oct. 10, 1980, <http://www.un.org/millennium/law/xxvi-18-19.htm>.

¹⁹⁹ Tim Lister, “North Korea’s military aging but sizable,” *CNN website*, Nov. 25, 2010, <http://edition.cnn.com/2010/WORLD/asiapcf/11/24/north.korea.capability/index.html>.

²⁰⁰ “U.N. Security Council to hold emergency meeting on Korean crisis,” *CNN website*, Dec. 19, 2010, <http://www.cnn.com/2010/WORLD/asiapcf/12/18/north.korea.richardson/index.html?hpt=T2>.

flight, “A U.S. military reconnaissance aircraft made an emergency landing during annual South Korea-U.S. military exercises in March when North Korea jammed its GPS device.”²⁰¹ Another GPS jamming issue happened in 2012 that affected both civilian aircraft and ships:

A total of 553 aircraft on route to and from Incheon and Gimpo, South Korea’s two main gateways, reported a failure with their GPS signals between April 28 and May 6... More than 120 ships, boats and passenger liners off the West Sea, as well as two fishing fleets on the eastern shore, also saw their signals jammed.²⁰²

North Korea is also developing cyber capabilities as it seeks to take advantage of the Revolution in Military Affairs and increase its military capabilities in new more effective ways. Two Distributed Denial of Service (DDoS) targeting South Korea have been attributed to North Korea. One cyber attack occurred in July 2009 and the other occurred in March 2011. These two incidents affected many different government and military facilities, “Government ministries, the National Assembly, the military headquarters, U.S. Forces in Korea and major banks were among those hit.”²⁰³ North Korea is a country that can take full advantage of developing a military strategy around cyber war for two reasons – it has limited civilian and military cyber capabilities while its opponents are very reliant on the Internet, “With little vulnerability to computer attacks, North Korea is free to focus on offense, which has relatively low costs and a potentially high impact.”²⁰⁴

To conclude this alternative hypothesis, North Korea continues to be a significant threat to the United States. Besides moving its conventional forces closer to the DMZ and upgrading its air defense capabilities, North Korea is investing in new asymmetric

²⁰¹ “N. Korea Jammed U.S. Reconnaissance Plane GPS,” *Chosun Ilbo*, Sept. 9, 2011, http://english.chosun.com/site/data/html_dir/2011/09/09/2011090900455.html.

²⁰² Shin Hyon-hee, “GPS jamming highlights N.K. cyber war threat,” *The Korean Herald*, May 8, 2012, <http://view.koreaherald.com/kh/view.php?ud=20120508001326&cpv=0>.

²⁰³ “South Korea hit by cyber attacks,” *BBC website*, Mar. 4, 2011, <http://www.bbc.co.uk/news/technology-12646052>.

²⁰⁴ Chico Harlan and Ellen Nakashima, “Suspected North Korean cyberattack on a bank raises fears for S. Korea, allies,” *Washington Post*, Aug. 29, 2011, http://www.washingtonpost.com/world/national-security/suspected-north-korean-cyber-attack-on-a-bank-raises-fears-for-s-korea-allies/2011/08/07/gIQAvWwIoJ_story.html.

capabilities to win a future conflict. North Korea looks to cyber and space as areas where it can take advantage of the lower cost to quickly catch up to the United States and make up for its deficit in conventional forces. North Korea sees cyber as a way to expand a future battlefield all the way to the United States homeland in ways that are otherwise not available via conventional forces.

The second alternative hypothesis is that the reduction in forces is due to budget constraints imposed on the United States military. This is also incorrect. While budget deficits and discussions of curtailing spending have been in the news frequently the military budget of the Department of Defense has not had to deal with a reduction in spending. As this chart from the Department of Defense shows military spending, excluding war funding, has actually increased from \$297 billion in 2001 to \$513 billion in 2009.²⁰⁵

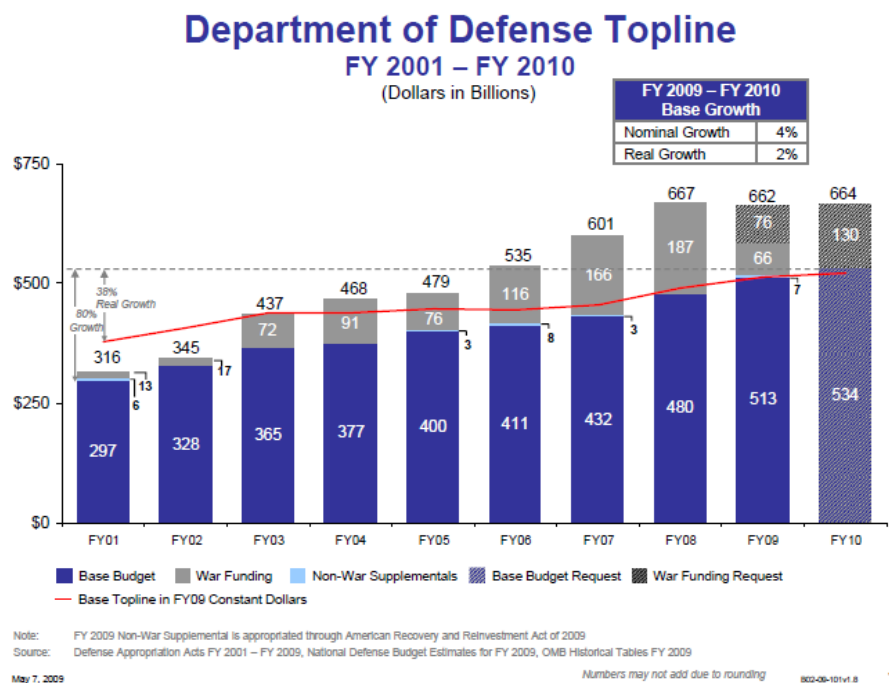


Figure 8. Department of Defense Topline Budget²⁰⁶

²⁰⁵ “Department of Defense Topline FY 2001 – FY 2010,” *Department of Defense*, May 7, 2009, <http://www.defense.gov/news/FY10%20Budget%20Request.pdf>.

²⁰⁶ “Department of Defense Topline FY 2001 – FY 2010,” *Department of Defense*, May 7, 2009, <http://www.defense.gov/news/FY10%20Budget%20Request.pdf>.

Additionally the Department of Defense budget in 2011 was even more expensive than any previous year, “The 2011 U.S. military budget of nearly \$700 billion is higher in real terms than at any point during the Cold War.”²⁰⁷ If one looks at a comparison to other countries the United States is also spending more money for defense than any other nation, “The United States invests more in its military manpower and hardware than all other countries combined.”²⁰⁸

The third alternative hypothesis is that the United States needed to shift its resources after September 11th, 2001 due to the Global War on Terror. This is also incorrect. The seeds of the current South Korean reduction in forces were already being planted in 2000:

A searching review of the American strategy of stationing ground forces in Japan and South Korea is underway to see whether those forces can be reduced or withdrawn. The United States would rely instead on warships, air power, and rapidly deployable ground forces to maintain a military presence in Asia.²⁰⁹

The goal of the Department of Defense was to have a plan ready for the next president to sign once he assumed office in January 2001. The origins of this reduction in forces plan were also referenced in an article in U.S. News and World Report article in 2012, “it’s because Bush-era defense secretary Donald Rumsfeld proposed similar changes-before the 9/11 terrorist attacks. ‘Rumsfeld talked about ‘lily pad bases’ with a lighter-weight force spread to more places around the world.’”²¹⁰ In addition to these points, North Korea was also listed as one of the three countries in the Axis of Evil making North Korea a primary concern in the War on Terror.

With these confounding variables undermined this section will present quotes and evidence for my theory that the reduction in forces was due to the Revolution in Military

²⁰⁷ Benjamin Friedman, “How Cutting Pentagon Spending Will Fix U.S.,” *Foreign Affairs website* (Nov/Dec 2011).

²⁰⁸ Joseph M. Parent, “Wisdom of Retrenchment” *Foreign Affairs website* (Nov/Dec 2011).

²⁰⁹ Richard Halloran, “U.S. Reconsiders Ground Forces in Korea, Japan,” *Global Beat Issue Brief* No. 62, Oct 2000, <http://www.bu.edu/globalbeat/pubs/ib62.html>.

²¹⁰ John Bennett, “Obama Administration Quietly Altering Military’s Global Presence,” *U.S. News*, Jan. 24, 2012, <http://www.usnews.com/news/articles/2012/01/24/obama-administration-quietly-altering-militarys-global-presence>.

Affairs. The conclusion is that the military objective of securing South Korea can be done with significantly fewer forces and bases due to improvements in intelligence, force projection, and logistics capability. When Secretary of Defense Rumsfeld unveiled the reduction in troops and bases in South Korea he was met with concerns about if this would reduce United States capabilities on the Korean peninsula. In an article describing the transformation he stated, “We should take advantage of advanced capabilities that allow us to do more with less. The old reliance on presence and mass reflects the last century’s industrial-age thinking.”²¹¹

One of the important advancements that have occurred is with satellites. Satellites allow increased imagery of North Korea allowing a better intelligence picture of what is occurring inside the country. Additionally with the establishment of the GPS system it has allowed better accuracy in location information for friendly forces and enemy targets. Former Chief of Staff of the Air Force General Schwartz has said, “Besides GPS...the Air Force has come to rely on other information operations provided by space-based capabilities, such as imagery and communications satellites, as well as those from single-purpose aircraft.”²¹² General Schwartz also recognized that there are vulnerabilities with the current space based systems and so is a strong advocate of developing new ideas for intelligence collection, “So what we are trying to do at the strategic level is not shackle ourselves to applications of our resources that are traditional and comfortable. And think more broadly and aggressively on how to make better use of these assets.”²¹³

So why is North Korea investing so much money and resources in GPS jammers? And why is the United States attempting to come up with alternatives to GPS? The reason is that both countries recognize that in a future conflict whoever controls space will have a major advantage in a future conflict. North Korea does not have the capabilities of China and so cannot try and create its own satellite navigation system. But what North Korea can do is try and make the United States GPS and other satellite

²¹¹ Donald Rumsfeld, “Positioning America’s Forces for the 21st Century,” *Department of Defense*, Dec. 1, 2005, <http://www.defense.gov/home/articles/2004-09/a092304b.html>.

²¹² Michael Hoffman, “Schwartz warns against dependence on GPS,” *Air Force Times*, Jan. 23, 2010, http://www.airforcetimes.com/news/2010/01/airforce_schwartz_012310/.

²¹³ Hoffman, “Schwartz warns against dependence on GPS.”

systems ineffective in a regional setting like the Korean peninsula. The United States has recognized that space based systems are a vital component to their military and so are trying to find ways to negate North Korea's jamming capabilities.

Open source intelligence is also providing information about Korea that was not available to the same extent twenty years ago. While North Korea is still a very closed society it has recently shown signs that it cannot maintain the same level of control of information that it could a decade ago. A good example is the North Korean failed missile launch in 2012. The United States Ambassador to South Korea pointed out that the North Korean media announced to its own citizens the failure of the test, which had never happened before, "the North took the unusual step of announcing to its citizens a couple of months ago, "that the satellite was at the bottom of the Yellow Sea ... because of the concern that the people would (already) know."²¹⁴ If information is able to enter North Korea more effectively it also means that information is able to be transmitted out of North Korea. In fact cell phone usage, while illegal, has become common place near the Chinese border, "Smuggled mobiles have been used on Chinese networks near the border for years."²¹⁵ North Korea is so concerned about increasing defectors and mobile phones that it has declared using a mobile phone a war crime during the 100 day period after Kim Jong Il's death.²¹⁶

When examining force projection it is important to remember that the goal is the objective not the number of personnel, "I think the way to think about it is that what deters and what gives you the capability to defend are military capabilities. It is not numbers of things; it is capability to impose lethal power when needed, where needed, with the greatest flexibility and with the greatest agility."²¹⁷ One of these changes was

²¹⁴ Jon Rabirotff, "North Korea struggling to hid information from people, envoy says," *Stars and Stripes*, Jun. 14, 2012, <http://www.stripes.com/news/north-korea-struggling-to-hide-information-from-people-envoy-says-1.180299>.

²¹⁵ "Also available to earthlings," *Economist*, Feb. 11, 2012, <http://www.economist.com/node/21547295>.

²¹⁶ Julian Ryall, "North Korea threatens to punish mobile-phone users as 'war criminals,'" *The Telegraph*, Jan. 26, 2012, <http://www.telegraph.co.uk/news/worldnews/asia/northkorea/9040152/North-Korea-threatens-to-punish-mobile-phone-users-as-war-criminals.html>.

²¹⁷ Donald Rumsfeld, "Secretary Rumsfeld Korean Joint Press Conference," *Department of Defense*, Nov. 17, 2003, <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=2954>.

the ability to better defend South Korea from missile attacks with new technology, “the United States would deploy by November its most modern air-defense system, the Patriot PAC-3, to South Korea.”²¹⁸ Another component was upgrades to current military helicopters, aircraft, and the increased logistics ability to move troops around the world quickly. Even in 2011 the idea of new force projection capabilities and a rapidly deployable force continues to shape the pressure for reduced overseas bases and troops,. As Joseph Parent who has a PhD in Political Science from Columbia University and is a professor at the University of Miami explained in *Foreign Affairs*, “Defending the territorial integrity of Japan and South Korea and preventing Chinese or North Korean adventurism demands rapid-response forces with strong reserves, not the 30,000 soldiers currently stationed in each country.”²¹⁹ New force projection capabilities include expanding into new realms of war, “Our ability to operate effectively in space and cyberspace, in particular, is increasingly essential to defeating aggression.”²²⁰

C. BRITISH FORCE REDUCTION IN THE FALKLAND ISLANDS

The next case study will examine the British reduction in troops on the Falkland Islands from 1982 until 2012. The case study will examine the background to the conflict in 1982, followed by the reduction in forces, refuting alternative hypothesizes, and then present evidence validating my theory.

Starting in 1833 the British have maintained a continuous presence on the Falkland Islands. However, this presence has been contested by Argentina since the 19th century. During the period before 1982 there were various discussions about the status of the Falklands but no formal decisions were reached. In 1982 the military junta in charge of Argentina decided to launch a “surprise” attack on the Falklands:

²¹⁸ Tom Shanker, “U.S. Defends Plan to Reduce Forces in South Korea,” *New York Times*, Jun. 9 2004, <http://www.nytimes.com/2004/06/09/world/us-defends-plan-to-reduce-forces-in-south-korea.html?pagewanted=all&src=pm>.

²¹⁹ Parent, “Wisdom of Retrenchment.”

²²⁰ Department of Defense, *The National Military Strategy of the United States of America* (Washington D.C: 2011), 9, http://www.jcs.mil/content/files/2011-02/020811084800_2011_NMS_-_08_FEB_2011.pdf.

The Falklands were invaded and illegally occupied by Argentine military forces on 2 April 1982. A British task force was dispatched immediately and, following a conflict in which over 900 British and Argentine lives were lost, the Argentine forces surrendered on 14 June 1982.²²¹

When Britain organized a task force to retake the Falklands it consisted of 120 ships including two small aircraft carriers and 43 warships.²²² Included in this Task Force were 28 Sea Harriers and 14 RAF Harrier GR3s²²³ and 4,778 personnel on the island at the conclusion of the war.²²⁴ When the fighting ended the plan was to garrison 3,100 military personnel on the Falklands in order to ensure security.²²⁵

After the conflict ended in 1982 the British indeed had over 3,000 military personnel on the island along with an aircraft carrier with an air wing, multiple destroyers, frigates, and other support ships.²²⁶ There were plans to improve the defensive capabilities of the island, “Soon after the Conflict in 1982, work was started on the building of Mount Pleasant Airfield (MPA), 35 miles from Stanley... An airfield capable of supporting fighters, helicopters and transport aircraft was constructed and also a complex capable of providing for all needs.”²²⁷ However, since the late 1980s the British government has reduced its forces on the island which now consists of 1200 troops, 4 aircraft, 2 ships, and surface to air missiles.²²⁸

²²¹ Foreign and Commonwealth Office, *The Overseas Territories* (London: June 2012), 100, <http://www.fco.gov.uk/resources/en/pdf/publications/overseas-territories-white-paper-0612/ot-wp-0612>.

²²² James A. Haggart, “The Falkland Islands Conflict, 1982,” *Global Security website*, <http://www.globalsecurity.org/military/library/report/1984/HJA.htm>.

²²³ “AV-8B Harrier Operations,” *Global Security website*, <http://www.globalsecurity.org/military/systems/aircraft/av-8-ops.htm>.

²²⁴ Sir Lawrence Freedman, *The Official History of the Falklands Campaign Volume 2* (London: Routledge, 2005) 685.

²²⁵ Freedman, *The Official History of the Falklands Campaign Volume 2*, 679.

²²⁶ “Main British Task Force Returns Home,” *Naval-History.Net website*, Dec. 13, 2010, <http://www.naval-history.net/F61home.htm>.

²²⁷ “About the Falklands,” *Minister of Defense webpage*, <http://www.mod.uk/DefenceInternet/DefenceFor/ServiceCommunity/OverseasPosting/BFSAI/AboutTheFalklands.htm>.

²²⁸ “Falklands Garrison still going strong,” *Minister of Defense webpage*, <http://www.mod.uk/DefenceInternet/DefenceNews/MilitaryOperations/FalklandsGarrisonStillGoingStrong.htm>.

Between 1982 and the present there has been significant reduction in the amount of manpower the overall British military employs “a former RAF Wing Commander stated in 2011, “When I joined in 1980, the RAF had about 90,000 staff. When I left in 2006, it was down to 45,000, and now it will be reduced again to about 30,000.”²²⁹ Along with this reduction in manpower Britain also currently does not maintain an aircraft carrier as it is waiting for two new aircraft carriers to be built.

Thus, one alternative hypothesis for the reduction in the amount of manpower on the island is due to reductions in Britain’s military budget and austerity. While cuts in defense have occurred over the past twenty years, Britain was also grappling with defense cuts before the Falklands incident happened in 1982. One example was the “announcement that the ice patrol ship HMS Endurance, the Royal Navy’s last presence in the South Atlantic, would be decommissioned the following year [1982] and not be replaced.”²³⁰ The other piece of evidence is that the Thatcher government had also attempted to sell the HMS Invincible in 1981, “In a Whitehall in 1981 deep in the throes of cutting defense expenditures (ironically, the Argentine Navy had been offered the new carrier HMS Invincible at a knock down price in 1981...) any policy advocating extra military spending “out of area” equated to lunacy.”²³¹

Additional the cuts to defense have to be placed in the proper context as Britain still has the 4th largest defense budget in the world behind only the United States, China, and Russia, “The defence budget will rise in cash terms. It will meet the NATO 2% target throughout the next four years. We expect to continue with the fourth largest military budget in the world.”²³² In fact, Britain still spends \$62.7 million dollars a year or roughly 2.6% of its GDP.²³³ The United Kingdom has spent roughly 2.6% of GDP on

²²⁹ Nick Hopkins, “Defence cuts: Gurkhas and RAF take brunt,” *Guardian*, Aug. 31, 2011, <http://www.guardian.co.uk/uk/2011/sep/01/defence-cuts-gurkhas-raf?INTCMP=ILCNETTXT3487>.

²³⁰ Colonel John Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups* (London: Robinson, 2004), 273.

²³¹ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 292.

²³² United Kingdom Government, *Strategic Defence and Security Review* (London: Oct 2010), 3.

²³³ “The 15 countries with the highest military expenditures in 2011,” *SIPRI Military Expenditures Database*, Sept 2011, http://www.sipri.org/research/armaments/milex/resultoutput/milex_15/the-15-countries-with-the-highest-military-expenditure-in-2011-table/view.

military defense since 1997.²³⁴ Indeed the government has proclaimed that budget will not impact the capabilities of the United Kingdom to protect itself and its overseas territories, “we have been clear that savings will not be made at the expense of our core security: national security budgets have been given relative protection in the Spending Review.”²³⁵ Hence if personnel are being cut, its not due to the budget reductions but instead because large amounts of personnel have been deemed no longer necessary to accomplish Britain’s objectives and a similar amount of defense GDP could be better spend on other military capabilities.

The second alternative hypothesis is that there has been a reduction in the invasion threat to the Falklands. This is also debatable. Up until a few months before the Argentine invasion of the Falklands in 1982 no one in the British government, or most of the world, expected an invasion to occur. According to one British historian the original invasion planning by the Argentinean military occurred in December 1981 and was briefed to the Argentine military leadership in January 1982, or only about 2 months before the invasion actually happened.²³⁶ Additionally recently tensions between the United Kingdom and Argentina have risen due to the 30th anniversary of the Falkland War, political instability in Argentina, and Falklands allowing hydrocarbon exploration in its territorial waters.²³⁷ Over the last year the president of Argentina, Cristina Kirchner, has been running into economic trouble which threatens her popularity. In order to find new sources of revenue she has nationalized a Spanish oil company and increasingly tried to distract the Argentina public by focusing on the Falkland Islands.²³⁸ If economic

²³⁴ “The SIPRI Military Expenditure Database,” SIPRI, Sept 2011, <http://milexdata.sipri.org/result.php4>.

²³⁵ United Kingdom Government, *Strategic Defence and Security Review*, 6

²³⁶ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 278–9.

²³⁷ Terry Macalister, “Falkland Islands: Premier Oil plan leads UK and Argentina to new dispute,” *Guardian*, Jul. 12, 2012, <http://www.guardian.co.uk/business/2012/jul/12/falkland-islands-premier-oil-argentina-dispute>.

²³⁸ Simon Romero and Raphael Minder, “Argentina to Seize Control of Oil Company,” *New York Times*, Apr. 16, 2012, <http://www.nytimes.com/2012/04/17/business/global/argentine-president-to-nationalize-oil-company.html?pagewanted=all>.

circumstances in Argentina continue to deteriorate and oil is discovered around the Falkland Islands it could lead to similar disputes that are occurring in the South China Sea.

My theory is that the reduction in military forces was due to the Revolution in Military Affairs and the conclusion that the same objectives of intelligence, force projection, and logistics could be accomplished in support of the with significantly fewer forces. Increased intelligence capabilities, better force projection, and logistics have transformed the Falklands from a military base to more of a military node, or place.

Starting with intelligence it is important to compare the capabilities that were available in 1982 to the capabilities that the British have available now. Concerning intelligence in 1982, Prime Minister Margaret Thatcher has publicly stated, “Contrary to what was said at the time...we had no intelligence until almost the last moment that Argentina was about to launch a full-scale invasion.”²³⁹ Other sources have also talked about how, “The intelligence was poor; preparations non-existent.”²⁴⁰ Retired Colonel John Hughes-Wilson, who served 31 years in the British Army with 20 spent in British Intelligence, focuses on what the specific intelligence failures were, “Cognitive dissonance in the British civil service and government in 1982 was a major cause of the Falklands War. The British ignored the many intelligence warning because they did not accord with what the British wanted to happen.”²⁴¹ Part of the problem was that in the early 1980s Britain had very few intelligence capabilities in the Southern Atlantic, “In fact there were just two key intelligence officers in place.”²⁴² Hence when jingoistic comments were made in the Argentine press there was no capabilities that could be used to validate whether they were legitimate or not, “An article in the Argentine press in January 1982 claimed that, ‘If the next round of negotiations with London fails, Buenos Aires will take over the islands by force this year.’...The British FCO dismissed such

²³⁹ Freedman, *The Official History of the Falklands Campaign Volume 1*, 216.

²⁴⁰ Professor Michael Clarke, “The Falklands: The Security Equation in 2012,” *RUSI*, Mar. 16, 2012, <http://www.rusi.org/analysis/commentary/ref:C4F6324444BE2E/>.

²⁴¹ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 262.

²⁴² Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 280.

behavior as Latin exuberance.”²⁴³ Thus, “lacking good intelligence resources inside Argentina the British were fatally blind to both Argentinean capabilities and intentions.”²⁴⁴

One of the major differences today is that the British have realized the importance of maintaining good intelligence capabilities and collection around the world. As the British Chief of the Defense Staff has said concerning Libya, “The bedrock of successful combat capabilities is Intelligence, Surveillance, Target Acquisition and Reconnaissance. This allows us to understand, track, strike and remain poised to react to the unexpected.”²⁴⁵ One of these improvements has been to expand Britain’s intelligence capabilities – such as gaining access to satellite imagery. Looking at the Falklands 30 years ago, “Intelligence in those days [1982] was hopeless,” says Prof Sir Lawrence Freedman, official historian of the Falklands War. “There was no access to satellites at the time of invasion. People didn’t know what was going on.”²⁴⁶ This is dramatically different to today when Britain does have access to satellite imagery and the Internet allows quick dissemination of information. According to Professor Freedman, official historian of the Falklands War, in an article by the BBC, “Nowadays the UK has access to satellites that would show a massing of Argentine forces. Islanders have the Internet, which would make it easier to get word back that the islands are under attack.”²⁴⁷

Another intelligence capability that has been added to the Falklands is the additional of SIGINT platforms to monitor electronic communications in the area, “the electronic monitoring that now takes place from Mount Pleasant itself is, in orders of magnitude, greater than existed in 1982.”²⁴⁸ The 81st Signal Squadron usually deploys to the Falklands and recently has upgraded the communications capabilities, “These have

²⁴³ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 272.

²⁴⁴ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 278.

²⁴⁵ David Richards, “This Change of course on aircraft carriers is essential,” *Telegraph*, May 10, 2012, <http://www.telegraph.co.uk/finance/newsbysector/industry/defence/9257316/This-change-of-course-on-aircraft-carriers-is-essential.html>.

²⁴⁶ Tom De Castella and Megan Lane, “Could the UK still defend the Falklands?” *BBC webpage*, Feb. 27, 2012, <http://www.bbc.co.uk/news/magazine-17157373>.

²⁴⁷ De Castella and Lane, “Could the UK still defend the Falklands?”

²⁴⁸ Clarke, “The Falklands: The Security Equation in 2012.”

included major frame changes and cable replacements and more recently the installation of long distance fibre optic runs.”²⁴⁹

The second significant change that has occurred since 1982 that has allowed the reduction in troops is the addition of different force projection and logistical capabilities on the Falkland Islands and in the British military. The most important change is the addition of Mount Pleasant military airfield:

The military balance around the Falklands has been transformed by the construction since 1982 of the Mount Pleasant airbase 30 miles outside Stanley, which replaced the small airstrip that existed at that time. Mount Pleasant is a major military facility with two runways of over 4,000 meters between them. It will take military aircraft of all types and as such is a critical military asset that transforms the “can we defend/re-take The Falklands?” equation into a simple military fact: whoever controls Mount Pleasant controls the Islands.²⁵⁰

Other commentators have also remarked that the addition of the airfield means that the defense of the island is no longer measured in the amount of troops stationed there, “Military experts believe the islands are now virtually impregnable. The new air base has completely altered the balance of power.”²⁵¹ The addition of the air field has essentially changed the nature of the Falkland Islands from a military base to a military place. While there are a small number of military personnel and aircraft that serve as a deterrence force, the primary nature of the defense of the islands depends on rapid reinforcement.

One of the most important force projection capabilities that the airfield provides is the ability to quickly supply reinforcements in the event of deteriorating political or military conditions with Argentina. The Royal United Services Institute, an independent British think tank established in 1831 has said, “Most significantly, the base could be reinforced by air within 18 hours if the need arose.”²⁵² With this capability the defense

²⁴⁹ “81 Sig Sqn (V) Deployments,” *United Kingdom Army website*, http://www.army.mod.uk/documents/general/81_Sig_Sqn.pdf.

²⁵⁰ Clarke, “The Falklands: The Security Equation in 2012.”

²⁵¹ De Castella and Lane, “Could the UK still defend the Falklands?”

²⁵² Clarke, “The Falklands: The Security Equation in 2012.”

of the Falklands has shifted from a question of how many troops are on the island and how many ships are patrolling the surrounding waters to a matter of who controls the skies around the island, “The nature of the task has changed from essentially a Royal Navy commitment to the defence of The Falklands to an RAF commitment.”²⁵³ Along with newer aircraft and air refueling capability even if Britain were to lose the Mount Pleasant military airfield or it were to become incapacitated there are still other military force projection options available, “Much has changed in strategic terms. Nowadays, it could be won back through long-range air power, says Professor Michael Clarke, director of the Royal United Services Institute.”²⁵⁴

Another important point to make is that the primary reason the British want to protect the Falkland Islands is not military, “the British wanted neither the colony nor the ownership, but were stuck with the indignant islanders.”²⁵⁵ The British do not see any military value to the Falkland Islands and before the Argentina invasion were thinking of giving the island back to Argentina and then leasing it for 99 years.²⁵⁶ However, before 1982 the British were unable to accomplish this because the islanders had the right of self-determination as promised in the United Nations Charter under Article 73. After the 1982 conflict, islander self-determination and British nationalism have been the primary motives for continuing to have this overseas military base. If the British were deciding today whether to establish a military base and colonist on the Falkland Islands, they would probably decide against it. Hence if China is deciding to establish a military base today they do not have to worry about native Chinese populations demanding a continuation of historical protection.

In conclusion, the evidence presented supports my theory that the reduction in forces was due to the Revolution in Military Affairs and the conclusion that the same

²⁵³ Clarke, “The Falklands: The Security Equation in 2012.”

²⁵⁴ De Castella and Lane, “Could the UK still defend the Falklands?”

²⁵⁵ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 265.

²⁵⁶ Hughes-Wilson, *Military Intelligence Blunders and Cover-Ups*, 270.

objectives of intelligence, force projection, and logistics could be accomplished in support of the mission, to protect the Falklands from invasion, with significantly fewer military forces.

D. ISRAELI FORCE REDUCTION IN SOUTHERN LEBANON

The final case study will examine Israel's decision to withdraw troops from Southern Lebanon in 2000. The case study will look will examine the situation in two periods: 1982–2000 and post-2000. Then alternate hypotheses will be addressed and finally the evidence for my thesis that the reduction in forces was due to the Revolution in Military Affairs. This case study will look at the limitations of new technology when confronting non-traditional military objectives, like pacification, and asymmetric paramilitary forces, like an insurgency, in a foreign land. The case study will ultimately identify additional complications of setting up military bases in a foreign land and how these complications can be mitigated by developing new capabilities that can accomplish the same objectives from a country's home territory.

In 1982 Israel invaded southern Lebanon. The primary objective of Israel's invasion was to protect northern Israel from rocket attacks and cross border raids by the PLO. In 1985, "The forces gradually withdrew to a self-declared nine-mile 'security zone,' north of the Israeli border."²⁵⁷ While this resulted in an immediate reduction in attacks on northern Israel the intended effect did not last long. Instead attacks were redirected against the Israeli military forces that remained in Southern Lebanon, "the 'guerilla fighters' main aim was to end the Israeli occupation of southern Lebanon. Each year they killed dozens of Israeli soldiers. Finally, the human price of the war became too high."²⁵⁸

In May 2000 Israel unilaterally decided to withdraw all of its forces from southern Lebanon. Israel had left the South Lebanon Army (SLA) in southern Lebanon with the hope that it would be able to negotiate with the Lebanese government and maintain a

²⁵⁷ "Israel: Background and Relations with the United States," CRS, Jun. 6, 2008, 22, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA482847>.

²⁵⁸ "Q & A: Leaving Lebanon," *BBC website*, May 23, 2000, http://news.bbc.co.uk/2/hi/middle_east/636594.stm.

stable friendly presence next to northern Israel. However, this did not happen and the SLA collapsed almost immediately with Hezbollah taking over southern Lebanon to the discomfort of Israel. However, Hezbollah's domination of southern Lebanon did not result in the renewal of large amount of cross border raids or rocket attacks that some had predicated. This relative peace lasted until July 12, 2006 when Hezbollah kidnapped two Israeli soldiers and, "provoked Israel to launch a war against Hezbollah in Lebanon. The war ended with a cessation of hostilities on August 14. Israeli forces withdrew as their positions were assumed by the Lebanese army and an enlarged U.N. Interim Forces in Lebanon (UNIFIL)."²⁵⁹ Since 2006, besides low levels of violence, there has been relative peace along the Israel and Lebanon frontier, "As a result, since the middle of August 2006, all over southern Lebanon hardly a shot has been fired."²⁶⁰

Two alternative hypotheses can be presented for why Israel decided to withdraw its forces from foreign territory in Lebanon. The first alternative explanation is that Israel had accomplished its objectives. The idea behind this explanation is that Israel had originally established the security zone to ensure that its northern territory was protected. Over the 15 years this objective was accomplished so Israel decided to retreat expecting the SLA to continue the job it had been trained to do. However, this would be incorrect for three reasons: instead of rocket attacks on civilians the violence switched to Israeli troops, Israel continued to have rocket attacks, and the foreign occupation created an anti-Israel group that was more radical than the one that Israel had originally invaded Lebanon to crush.

The primary purpose of the 1982 invasion and subsequent occupation was to protect northern Israel. By protecting northern Israel the goal was to ensure that the civilian population would not be harmed or killed. While this was successful to a degree the problem became that Israel troops were being killed at a similar or greater rate than the rocket attacks that had warranted the invasion. Hence if the objective was to protect Israel lives trading civilian lives for military lives in a conflict that never seemed as if it was going to end was not accomplishing the goal, "Did the occupation enhance security?

²⁵⁹ "Israel: Background and Relations with the United States," CRS, 23.

²⁶⁰ Martin Van Creveld, "Israel - Second Lebanon War," *Infinity Journal* 3 (Summer 2011), 6.

Hardly at all. The Israeli forces and the SLA suffered a steady flow of casualties over the years.”²⁶¹ Part of the problem is that the rate of casualties on the Israeli side did not improve during the course of the occupation – on the contrary Israel actually started to lose more people proportionally to Hezbollah as the conflict progressed:

In marked contrast to the late 1980s, when its attacks often involved large losses, the ratio of Hizballah casualties to IDF/SLA casualties dropped from more than 5:1 in 1995 to less than 2:1. Suicide bombers were superseded by coordinated military attacks that benefited from excellent planning and intelligence...Most of the seven Israeli soldiers felled during January and February [2000] of this year were killed by TOWs.²⁶²

These Israeli military deaths in the later stages of the conflict effected all ranks, “The killing of seven Israeli soldiers in late February and early March, including a brigadier general (the highest ranking Israeli killed in Lebanon since 1982), has furthered the call in Israel to get out.”²⁶³ The RMA was not effective in southern Lebanon because Israel was not fighting a traditional conflict and instead was confronting an insurgency. With a traditional state conflict the objectives are usually land or resources. The enemy typically wears uniforms and has military equipment, like tanks, which are easy to identify. In these traditional conflicts the RMA is able to achieve a force multiplier effect and significantly enhance the capabilities of smaller forces. However, in an insurgency, like Iraq after the 2003 invasion, the enemy forces are not easy to identify and the objective is not territory but pacification. In this case, insurgency is able to negate the advantages of the Revolution in Military Affairs by utilizing the aspects of stealth, decentralized execution, and utilizing urban environments to the insurgents’ advantage.

When debating the question of whether China would establish a “string of pearls” the important point to keep in mind is that China would be creating these overseas military bases to confront traditional military threats. China would not be establishing overseas military bases to deal with insurgencies or to try and bring democracy to an

²⁶¹ “Q & A: Leaving Lebanon,” *BBC website*.

²⁶² Augustus R. Norton, “Hizballah and the Israeli Withdrawal from Southern Lebanon,” *Journal of Palestine Studies* 30 No. 1 (Autumn 2000), 22–35, <http://www.bc.edu/content/dam/files/centers/boisi/pdf/f09/Hizballah-and-Israel.pdf>

²⁶³ Stephen J. Sosebee, “Possible Withdrawal From Lebanon Becomes Israeli Election Issue,” *The Washington Report on Middle East Affairs* 3 (May 1999): 9.

area. Hence in a China case the Revolution in Military Affairs would still provide the force multiplier effect seen in the United States example above.

Even with the Israel occupation of southern Lebanon not all rocket attacks on Israel were prevented, “in April 1996, following Israel’s Grapes of Wrath operation, during which the resistance fired more than 600 Katyushas into Israel”²⁶⁴ The fact that Hezbollah was still able to mount large scale rocket barrages after more than 10 years of Israel occupation made many people wonder if anything had been accomplished. This became more of an issue as Hezbollah appeared to be gaining the edge, “According to the IDF, Hezbollah mortar attacks doubled to 1,100 last year.[1998]”²⁶⁵

The second alternative hypothesis is that Israel withdrew from southern Lebanon due to international pressure. However, this is incorrect, as the Director-General of the Israel Ministry of Foreign Affairs announced as the withdrawal concluded this was a unilateral action due to a changing military environment:

Yet, over time, the “Lebanese equation” has slowly changed. So much so, that a few months ago, the Israeli government decided to unilaterally withdraw from Lebanon, as a means of better promoting Israel’s security, in light of the new realities. And indeed, a full Israeli pull-out from Lebanon was completed Thursday, May 25th.²⁶⁶

Besides the changing military calculation that was occurring, Israel domestic opinion also felt that the sacrifices that the military was making in soldiers’ lives was not accomplishing the objectives that the military had set out to achieve, “Certainly, the momentum for getting out of Lebanon very much came from Israeli society, which was increasingly intolerant of Israeli losses.”²⁶⁷ Further evidence that international opinion was not a factor is illustrated when Israel then re-invaded Lebanon in 2006 after two of its soldiers were kidnapped, “In 2006, Hezbollah militants kidnapped two Israeli soldiers patrolling the border between Lebanon and Israel, provoking a month long war in which

²⁶⁴ Norton, “Hizballah and the Israeli Withdrawal from Southern Lebanon,” 22–35.

²⁶⁵ Sosebee, “Possible Withdrawal From Lebanon Becomes Israeli Election Issue,” 9.

²⁶⁶ Eytan Bentsur, “Op-ed Article on Israel’s Withdrawal from Lebanon,” *Israel Ministry of Foreign Affairs*, May 25, 2000, <http://www.mfa.gov.il/MFA/Government/Speeches+by+Israeli+leaders/2000/Op-ed+Article+on+Israel-s+Withdrawal+from+Lebanon.htm>.

²⁶⁷ Norton, “Hizballah and the Israeli Withdrawal from Southern Lebanon,” 22–35.

1,200 Lebanese, most of them civilians, and 128 Israelis, most of them soldiers, were killed.”²⁶⁸ This time, however, Israel had learned from the failure of its occupation and was involved in a quick war and withdrew back to its side of the border. While the success of the Second Lebanese War is debatable, it did accomplish an overall strategic objective of significantly reducing rocket attacks on Israel once the conflict had ended.

So why did Israel withdraw from southern Lebanon? My thesis is that Israel withdrew because it had developed new capabilities that could counter the problems it confronted when trying to station troops outside of Israel while still accomplishing its military objectives. These new options of increased intelligence capability and improved force projection meant that it no longer needed to have a large military footprint outside of its borders. As mentioned in the previous paragraph the Israel Minister of Foreign Affairs in 2000 talked about a change in the ‘Lebanese equation’ and ‘new realities’. One of these new intelligence capabilities was that Israel began a campaign of intercepting Hezbollah’s communications in order to discover how the organization worked. Nobody knows how many underground cables Israel has actually compromised but Hezbollah seems to unearth a different location every few months:

Hezbollah has been characteristically reticent in describing how the existence and location of the tap on the fiber-optic cable near Zrariah was determined... But it is likely the tap was discovered using similar means that led to the unearthing of previous Israeli interceptions near Srifa in December last year, and south of Houla in October 2009.²⁶⁹

In addition to intercepting Hezbollah’s communications Israel is also augmenting its intelligence with unmanned aerial vehicles, “Israel’s drones, like those of a few foreign powers, have since evolved into a sophisticated fleet of long-range surveillance platforms that are ever-present over the Gaza Strip and southern Lebanon.”²⁷⁰ In fact, Israel has a thriving indigenous industry producing unmanned aerial vehicles for itself

²⁶⁸ “Hezbollah,” *New York Times*, Apr. 2012, <http://topics.nytimes.com/top/reference/timestopics/organizations/h/hezbollah/index.html?inline=nyt-org>.

²⁶⁹ Nicholas Blanford, “Israeli tap found in Zrariah points to ongoing intelligence war,” *The Daily Star*, Jul. 5, 2012, <http://www.dailystar.com.lb/News/Politics/2012/Jul-05/179416-israeli-tap-found-in-zrariah-points-to-ongoing-intelligence-war.ashx#axzz20jmyEWq1>.

²⁷⁰ Dan Williams, “Buzz Of Israel’s Drones Resonates Throughout Region,” *Aviation Week*, Dec. 5, 2011, http://www.aviationweek.com/Article.aspx?id=/article-xml/awx_12_05_2011_p0-401838.xml.

and sale to other countries – one example would be the Heron.²⁷¹ Israel has even advanced to the point where it has added lethal capabilities to its UAVs similar to the Predator and has utilized these drones to attack kill terrorists without having to send military forces into foreign territory, “Israeli airstrikes killed seven Palestinian members of Islamic Jihad’s armed wing in southern Gaza,”²⁷²

Since 2000 Israel has also added significant defensive capabilities that allow it to accomplish its primary objective – the defense of northern Israel from rockets – without having to deploy soldiers outside of its border. How significant have these advances in defensive missile technology been? “Israeli defense and other analysts say it has now reached a level of maturity that could begin changing the nature of strategic decisions in the region.”²⁷³ Through research and development and steady improvements Israel has produced a wide variety of anti-rocket systems that are achieving results, “Israel is steadily assembling one of the world’s most advanced missile defense systems, a multi-layered collection of weapons meant to guard against a variety of threats, including the shorter-range Grads used to strike Israeli towns like this one and intercontinental rockets.”²⁷⁴ With systems like the Arrow 2, David’s Sling, and the Iron Dome, Israel is now capable of intercepting most rockets fired from outside of its borders before they cause damage to any cities. For example the Iron Dome currently has, “a success rate of over 90%.”²⁷⁵ Israel has also developed new sensors to deploy along its border to detect

²⁷¹ “Heron 1,” *Israeli Aerospace Industries webpage*, http://www.iai.co.il/18900-16382-en/BusinessAreas_UnmannedAirSystems_HeronFamily.aspx.

²⁷² Fares Akram and Isabel Kershner, “Israeli Drone Strike Kills Militants in Southern Gaza,” *New York Times*, Oct. 29, 2011, <http://www.nytimes.com/2011/10/30/world/middleeast/israeli-drone-strike-kills-militants-in-gaza.html>.

²⁷³ Howard Schneider, “Israel’s Missile Defense System Is Progressing Steadily,” *Washington Post*, Sept. 19, 2009, <http://www.washingtonpost.com/wp-dyn/content/article/2009/09/18/AR2009091801787.html>

²⁷⁴ Schneider, “Israel’s Missile Defense System Is Progressing Steadily.”

²⁷⁵ Guy Azriel, “Israel’s ‘Iron Dome’ anti-rocket system in play during ongoing strife,” *CNN website*, Mar. 11, 2012, http://articles.cnn.com/2012-03-11/middleeast/world_meast_israel-iron-dome_1_anti-rocket-israeli-cities-iron-dome-system?_s=PM:MIDDLEEAST.

individuals trying to illegally enter²⁷⁶ and cyber systems that can prevent an enemy's air defense system from finding Israeli aircraft involved in operations – such as the “Suter” airborne network attack system.²⁷⁷

E. CONCLUSION

In conclusion, these three case studies have demonstrated why the concept of large overseas military bases is an outdated concept. The United States is closing bases and reducing personnel in South Korea as it seeks to accomplish more capabilities with less deployed personnel. North Korea and the United States have also both realized that the first battlefields of the next war will be in who controls space and cyberspace. Both states are therefore testing new capabilities and establishing cyber military units. Both states realize that by the time traditional troops, planes, and ships become involved in a conflict the important skirmishes deciding battle field dominance will have already been decided. In the past this would have been a location like a hill or the Fulda Gap, in the future it will be capabilities like GPS and Internet communications.

In the Falkland Islands the British continue to station troops there because of British settler requests and not because the Falkland Islands have any military usefulness. The British military has decided that the best use of its resources is to turn the Falkland Islands into a military place with a minimal amount of personnel as opposed to a military base. The British military accomplished this by building RAF Mount Pleasant, improving its intelligence collection capabilities, and creating the capability to rapidly reinforce the island if it becomes necessary.

The Israel case has shown the problems with trying to establish a military presence in unfriendly areas – especially when the military objectives are non-traditional and a state is facing an insurgency. The Israel military solved this problem by

²⁷⁶ Yaakov Katz, “Border barrier: Israel’s high-tech fence to protect against militant infiltration,” *Janes Defense Weekly*.

²⁷⁷ David A. Fulghum, “Why Syria’s Air Defenses Failed to Detect Israelis Oct 2007,” *Aviation Week*, Oct. 3, 2007, <http://www.aviationweek.com/Blogs.aspx?plckBlogId=Blog:27ec4a53-dcc8-42d0-bd3a-01329aef79a7&plckController=Blog&plckScript=blogScript&plckElementId=blogDest&plckBlogPage=BlogViewPost&plckPostId=Blog%253a27ec4a53-dcc8-42d0-bd3a-01329aef79a7Post%253a2710d024-5eda-416c-b117-ae6d649146cd>.

withdrawing from southern Lebanon, increasing their intelligence capabilities, and utilizing new technology like the Iron Dome and unmanned vehicles to project force from within Israel and accomplish the same military objectives.

One of the common threads that unite these three cases is that all three countries have decided that large foreign military bases are becoming an outdated concept. The development of new technology has allowed them to accomplish the same objectives without deploying military forces more effectively.

As China continues to gain more economic and military power it will face choices about developing a string of pearls in the Indian Ocean. However, China is likely to realize that it can accomplish the same military objectives without having to station large military forces in overseas bases. Additionally, China does not have a legacy of overseas military obligations that will force it to deploy substantial forces overseas to protect its citizens or allies.

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V. CHINA

A. INTRODUCTION

Chapter V presents evidence that Chinese officials and military leaders talk about new military tech in ways that suggest the utility of overseas military bases is low, and that their public statements assert they do not want to establish overseas military bases for a variety of reasons. Chinese perceptions and intentions are assessed through an examination of writing and statements from both diplomatic and military leaders at the geo-strategic level. Next, this paper examines Chinese documents to illustrate how the revolution in military affairs has led China to expand the domain of warfare from land, sea, and air into the cyber realm and space. Chinese sources view these new realms as critical to future warfare and feel that conflicts will be decided by who is able to establish dominance in both of these areas. This reduces the impact that overseas military bases will play in a conflict. While overseas military bases could still play a part in the maritime realm, there are better ways to collect intelligence and project power. These better methods include cyber espionage, satellites, and mobile naval power projection like aircraft carriers and unmanned aerial vehicles. In a future conflict, overseas military bases provide an immovable object that is easy to target and isolate from the rest of the conflict. An overseas military base in Pakistan will not be useful in a conflict over Taiwan or a skirmish in the South China Sea, as opposed to an aircraft carrier that will have the option to be wherever the threat is greatest.

Additionally, as China develops its cyber and space capabilities, Chinese military leaders are debating the strategy of how a future conflict would unfold. China is also developing UAVs to serve as a force multiplier in the maritime realm and reduce their requirements for ships and military personnel. The best evidence of this is their training with UAVs onboard PLAN naval vessels. These reduced requirements would result in fewer forces deployed, less logistical support, and the option to provide the same capabilities aboard naval vessels as opposed to on an overseas military base.

Finally, China is examining different blueprints on how to accomplish its logistical needs in the international arena. One of the plans that China is currently experimenting with is the concept of military places that have a minimal military presence and instead primarily serve as resupply points for naval vessels.

B. DEFINING CHINESE NATIONAL INTEREST AND MILITARY OBJECTIVES

China's national interests have shifted since the economic reforms in the 1970s. But what are China's national interests? Xu Qi, a senior captain in the People's Liberation Army, published an article in *China Military Science* in 2004 examining some of these issues: "In terms of the key factors that constitute comprehensive national power, a nation's territorial area, natural resources, population size, and [national] qualities are the most fundamental conditions."²⁷⁸ Among key attributions listed are natural resources. Ever since 1993, China's demand for oil has outstripped its domestic supply. Therefore, China has had to import oil to ensure that its economic growth can continue unrestrained. In the 19th and 20th centuries, many countries developed international military bases in order to protect oil imports and shipping lanes in an unstable international environment. Examples of states creating international bases for this reason include Great Britain, Japan, and the United States. However, in the 21st century, the international maritime scene is more stable, and for a variety of reasons. The most important is that the United States has served as the world's policeman for the past twenty years, ensuring the relative free flow of goods in most of the maritime realm. Many other countries have ceded this responsibility to the United States because the United States claims to operate according to universal rules that apply to everybody—including the United States. Another reason the maritime realm is more stable is the United Nations. While the United Nations has very limited force projection power, it is able to create a forum where countries can create theoretically impartial agreements and resolve understandings. Importantly, unlike the League of Nations, all the major regional

²⁷⁸ Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century," *China Military Science* (2004): 50, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA519353>.

powers participate and claim to abide by the rules of the United Nations. The United Nations, therefore, raises the threshold for when disagreements will create conflict. A third important reason for maritime stability is that most countries in the world now subscribe to a market capitalist system. This agreement on economic fundamentals creates the opportunity for organizations like the World Trade Organization to create rules, judge disagreements, and punish violators, none of which was possible in the past. Finally, there is cooperation among states to punish non-state actors that decide to cheat the system. Examples of this include the Combined Maritime Task Force.²⁷⁹

Energy security is not the only national interest that China has to think about. China is also worried about what it perceives as its national territory integrity, specifically Taiwan, the Parcel Islands, and the Spratly Islands, to name the three most important. All three of these territory issues are in dispute and China is concerned that any escalation in conflict could lead to disruption in its oil supply. This leads to a duality in Chinese foreign policy that many rising powers have faced. First, China gains from the current system and, hence, wants to maintain the stability of the system so it can continue to benefit economically. In the 2010 Chinese Defense White Paper, the Chinese government talks about peace and defense in relation to its military objectives as “an independent foreign policy of peace and a national defense policy that is defensive in nature.”²⁸⁰ China also wants to ensure that its rise does not result in other regional states balancing against it, and so China continues to deny it has any international territorial objectives: “China will never seek hegemony, nor will it adopt the approach of military expansion now or in the future, no matter how its economy develops.”²⁸¹ This has been reinforced by various Chinese officials:

In December 2010, State Councilor Dai Bingguo specifically cited Deng’s guidance, insisting China adhered to a “path of peaceful development” and would not seek expansion or hegemony. He asserted that the “bide and

²⁷⁹ “Combined Maritime Forces,” *Department of Defense*, http://www.cusnc.navy.mil/cmfc/cmfc_command.html.

²⁸⁰ *Chinese Defensive White Paper 2010*, Xinhua, 31 Mar 2011, Preface.

²⁸¹ *Chinese Defensive White Paper 2010*, Xinhua, 31 Mar 2011, Section II.

hide” rhetoric was not a “smokescreen” employed while China builds its strength, but rather an admonition to be patient and not stand out.²⁸²

At the same time that Chinese leaders do not want to disturb the current international system, they also recognize that their national interests have expanded. In the 19th or 20th centuries, if there was a dispute between countries over natural resources or territory, there were three primary options available to resolve the dispute. The first was diplomacy. The second was economic disruption through a blockade or increasing tariffs. Finally there was military force. Military force was limited in scope to ground, naval, and air forces. However, in the 21st century, additional military options have become available. President Hu addressed this point directly in his Historic Missions speech given to the Central Military Committee on December 24, 2004,

The progress of the period and China’s development have caused our national security interests to gradually go beyond the scope of our territorial land, seas, and airspace, and continually expand and stretch into the oceans, space, and [cyberspace]. Maritime, space, and [cyberspace] security have already become important areas of [China’s] national security.²⁸³

It is important to note that President Hu does not reference directly how to address national security interests in the oceans. While it is possible that China could establish overseas military bases, this would directly contradict fifty years of foreign policy statements. More importantly, if China began to establish overseas bases, it would likely accelerate a regional balancing against China by other Asian nations. Additionally, China’s national security interests in the maritime realm can be indirectly protected by developing its capabilities in space and cyber:

In the informatized maritime warfare, the air and space information platform will become the “commanding height” of information support in war. The one that controls the “command height” is the one who can seize

²⁸² *Military and Security Developments Involving the People’s Republic of China 2011* (Washington D.C.: Office of the Secretary of Defense, 2011), 18.

²⁸³ Hu Jintao, “*Renqing Xinshiji Xinjieduan Wojun Lishi Shiming*,,” *Speech to CMC*, 24 Dec 2004, quoted in *2009 Report to Congress U.S.-China Economic and Security Review Commission*, 111th Congress, First Session, Nov 2009, 116.

information supremacy, which subsequently creates necessary conditions for the obtainment of air supremacy and maritime supremacy.²⁸⁴

The added benefit of developing capabilities in space and cyber is it reduces the likelihood of regional balancing against China. Launching satellites and developing cyber units does not have the same aggressive military expansion connotations that establishing overseas military bases does. By developing cyber and space capabilities instead of overseas military bases, this give China the opportunity to both increase its military capabilities when dealing with international national security issues while minimizing balancing behavior by its regional neighbors.

C. EXPANDING THE BATTLESPACE – THE CYBER DOMAIN

1. Chinese Doctrine and Training

In the 20th century, overseas military bases were important because the primary battlefields were land, sea, and air. These were all objective physical spaces that were located in a fixed area. If a military wanted to control a strait, they needed to have military forces there to defend the waterway from other militaries. Similar for control of a hill or the control of the sky, military forces were required to be physically present to prevent someone else from occupying and denying the space to your country. However, Chinese military leaders, along with some other countries, have realized that the battlespace has expanded. One new battlespace is the information realm, or cyberspace. “In future warfare the traditional race to control the air and the sea will become contention for control of information.”²⁸⁵ Even China’s president has realized that in order for the PLA to compete they have to master this new objective. “Winning informatized regional wars is a completely new task that our military must face and handle.”²⁸⁶ Yet in 2004, Chairman Hu felt that the military still needed to make significant progress, noting, “Our military lacks practice in high-tech wars, particularly in

²⁸⁴ Fang, *On Maritime Strategic Access*, 65.

²⁸⁵ Zhang Panxiong and Chen Yongshui, “New Trends in Future Warfare,” *Jiefangjun Bao*, Dec. 15, 1998, quoted in David Shambaugh, *Modernizing China’s Military* (Berkeley: UC Press, 2004) 77.

²⁸⁶ “JFJB Commentator on Spirit of CPC Fourth Plenum, Enlarged Meeting of CMC” *Jiefangjun Bao*, Dec. 17, 2004, Open Source Center CPP20041221000018.

informatized wars. Because of these problems, our minds and concepts are still bounded and influenced by traditional concepts in many fields.”²⁸⁷ To illustrate Chinese perceptions of this new battlespace this portion will be divided into cyber doctrine, cyber training, and cyber activities.

Chinese military strategists over the past decade have developed a number of ideas concerning cyberspace. One of the most important strategic changes is the idea that in the event of a conflict it is important to strike first in cyberspace. This is a significant shift in doctrine from China’s normal policy of “active defense” where China would only attack someone if they had initiated the attack:

Chinese belief that only countries that take the initiative in an information war or establish information superiority and control ahead of time will win, and that this requires reconnaissance and intelligence gathering before the first battle to set the stage for the use of cyber forces.²⁸⁸

This cult of the offensive can be seen in Chinese journals. In an article titled “Bringing Internet Warfare into the Military System is of Equal Significance with Land, Sea, and Air Power” in *Jiefangjun Bao*, the authors’ state, “It is essential to have an all-conquering offensive technology and to develop software and technology for [inter]net offensives, so as to be able to launch attacks and countermeasures on the [inter]net.”²⁸⁹

General Dai Qingman, head of the PLA General Staff Fourth Department shares similar sentiments, “As the key to gaining the initiative in operations lies in positively and actively contending with an enemy for information superiority, China should establish such a view for IO as ‘active offense.’”²⁹⁰ Other military journals have highlighted information warfare as an important new capability: “Two military doctrinal writings, *Science of Strategy*, and *Science of Campaigns* identify information warfare

²⁸⁷ “JFJB Commentator on Firmly Establishing Concepts on PLA’s New Missions” *Jiefangjun Bao*, Apr. 15, 2005, Open Source Center CPP20050418000118 .

²⁸⁸ Timothy Thomas, “China’s Electronic Long Range Reconnaissance,” *Military Review* (Nov.-Dec. 2008), 48.

²⁸⁹ Leng Bingling, Wang Yulin, and Zhao Wenxiang, “Bringing Internet Warfare into the Military System is of Equal Significance with Land, Sea, and Air Power,” *Jiefangjun Bao*, Nov. 11, 1999, quoted in Shambaugh, *Modernizing China’s Military*, 77.

²⁹⁰ Dai Qingmin, “Innovating and Developing Views on Information Operations,” *Zhongguo Junshi Kexue*, date not given, quoted in Thomas, “China’s Electronic Long Range Reconnaissance,” 49.

(IW) as integral to achieving information superiority and an effective means for countering a stronger foe.”²⁹¹ Along with the importance of information warfare is the shift in the center of gravity of a war. Instead of the center of gravity being an airfield or an aircraft carrier, as “the *Science of Strategy* explains, ‘In the information war, the command and control system is the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield.’”²⁹²

The shift of the military objective during an engagement from stopping frontline military forces to disrupting the command center has significant strategic implications for maritime operations. “Future at-sea informationalized warfare has characteristics of noncontact and nonlinearity [and] in particular uses advanced informationalized weapons, space weapons, and new-concept weapons.”²⁹³ With this new concept of warfare, it is no longer vitally important to have military forces immediately engaged in a disputed area. The initial goal is no longer to be the first military unit to seize the disputed ground and retain control until reinforcements arrives. Instead, the primary goal in a future conflict is to disable and disrupt your adversary’s command and control. Once this has been accomplished, his deployed forces will be vulnerable to attack. This strategy is perfect for a country like China to use against an adversary that has a significantly stronger physical military. “Chinese analysts also describe computer network warfare as a critical tool that can be exploited by a weaker military force to level the playing field against a stronger opponent.”²⁹⁴

The previous quotes illustrate how overseas military bases are no longer the primary focus of maritime naval competition. Instead some Chinese military thinkers have advocated that cyberspace and information control has surpassed the importance of physical forces stationed in the area. This is especially true for forces that are constrained

²⁹¹ *Military and Security Developments Involving the PRC 2011* (Washington, DC: Office of the Secretary of Defense, 2011), 5.

²⁹² *Military and Security Developments Involving the PRC 2011* (Washington, DC: Office of the Secretary of Defense, 2011), 6.

²⁹³ Qi, “Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century,” 61.

²⁹⁴ *2009 Report to Congress U.S.-China Economic and Security Review Commission*, 111th Congress, First Session, Nov. 2009, 170.

to a specific geographical location as opposed to military forces like aircraft carriers that are able to constantly be on the move. An appropriate analogy would be the invention of the aircraft carrier in World War II. Previous to World War II, naval forces had to locate the enemy and then engage each other via artillery on battleships. However, with the invention of the aircraft carrier and naval aviation, naval ships no longer had to see each other to engage in combat. This was demonstrated with the Battle of the Coral Sea. This revolution extended the distances that naval forces could engage and resulted in the battleship no longer being the most important force in a naval conflict. A similar change is occurring now. Only instead of aircraft carriers, it is now the control of information that will be the deciding factor in future naval engagements. Importantly, the battle for control of information will be able to take place further away from the contested area and can now occur from military positions in the home country. Again, this does not make overseas military bases useless, just as the aircraft carrier did not make the battleship useless. Instead it minimizes the importance of overseas military bases.

A final example of the change in Chinese military doctrine involves the rewriting of training manuals. One of the best examples is the update to the “Outline of Military Training and Evaluation” that was published in 2008. This manual is important because it “is the guideline and the law for the entire military and [People’s] Armed Police Force to conduct and carry out the training.”²⁹⁵ Previously, the manual has been rewritten six different times since 1949, with the last revision being in 2001. The new manual focuses on “the strategic goals to build an informatized military and win informatized warfare.”²⁹⁶

The strategic change in military doctrine concerning cyberspace has also translated into changes in military training. One of the most important changes has been networking all of China’s different military regions together so that commanders can have quicker access to what is happening on the battlefield or in any region of the country. While the wartime capabilities of the information superhighway are unknown,

²⁹⁵ “JFJB on Implementing New Outline of Military Training, Evaluation,” *Jiefangjun Bao*, Aug. 1, 2008, Open Source Center CPP20080801710005

²⁹⁶ “JFJB on Implementing New Outline of Military Training, Evaluation,” *Jiefangjun Bao*.

the training capabilities were presented to reporters during a nationwide exercise in 2008, which was monitored from Beijing:

The exercises over a 10,000 *li* [Chinese mile] range were reviewed all on the network. Various services and arms and the Armed Police Force demonstrated on the same stage and communicated with each other, which was the first time in our military's history of collective training of training outlines. The reporter saw that the studio hall was connected with the training bases of various services and arms.²⁹⁷

The next important change related to cyber was the creation of cyber units in the People's Liberation Army. The first mention of these units was in 1999: "In November 1999, a *Jiefanguin Bao* (Liberation Army Daily) article stated that China may develop an information warfare branch of service—a "net force"—to complement the army, navy, and air force."²⁹⁸ Prior to 2009, the responsibilities for cyber units had been refined into two different departments:

The Third Department of the PLA General Staff Department, which has traditionally engaged in signals intelligence collection, bears primary responsibility within the PLA for computer network exploitation... The Fourth Department of the PLA General Staff Department, which has traditionally engaged in electronic warfare, plays the leading role in computer network attack.²⁹⁹

Other Chinese units, such as Project 863,³⁰⁰ were created to assist with espionage against the United States, while additional Chinese units were created to both create viruses and provide network defense for Chinese systems against computer network attacks.³⁰¹

Finally, Chinese units are conducting training to ensure that they are ready for conflict in cyberspace and how to respond accordingly:

²⁹⁷ "JFJB on Implementing New Outline of Military Training, Evaluation," *Jiefangjun Bao*.

²⁹⁸ Thomas, "China's Electronic Long Range Reconnaissance," 48.

²⁹⁹ *2009 Report to Congress U.S.-China Economic and Security Review Commission*, 111th Congress, First Session, Nov. 2009, 172.

³⁰⁰ *Foreign Spies Stealing U.S. Economic Secrets in Cyberspace* (Washington D.C.: Office of the National Counterintelligence Executive, Oct. 2011), 8.

³⁰¹ *Military and Security Developments Involving the PRC 2011* (Washington, DC: Office of the Secretary of Defense, 2011), 37.

In the exercise, troops of the defending PLA forces had to fend off attacks from mock aggressor forces employing simulated cyber and electronic attacks. These attacks included a computer virus that sowed confusion by changing logistics requirements, using electrical pulse attacks that destroyed computer motherboards, and jamming communications and radar systems.³⁰²

2. Chinese Cyber Operations – More Effective than Overseas Bases

While there are plenty of Chinese articles on Chinese units preparing for defense against cyber attacks, there is a lack of Chinese reports on Chinese offensive cyber capabilities. This is not surprising, since most countries, including the United States, tend not to discuss their offensive cyber capabilities openly. The ability to identify that China was conducting cyber reconnaissance and attacks would help illustrate the point that China is utilizing the cyber realm to accomplish objectives that twenty years ago would have required military personnel on overseas bases. These objectives will reduce the fog of war by collecting intelligence and projecting force. Ten years ago, it would have been very difficult to attribute cyber reconnaissance, espionage, or attacks to any one country. However, over the last ten years, as cyberspace has evolved, attribution has become easier to accomplish. This is accomplished in four primary ways. The first way to identify a cyber incident is with the cyber signatures that are left behind through forensic analysis. A synonymous example would be how U.S. troops in Iraq were able to identify IED bomb makers due to the way they create their IEDs. IEDs might use a specific type of tape, use a certain type of cell phone, or be constructed in a similar fashion. Cyber attacks can be identified in similar ways. How did the individual gain access to the computer system, what type of virus or other malware did he use, how long did the attack take, etc.? The specifics are classified but “This sometimes allows investigators to implicate the Chinese government directly, or sometimes even specific parts of the Chinese government, such as the People’s Liberation Army (PLA).”³⁰³

³⁰² “JFJB: Military Commanders Take Part in Armament Support Training in Shenyang MR,” Jan. 14, 2008, quoted in *2009 Report to Congress U.S.-China Economic and Security Review Commission*, Nov. 2009, 170.

³⁰³ *2009 Report to Congress U.S.-China Economic and Security Review Commission*, Nov. 2009, 169.

The second way to attribute a cyber attack is the type of information that was targeted. Was the attacker grabbing everything in sight? Or was he after a specific file or folder? “One can infer state involvement in some instances based on the specific targeting of government and defense networks.”³⁰⁴ Third, how difficult was the attack to accomplish? Penetrating into the United States Department of Defense systems is not easy, and the more complex an attack was to accomplish, the less likely it was to be the work of criminal enterprises or other lone wolf attackers. If the attack was complicated and the items stolen had little to no monetary value, it further implicates a foreign government. Finally, an attacker’s identity can be discovered due to carelessness, for example, “when a high-ranking officer in China’s People’s Liberation Army employed the same server to communicate with his mistress that he was also using to coordinate an APT.”³⁰⁵ Due to a combination of these techniques, “The NSA and other intelligence agencies have made significant advances in attributing cyber attacks to specific sources—mostly in China’s People’s Liberation Army—by combining cyber forensics with ongoing intelligence collection through electronic and human spying.”³⁰⁶

So why would China conduct cyber reconnaissance? The primary reason is due to the changing nature of intelligence collection. The primary way cyber reconnaissance is more effective than traditional reconnaissance is in monitoring strategic military deployments. One example of this would be an attempted cyber incident against the American air transportation system. “Government officials will not discuss the details of a recent attack on the air transportation network, other than to say the attack never directly affected air traffic control systems.”³⁰⁷ If an adversary could obtain access to a country’s air traffic system it would provide the state the ability to monitor strategic movement of both civilian and military planes. By detecting patterns in military plane movements, it would allow an adversary the ability to determine how an opponent was

³⁰⁴ 2009 Report to Congress U.S.-China Economic and Security Review Commission, Nov. 2009, 169.

³⁰⁵ Peter W. Singer, “The ‘Ocean’s 11’ of cyber strikes,” *Armed Forces Journal* (May 2012), [http://www.armedforcesjournal.com/2012/05/10122504The ‘Ocean’s 11’ of cyber strikes](http://www.armedforcesjournal.com/2012/05/10122504The%20Ocean%27s%2011%20of%20cyber%20strikes).

³⁰⁶ Siobhan Gorman, “U.S. Homes In on China Spying,” *Wall Street Journal*, Dec. 13, 2011, <http://online.wsj.com/article/SB10001424052970204336104577094690893528130.html>.

³⁰⁷ David E. Sanger, John Markoff, and Thom Shanker, “U.S. Steps Up Effort on Digital Defense,” *New York Times*, Apr. 27, 2009, <http://www.nytimes.com/2009/04/28/us/28cyber.html?pagewanted=all>.

deploying his forces before a conflict begins. Previously, this type of information would have required a radar station located relatively close to the area of interest. This radar station would have been able to pick up information of planes flying into and out of the area that the radar could monitor. Another way this could have been accomplished is with surveillance aircraft; however, these aircraft would also have required military bases close to the targets they were analyzing. However, the ability to gain access to the air transportation network of a country allows an opponent greater knowledge and range for civilian and military aircraft activity than was possible with overseas military bases. It is also important to note the scale of military mobility information available on the unclassified Internet:

More than 90 percent of the Transportation Command's distribution and deployment transactions are handled through unclassified commercial and Defense Department networks, the report found. The command is responsible for moving military equipment and personnel to war zones... Outside attempts to get into the command's networks rose 30 percent in 2011 compared with the previous year, General William Fraser, head of the command, told the Senate Armed Services Committee on Feb. 28.³⁰⁸

There are also additional benefits to the cyber approach that are not available with traditional reconnaissance from overseas bases. One of these is the ability to destroy the integrity of the transportation system by denying, deleting, or changing important mobility information. "Mr. Brenner, the U.S. counterintelligence chief, issued a veiled warning about threats to air traffic in the context of Chinese infiltration of U.S. networks... He went on to warn of a potential situation where 'a fighter pilot can't trust his radar.'"³⁰⁹ With the upgrading of the air transportation network from a radar-based method to a GPS-based method, the problem is becoming even more critical.³¹⁰

Finally, the third way that cyber reconnaissance reduces traditional reconnaissance is in the tactical and operational battlefield. One U.S. government report

³⁰⁸ Gopal Ratnam, "China Advances Cyber Skills to Thwart U.S. Military, Report Says," *Bloomberg*, Mar. 7, 2012, <http://www.bloomberg.com/news/2012-03-08/china-advances-cyber-skills-to-thwart-u-s-military-report-says.html>.

³⁰⁹ Gorman, Cole, and Dreazen, "Computer Spies Breach Fighter-Jet Project."

³¹⁰ Maria S. Lee, "Helping the FAA Adapt to Evolving Cyber Threats" (Boston, MA: MITRE, Jan. 2011), http://www.mitre.org/news/digest/aviation/01_11/nas_cybersecurity.html.

discusses the significant advances China has made over the last five years in its detection systems and their integration:

Aircraft carrier strike groups operating in the vicinity of Taiwan and beyond are increasingly susceptible to detection by Chinese space-based electronic intelligence (ELINT) satellites, SIGINT collection, and land-based over the horizon radar. The PLA is increasingly able to move data from these collection systems over secure fiber optic cable to commanders at multiple locations and echelons of command thanks to the military's decade of work devoted to informationization.³¹¹

Before cyber capabilities, this type of detailed information about the battlespace would not have been available, which created the need for overseas bases. If a country wanted to find an adversary aircraft carrier, a country would need to send out planes and ships to locate the opponent. Previous satellite imagery would not have been responsive enough to get current data. Additionally, before cyber networking, there would have been no way to quickly pass information like detailed imagery from the national to the tactical level in a real-time manner. Today with the increased observation capability and an integrated military network, overseas military bases might no longer be the first location to find an opponent's mobile forces.

Two specific examples conclude the section on cyberspace. The first example is a cyber attack that was labeled Night Dragon by McAfee:

Starting in November 2009, coordinated covert and targeted cyber attacks have been conducted against global oil, energy, and petrochemical companies...McAfee has determined that all of the identified data exfiltration activity occurred from Beijing-based IP addresses and operated inside the victim companies weekdays from 9:00 a.m. to 5:00

p.m. Beijing time, which also suggests that the involved individuals were

³¹¹ Bryan Krekel, Patton Adams, and George Bakos, "Occupying the Information High Ground" (Washington D.C.: Northrop Grumman, Mar. 2012), 31, http://www.uscc.gov/RFP/2012/USCC%20Report_Chinese_CapabilitiesforComputer_NetworkOperationsandCyberEspionage.pdf.

“company men” working on a regular job, rather than freelance or unprofessional hackers.³¹²

This example shows how a cyber attack could accomplish a military objective by preventing a conflict from occurring. Energy security is one of the Chinese government’s primary international objectives. Traditionally, if China were limited in its knowledge of oil locations or technology, it would be forced onto the international marketplace to import the oil that its economy needs. If no oil were available on the international marketplace, China would then look to disputed maritime areas to increase its domestic supply. This can be seen in the various territorial disputes in the Spratly islands and disputes with Japan. An historical example would be the Japanese decision to declare war on the United States during World War II. However, if China can steal advanced drilling technology, it gives China the ability to open up new domestic drilling options that were not available. Likewise, if China can obtain intelligence on where new sources of oil have been discovered, it can give China an advantage in the international marketplace. “By the time the FBI informed the company of suspicious network traffic in the summer of 2010, Chinese firms had outbid the oil company on several high-stakes acquisitions by just a few thousand dollars.”³¹³ Thus, cyber espionage allows the Chinese government to increase its access to oil without having to result to territorial expansion or military conflict. By limiting the potential for military conflict, it minimizes the need for China to establish overseas bases.

³¹² “Global Energy Cyber Attacks: Night Dragon” (Santa Clara, CA: McAfee, Feb. 2011), <http://www.mcafee.com/us/resources/white-papers/wp-global-energy-cyberattacks-night-dragon.pdf>.

³¹³ Adam Piore, “Digital Spies: The Alarming Rise of Electronic Espionage,” *Popular Mechanics* (Jan. 2012), <http://www.popularmechanics.com/technology/how-to/computer-security/digital-spies-the-alarming-rise-of-electronic-espionage>

The second specific example illustrating China's cyber offensive capability was accidentally shown on a CCTV program in 2011:

The screenshots appear as B-roll footage in the documentary for six seconds—between 11:04 and 11:10 minutes—showing custom-built Chinese software apparently launching a cyber-attack against the main website of the Falun Gong spiritual practice, by using a compromised IP address belonging to a United States university.³¹⁴



Figure 9. CCTV Documentary³¹⁵

This example provides some of the most conclusive evidence that China is involved in developing offensive cyber tools.

This section has illustrated how Chinese perceptions of cyberspace can help them accomplish objectives that previously could have been accomplished only by traditional reconnaissance and force projection. By shifting to a strategy of disrupting an opponent's command and control at the beginning of a conflict, it minimizes the priority of having military forces at the scene of a conflict. This is especially true because, as long as the Chinese mainland is not affected, China can wait for its cyber capabilities to have their

³¹⁴ Matthew Robertson & Helena Zhu, "Slip-Up in Chinese Military TV Show Reveals More Than Intended" *Epoch Times*, Aug. 2011.

³¹⁵ Robertson & Zhu, "Slip-Up in Chinese Military TV Show Reveals More Than Intended."

desired impact of creating confusion and then attack at a time of their choosing. This idea couples nicely with the idea that a threat to China decreases with distance.” Oftentimes, threats to a nation’s interests—particularly its security interests— increase as their spatial distances decrease.”³¹⁶

This raises a secondary question: How will China discover who are the enemy forces that affect its national security? Traditionally, this would have been accomplished with increasing military forces patrolling an increasing amount of maritime territory corresponding to an increase in Chinese objectives. These military forces would require military bases to assist with intelligence collection, force projection, and logistics. However, the following sections will show how satellites and unmanned vehicles have reduced the need for a significant amount of forward reconnaissance forces.

D. EXPANDING THE BATTLEFIELD: SPACE – THE NEW “HIGH GROUND”

In order for a Chinese stratagem to be successful, military leaders need as much intelligence as possible. In fact, Chinese leaders have identified space and the reconnaissance capabilities that it provides as strategically important to its military operations:

[Space] has become China’s strategic interest and new “high ground.” At the same time, it also demonstrates that our satellite communications, global positioning, and radar information and transmission systems, etc., have obtained prominent success. [This] is beneficial for enhancing the information strength to safeguard our sea power.³¹⁷

Over the last twenty years, China’s perceptions involving space have evolved to where they consider it a strategic interest in national security. This relates to the idea of expanding the realm of war from sea, air, and land into new domains. Space is one of those domains. Previous to the RMA, success on the battlefield was determined by the quality of your commander, the number of troops, the type of equipment, terrain, and tactics. However, since the RMA the battlefield has expanded so that along with cyber,

³¹⁶ Qi, “Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-First Century,” 50.

³¹⁷ Qi, “Maritime Geostrategy,” 63.

space is another important domain that will determine the outcome of a battle before the first shot has been fired. This can be illustrated in China's actions to catch up to the United States in space while at the same time developing capabilities to prevent the United States from utilizing space in the event that hostilities develop.

Space is also significant because it can have a large impact on the other domains of land, sea, and air. "Space warfare has a profound influence on naval warfare...Space weapons can not only strike the enemy's satellites in space [but] can also attack any terrestrial target from space. They have a tremendous influence on land and sea warfare."³¹⁸ This is especially true concerning immovable objects like overseas military bases. With satellite imagery, China and other countries will already know the layout of any overseas military base, including where the aircraft hangers are and where the headquarters building is located. In the event of a conflict, these locations are not able to move to disrupt ballistic missile attacks. However, with mobile forces like an aircraft carrier, states are able to introduce additional targeting complications into any future military conflict. Hence, if China were deciding what was more survivable in a future military conflict, movable capabilities like aircraft carriers present a better option than immovable capabilities like large overseas military bases.

Chinese leaders began to understand the importance of space after observing the United States during the first Gulf War and Bosnia during the 1990s. "The extensive use of satellites and space-based sensors, coordinated from North America, but with downlinks to forces in the field, exposed the PLA's critical weaknesses in these areas."³¹⁹ The importance of this capability was reinforced upon the Chinese after Operation Iraqi Freedom. "In 2001, the U.S. had a hundred military satellites and 150 commercial satellites in space, which constituted nearly half the world's satellites. During the Iraq War in 2003, the U.S. used over fifty satellites to support battle operations."³²⁰

³¹⁸ Qi, "Maritime Geostrategy," 62.

³¹⁹ Shambaugh, *Modernizing China's Military*, 73.

³²⁰ Qi, "Maritime Geostrate," 63.

As China attempted to catch up with the United States it began by utilizing commercial satellite imagery as it developed its own systems.³²¹ However, over the past decade, China has rapidly improved its space capabilities. “China is now among the top few space powers in the world.”³²²

Chinese sources describe China’s developing imagery capabilities including the recent launch of a satellite that can produce three-dimensional imagery. “The images’ resolution is 2.1 meters... The satellite can transmit data at a speed four to five times of previous satellites. And for the first time, a low-Earth-orbit remote-sensing satellite’s lifespan is now five years.”³²³ One of the objectives of developing its own satellite industry is so that China will no longer have to rely as extensively on commercial satellite capability. “Officials said this satellite will eliminate the country’s surveying and mapping industries’ dependence on foreign satellites for high-resolution images.”³²⁴

Along with imagery satellites, China is also taking advantage of other opportunities. One of these is space’s ability to quickly transmit information from different locations. “The first data relay satellite, the Tianlian I-01, was launched in April 2008, and the second was launched in July 2011.”³²⁵ However, these space systems are about more than feeding raw information to commanders; they can also provide direct support to naval forces.³²⁶ This increased data capability allows smaller naval forces to

³²¹ “China currently accesses high-resolution, commercial electro-optical and synthetic aperture radar imagery from all of the major providers including Spot Image (Europe), Infoterra (Europe), MDA (Canada), Antrix (India), GeoEye (United States), and Digital Globe (United States).” *Military and Security Developments Involving the PRC 2011*, (Washington D.C.: Office of the Secretary of Defense, 2011), 35.

³²² *2011 Report to Congress U.S.-China Economic and Security Review Commission*, 112th Congress, First Session, Nov 2011, 8.

³²³ “New Remote-Sensing Satellite on the Job,” *China Daily*, 31 Jul 2012, Open Source Center CPP20120731968047.

³²⁴ “New Remote-Sensing Satellite on the Job.”

³²⁵ “China Launches 3rd Data Relay Satellite ‘Tianlian I-03’” *CCTV*, 25 Jul 2012, Open Source Center CPP20120730048013.

³²⁶ “China reportedly is developing and deploying maritime surveillance and targeting systems that can detect U.S. ships and submarines and provide targeting information for Chinese ASBMs and other Chinese military units. These systems reportedly include land-based over-the-horizon backscatter (OTH-B) radars, land-based over-the-horizon surface wave (OTH-SW) radars, electro-optical satellites, radar satellites, and seabed sonar networks.” “China Naval Modernization,” (Washington, DC: CRS, Mar. 2012), 29.

have more information than prior to the revolution in military affairs. With increased information, deployed naval forces need less reconnaissance aircraft or ships and can focus on force projection. Additionally, by knowing more about the operational environment, naval ships do not have to carry as many forces because they have a better idea of what type of threat they will face.

Again the idea is that control of space will be a significant factor in determining who will win a future conflict. If China can seize the high ground in space, Chinese perceptions are that space will serve as a force multiplier in any conflict. This force multiplier is more important than additional overseas military bases. Space can serve as a force multiplier for naval forces that can be equipped with smaller forces that still can accomplish the same missions that would have required larger forces and the presence of an overseas military base. Traditionally, overseas military bases provided intelligence and force projection capabilities. However, space and satellites can now provide these capabilities for a larger area with fewer assets. For example, in one article talking about military operations, the role of satellites was highlighted: “In the several most recent local wars, 90 percent or more of the battlefield intelligence came from the satellite reconnaissance.”³²⁷ As an added bonus, satellites are also a lot more difficult to destroy than overseas military bases. Hence, compared to space, overseas military bases are less efficient and more vulnerable.

However, having satellites is only part of the equation. The other aspect that the Chinese are focused on is denying an adversary the capability to utilize space in a future conflict. The Chinese have developed and demonstrated capabilities to achieve this. The most discussed was the Chinese test of an anti-satellite (ASAT) weapon. “On January 11, 2007, the People’s Republic of China (PRC) conducted its first successful direct-ascent anti-satellite (ASAT) weapons test in destroying one of its own satellites in space.”³²⁸ When some Chinese officials were asked about the ASAT test they pointed out that developing anti-satellite weapons was important to “counter perceived U.S.

³²⁷ Fang, *On Maritime Strategic Access*, 65.

³²⁸ “China’s Anti-Satellite Weapon Test” (Washington, DC: CRS, Apr. 2007), Summary.

‘hegemony’ in space and target the vulnerability of U.S. dependence on satellites.”³²⁹ Indeed, in one PRC Daily article, the author is concerned that an operational Chinese Beidou system will result in a first strike in space by the United States in the event of hostiles:

Once China’s anti-aircraft carrier ballistic missile technology matures, the U.S. Navy will face a choice, do they lose an aircraft carrier to China’s first strike, or will they be forced to use anti-satellite weapons to shoot down China’s satellite, and from this, what space force action escalated by China might they face?³³⁰

The Chinese are also pursuing other counter-space capabilities. “By September 2006, China had used a ground-based laser to illuminate a U.S. satellite in several tests of a system to ‘blind’ satellites.”³³¹ China is also working on other systems to jam satellites, or degrade or destroy them with lasers or high-powered microwaves.³³²

So what does this all mean? The Chinese military feel that the weaponization of space is not a question of *if* but *when*. “A Senior Colonel of the PLA’s Academy of Military Sciences said that ‘outer space is going to be weaponized in our lifetime.’”³³³ According to Chinese new sources, “While opposing the weaponization of outer space, the Chinese military is also making the necessary preparations.”³³⁴ The Chinese perception is that they do not want a war in space, but in the event of a conflict they do not want to be caught unprepared. China feels that, similar to the cyber realm, space will be one of the first domains contested in the event of a conflict. This means that even before the first shot is fired, whoever controls space and cyber will have a significant advantage in an ensuing conflict. In fact, by being able to deny an adversary access to these two domains, China might be able to prevent a conflict from occurring. This further

³²⁹ “China’s Anti-Satellite Weapon Test” (Washington, D.C.: CRS, Apr. 2007), 3.

³³⁰ “PRC Daily Says China Should Fight Against U.S. Hegemony in Space,” *Nanfang Zhoumo Online*, Jan. 4, 2012, Open Source Center CPP20120110787006.

³³¹ “China’s Anti-Satellite Weapon Test,” 5.

³³² *Military and Security Developments Involving the PRC 2011*, (Washington D.C.: Office of the Secretary of Defense, 2011), 36.

³³³ “China’s Anti-Satellite Weapon Test,” 5.

³³⁴ “PRC Daily Says China Should Fight Against U.S. Hegemony in Space.”

illustrates why China would not be interested in building large overseas military bases. One assessment is that by the time forces in an overseas military base could be utilized in a future conflict, the conflict would already have been decided in the space and cyber domain. Military forces stationed on the periphery or other international areas would then be cut off from all communications with their command and be blind to the world around them. This would then allow the Chinese to either not engage them or decide to attack them at a time of their choice. This would be similar to the island-hopping campaign from World War II that the Allies decided to use in order to defeat Japan in the Pacific. Once the Allies had gained naval superiority and significantly disrupted Japanese forces, they no longer needed to secure every island with a Japanese military base. Instead, they could just bypass these and concentrate on important objectives. A similar situation could occur in the Pacific today. With no access to GPS, Internet, satellite phones, or international communications, how effective would Anderson AFB in Guam be to a skirmish in the South China Sea? In fact, cyber might be more important than space since, “in recent years, two U.S. government satellites have experienced interference apparently consistent with the cyber exploitation of their control facility.”³³⁵

E. UNMANNED VEHICLES – A FORCE PROJECTION MULTIPLIER

In the event of a future war, Chinese military leaders expect that the space and cyber domain will be two of the first domains that will be contested. Another strategic change that China is making is incorporating unmanned aerial vehicles into all levels of military units.

China has become very interested in UAVs after seeing what the United States has accomplished over the last decade. “UAVs also are beginning to fill scientific discussions in Chinese military technical journals. A glance at October’s *Fire Control & Command Control* reveals two articles’ titles that display Chinese technological prowess

³³⁵ 2011 Report to Congress U.S.-China Economic and Security Review Commission, 112th Congress, First Session, Nov. 2011, 8.

with respect to communications and guidance for UAVs.”³³⁶ Along with military technical journals, the Chinese media is also highlighting UAVs in order to interest the public and stimulate domestic creativity and production:

On January 11, CCTV’s “Military Report” (*junshi baodao*) program reported on the X-47B’s carrier application and included pictures of it with its wings bent for storage. These publications manifest a growing and progressing Chinese awareness of UAV capabilities and their relevant naval applications.³³⁷

Due to the recent developments in UAVs and their quick advancement, China feels that it still has time to achieve parity in the unmanned vehicle realm. China has thus encouraged its domestic aeronautical manufactures to start producing domestic UAVs for both civilian and military use,

The “Wings of Crack Troops—Chinese UAV Conference and Exhibition,” which is held once every two years, started in Beijing. More than 70 domestic and foreign scientific research institutes and companies displayed more than 60 complete UAVs and related technical products.. Here, several models of UAVs with the capabilities of vertical takeoff and landing attracted the most attention.³³⁸

Along with conferences and conceptual development, UAVs are making a significant impact on the capabilities of the Chinese military at all levels. Starting at the tactical level, these UAVs serve as a force multiplier allowing one soldier to accomplish significantly more reconnaissance than he could have even ten years ago. In an article in June 2012, a PLA reconnaissance squad leader talked about the dramatic changes in his unit:

Nine years ago, he could only spy on the enemy along the frontline equipped with only a pair of binoculars and his skills in hand-to-hand combat. But now, he is operating a new kind of unmanned aerial vehicles. With the use of a mouse and a keyboard, he can see quite clearly enemy positions over on the other side... As more and more new computerized

³³⁶ Wilson VornDick, “Exploring Unmanned Drones as an Option for China’s First Carrier,” *China Brief* 12 no. 7 (2012), [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=39210&tx_ttnews\[backPid\]=589](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=39210&tx_ttnews[backPid]=589).

³³⁷ VornDick, “Exploring Unmanned Drones as an Option for China’s First Carrier.”

³³⁸ “PRC Expert Says China’s UAVs Mostly Only Conceptual Aircraft, Model Aircraft,” *Ta Kung Pao Online*, Jun. 13, 2012, Open Source Center CPP20120613787006.

equipment is being supplied to his company, they are now equipped with UAVs, a scout vehicle fleet and radar instead of optical instruments such as binoculars to help them spy on the enemy. They have now replaced “armed” reconnaissance with more technical and intelligent spying techniques.³³⁹

This increase in reconnaissance ability for all soldiers has led to a dramatic change in their capability. Where ten years ago a reconnaissance squadron was limited to their binoculars and transportation vehicles, it can now utilize the air and optical cameras to scout a larger area in a shorter amount of time. This cuts down on the amount of reconnaissance squadrons necessary to be developed at the perimeters of a country or overseas. One squadron in the Spratly Islands can now accomplish the equivalent of what would have taken multiple squadrons to survey.

However, it is not just reconnaissance that the Chinese military is using its UAVs to accomplish. The Chinese have also incorporated UAVs into their “Blue Force,” which they use to help train Chinese forces in modern warfare:

More than 10 Blue Force unmanned aerial vehicles were airborne all at once and fell in formation. They skirted the air defense fire of the Red force and “destroyed” their command network. In just 20 minutes, the fleet of tanks rolling majestically on suddenly became “blind” and “deaf.” They had to be taken out of the battlefield.³⁴⁰

Thus, along with reconnaissance, the Chinese military is also incorporating UAVs into tactical and operational training. The ability to take out a command center and cripple advancing tanks is another task that ten years ago would have taken either air support with manned air craft or another tank force. Today it can be accomplished with a smaller force employing UAVs. By accomplishing the same objectives with fewer forces, it reduces the need to establish large, overseas military bases. The logistical requirements for smaller forces are significantly less than what would normally be required to accomplish the same objectives. With fewer forces, it also results in less support personnel and equipment. By minimizing the support personnel and equipment, it reduces

³³⁹ “Training of Reconnaissance Squad Leader of Shenyang MR Brigade,” *Jiefangjun Bao Online*, Jun. 21, 2012, Open Source Center CPP20120621787009.

³⁴⁰ “Nanjing MR ‘Blue Force’ Electronic Countermeasure Unit Learns From All Forces,” *Renmin Qianxian*, Jun. 19, 12, Open Source Center CPP20120723678001.

the amount of food, water, and petroleum required to conduct missions. This reduction could have two beneficial outcomes. The first outcome is that fewer overseas places or bases are required because maritime vessels can deploy for longer periods of time without resupply. Additionally, maritime vessels are able to obtain intelligence and force projection support from longer distances than was previous possible. The second positive outcome is that with the reduced footprint, some of these capabilities might be able to be deployed within a ship instead of on land. For example, previously, if a naval ship that was not an aircraft carrier wanted to have an aerial intelligence-gathering capability, its options were limited. Today, that same naval ship has the opportunity to deploy with unmanned aerial vehicles, which reduces its need for land-based aerial intelligence gathering. This then reduces the need for overseas bases.

Chinese forces are also starting to incorporate UAVs onto their naval platforms. This began with conferences and competitions that focused on utilizing UAVs on aircraft carriers³⁴¹ to press in military magazines. “Last July, *Modern Ships* magazine, a ten-page, special section discussed carrier-based UAVs in detail.”³⁴² In April 2012, a Japanese P-3 photographed a Chinese naval ship operating a UAV far from shore.³⁴³

³⁴¹ Daniel Houpt, “Civilian UAV Production as a Window to the PLA’s Unmanned Fleet,” *China Brief* 12 (Feb. 2012).

³⁴² VornDick, “Exploring Unmanned Drones as an Option for China’s First Carrier.”

³⁴³ James Bussert, “Chinese Navy Employs UAV Assets,” *Signal Magazine Online* (Apr. 2012), http://www.afcea.org/signal/articles/templates/Signal_Article_Template.asp?articleid=2918&zoneid=345



Figure 10. Chinese Naval UAV³⁴⁴

China continues to conduct research to make UAVs take over a variety of roles and increasing capabilities. A recent Chinese article was titled “Study of Capability of Shipborne UAV Transmitting Ship Damage Information.”³⁴⁵ Looking at the strategic level, China is developing UAVs similar to the Global Hawk called the Xianglong³⁴⁶ and BZK-005.³⁴⁷ The goal of these strategic systems is to increase the amount of intelligence that the Chinese military is able to collect off of their shoreline and around their ships.

By utilizing UAVs, China can save on manpower while being more efficient in collection. It also allows the Chinese government to continue to expand their military capabilities while minimizing the number of ships they have to deploy far from China or build overseas military bases. Thus, these UAV capabilities help China continue to honor their commitment to not build overseas bases while at the same time develop additional

³⁴⁴ Bussert, “Chinese Navy Employs UAV Assets.”

³⁴⁵ “Study of Capability of Shipborne UAV Transmitting Ship Damage Information” *Jianchuan Dianzi Duikang*, Aug. 1, 2011, Open Source Center CPP20120601536002.

³⁴⁶ “Zhuhai Airshow -- Photos of PRC Space Station, Xianglong UAV, P-12 Missile System,” Nov. 2, 2006, Open Source Center CPP20061109071001.

³⁴⁷ “Unmanned Stealth Aircraft Crashes in Xingtai Hebei” *Ming Pao Online*, Aug. 25, 2011, Open Source Center CPP20110825787001.

capabilities. Additionally, efforts to arm China's UAV would mean that in the event of a conflict, there would be fewer Chinese targets in international waters where the United States currently holds local superiority.

F. LOGISTICS – RESUPPLY POINTS, NOT BASES

With smaller naval forces accomplishing the same tasks, less logistical support is required to sustain these forces when they are far from China. This reduced logistical need can then result in smaller and less frequent logistical resupply, which can be accomplished by agreements with other countries that host resupply points, as opposed to military bases.

As China has begun to participate in anti-piracy operations and goodwill naval tours, it has started a discussion about the best way to keep these naval forces resupplied when they are away from China. Originally, Chinese naval vessels would be accompanied by resupply vessels, but the limitations of this strategy soon became apparent with the prolonged deployments in the Gulf of Aden.³⁴⁸ Since then, the Chinese Navy has shifted to an idea that its logistical resupply can then be handled by foreign country “places” as opposed to large overseas military bases. The difference between places and bases is explained by Project 2049, a foreign affairs think tank. When discussing the future of Gwadar, “the seaport could theoretically be used by Chinese naval vessels, but there is a meaningful distinction between a friendly ‘place’ willing to provide maintenance, resupply or logistical support to a Chinese ship and a military base capable of supporting combat operations.”³⁴⁹ Another example of China looking for places as opposed to bases is its recent discussions with the Seychelles concerning resupply operations. “Under the proposal, Chinese naval ships would regularly visit ports in the Seychelles to collect supplies, and allow their crews to rest, but they wouldn’t be

³⁴⁸ McDevitt, *PLA Naval Exercises with International Partners*, 15.

³⁴⁹ Issac B. Kardon, “China and Pakistan: Emerging Strains in the Entente Cordiale” (Arlington, VA: Project 2049 Institute, Mar. 2011), 17, http://project2049.net/documents/china_pakistan_emerging_strains_in_the_entente_cordiale_kardon.pdf.

permanently based there.”³⁵⁰ Two final examples of China employing the places-not-bases philosophy is with their port visits to resupply their vessels that are currently working with the anti-piracy task force off of Somalia. *China Daily* ran an editorial in August 2009 discussing the need for Chinese ships to establish port visits to ensure the success of future anti-piracy efforts. “Past anti-piracy experience in the Gulf area also indicates that China’s navy should make bigger efforts to further shorten its material and armament supply cycle to guarantee its success, and, if necessary, set up some coastal refuel and maintenance stations.”³⁵¹ Shortly after this, the PLAN began to make port visits first to Salalah, Oman and then to Djibouti. In order to avoid turning these locations into bases, the Chinese have also looked to Chinese commercial companies to deal with logistical issues of working with the host country and obtaining supplies.³⁵²

These places do not represent a string of pearls for a number of reasons. First, the main focus is resupply and not military force projection. Second, the places will not have any permanent military facilities or military ships or planes stationed at them. Third, even if the Chinese were to turn the Seychelles, Gwadar, or another place into a military base, it would be significantly vulnerable in the event of hostilities breaking out with India or the United States. RADM McDevitt makes this point when discussing the lessons China has probably learned from its anti-piracy task force operations: “Operating alone in waters where the air space is dominated by either the United States or India must have emphasized the importance of air cover for distant operations that could someday involve combat.”³⁵³ Fourth, if China were to station significant forces in the Seychelles, it would make them unavailable in the short term if a conflict were to break out in the South China Sea or Taiwan, assuming they would be let back through the Strait of Malacca in the event of hostilities. Finally, some Chinese experts expect that in the case of a conflict,

³⁵⁰ Jeremy Page and Tom Wright, “Chinese Military Considers New Indian Ocean Presence,” *Wall Street Journal*, Dec. 14, 2011, <http://online.wsj.com/article/SB10001424052970203518404577096261061550538.html>

³⁵¹ Li Jie, “China’s Navy Still has Far to Go,” *China Daily*, Aug. 14, 2009, www.chinadaily.com.cn/opinion/2009-08/14/content_8568918.htm

³⁵² Michael McDevitt, *PLA Naval Exercises with International Partners* (Quantico, VA: Center for Naval Analyses, Feb. 2012) paper presented at “Learning by Doing: The PLA Trains at Home and Abroad” workshop, Feb. 18, 2012.

³⁵³ McDevitt, *PLA Naval Exercises with International Partners*, 21.

China will rely extensively on its submarine and land-based air forces while China's surface ships play a supporting role within the first island chain:

But for the PLA Navy, it is the submarine force and land-based naval aviation arm are the central players in area denial scenarios. The PLA Navy's surface force plays second fiddle in these scenario's and should a conflict over Taiwan erupt, will probably remain inside the first island chain, conducting anti-submarine warfare (ASW) and air-defense roles.³⁵⁴

In conclusion, at the present time, it appears that the Chinese military leadership is examining how effective resupply points in other countries are to achieving its objectives. This approach appears to have had mixed results with limited success in places like Salalah and Djibouti, but problems in areas like Gwadar. Expect China to continue to experiment with this approach and further discuss if this arrangement can accomplish all their objectives or if another approach is warranted.

G. CONCLUSION

In conclusion, by examining Chinese perspectives and actions, it does not appear that China perceives an overriding logic or compelling demand to build overseas military bases. Instead, Chinese strategic thoughts center on avoiding conflict. However, if conflict does occur, China wants to ensure that the factors are in its favor. Previously this would have been accomplished by projecting significant amounts of force at strategic trading points and on China's periphery. However, as the quotes above from Chinese military-affiliated sources make clear, the battlefield has expanded and changed. Chinese military perspective now sees space and the cyber domain as the two most critical warfighting realms. In the event of a future conflict, whoever controls space and cyber will have a decisive advantage in the maritime realm. By implication, then, the effectiveness of overseas military bases will be minimized before the conflict has even begun. Additionally, the Chinese military is developing UAVs to keep their overseas footprint small, and reduce the amount of targets that the United States will be able to engage in the international arena and far from Chinese shores.

³⁵⁴ McDevitt, *PLA Naval Exercises with International Partners*, 2.

VI. CONCLUSION

The goal of this research was to provide evidence and a theory about why China would not be interested in building a “string of pearls” in the Indian Ocean. To accomplish this objective, this thesis examined the military reasons for creating large, overseas military bases as offered by various important scholars in the field. The three reasons that stand out for establishing and maintaining a large, overseas military base were: intelligence, force projection, and logistics. However, with the revolution in military affairs collecting intelligence and force projection can be accomplished in more efficient methods. Logistics can now be outsourced to a host country to provide support for naval vessels that require resupply in a “places not bases” type of agreement.

Chapter II initially examined the conventional wisdom surrounding the idea of Chinese military expansionism and creating overseas military bases. Two primary reasons for Chinese military expansion were then identified. The first reason offered was that China is operating according to the Mahan force projection model and so requires military forces to support and defend its sea lines of transportation. According to this theory, since China has to import massive amount of energy supplies from the Middle East and across the Indian Ocean, China will want to establish bases to protect its maritime trade. However, various problems were identified with this reason. The first problem is that there are many different lessons that can be drawn from the writings of Mahan. Examining the Chinese military and academic literature shows that there is no consensus about what lessons to learn from Mahan or whether Mahan is still relevant in the 21st century. The second problem with this conventional wisdom is that it minimizes the complications and cost associated with establishing multiple large military bases far away from the Chinese coast.

The second conventional wisdom reason for Chinese military expansionism was that China is seeking to become a “great power.” In order to become a great power, China feels it needs to emulate other important powers and attain the same attributes that these countries have. When China looks at other countries, it sees that they have aircraft carriers, overseas military bases, and maritime power-projection capabilities. Hence,

China seeks to attain these same attributes and will want to create overseas military bases as a source of national pride. However, there are also problems with this conclusion. First, overseas military bases might be an outdated concept that no longer has the same symbolism it did in the 20th century. Second, there are other ways to illustrate power, such as technological innovation. Third, if China were to begin to develop overseas military bases, it could lead to balancing behavior by other nations against China and complicate China's international relations.

Chapter III examined the Revolution in Military Affairs and how it has the potential to change the nature of warfare. This chapter examined four areas of technological innovation: space, open source intelligence, unmanned vehicles, and cyber. This chapter presented the theory that these four new technologies can accomplish the same military objectives of intelligence collection and force projection that were previously accomplished by overseas military bases. In fact, these four new technological innovations can accomplish these two objectives more efficiently and for a smaller cost.

Chapter III framed overseas military bases as a form of meta-technology that is becoming outdated. In the 20th century, overseas military bases allowed technology like manned aircraft and naval vessels to extend their limited intelligence collection capabilities and force projection far beyond the coast of a country. However, with satellites, open source intelligence, unmanned vehicles, and cyber, intelligence collection and limited force projection can now be accomplished from a much farther range that stretches back to the host state. Essentially, these technologies have expanded the battlefield to an extent that each state can now be targeted in the event of a conflict before the first plane is launched or the first ship fires its weapons.

Chapter IV examined three case studies to illustrate how the Revolution in Military Affairs has effected states actions regarding overseas military bases. The first case study examined the United States actions regarding its troops and bases in South Korea. The conclusion was that the United States is reducing its troops and bases in South Korea because new technology has allowed the United States to accomplish the same military objectives with fewer forces. The second case study was Britain and the Falkland Islands. Since 1982, the British are no longer interested in the Falklands for

their military usefulness but instead to protect its citizens located on the island. Britain is also able to reduce its military forces on the island due to better intelligence gathering and new technology. The third case is Israel's decision to withdraw from southern Lebanon in 2000. Israel withdrew because they invented new technology that allowed them to accomplish the same military objective of securing their northern border without having to station troops in a neighboring country.

Chapter V examined Chinese perceptions regarding the Revolution in Military Affairs. This chapter presented evidence that Chinese officials and military leaders talk about new military tech in ways that suggest the utility of overseas military bases is low, and that their public statements assert they do not want such to establish overseas military bases for a variety of reasons. Additionally, the Chinese military has been investing substantial resources in the areas of space, cyber, and unmanned vehicles.

In conclusion, given what this research offers, what are some assessments for the future of Chinese maritime activities? First, China could probably continue to invest in space, cyber, and unmanned vehicles. This could result in increasing amount of Chinese satellites in orbit, along with the development of micro-satellites and anti-satellite capabilities. The objective would be to reach parity with the United States or another country in the event of a conflict while at the same time degrading the capability of an opponent's space systems. Possible evidence of this trend is China's increase in satellites and its development of an indigenous navigation system similar to GPS. In cyber, China could continue to develop cyber units and cyber offensive and defensive capabilities to be used in both intelligence collection and force projection. Possible evidence of this is the establishment of a Chinese cyber "information security base," and adding cyber as a possible new realm of warfare along with land, sea, and air. In unmanned vehicles, China could continue to research and develop air, land, and naval unmanned vehicles to increase its maritime reach while minimizing its overseas military presence. Possible evidence of this includes Chinese naval forces testing unmanned aerial vehicles from

naval vessels and the announcement by the People's Daily that China's State Oceanic Administration will replace its manned aircraft with unmanned aerial vehicles.³⁵⁵

Second, these new technologies could lead to new military strategies concerning intelligence collection and force deployment. China could develop intelligence collection and force projection capabilities that can be accomplished from within China but affect an adversary country through space or cyber methods. This could result in new military strategies that focus on cyber and space as the first contested realms of warfare, with traditional kinetic attacks being relegated to later stages of a conflict. Finally, if this thesis is accurate, Chinese military maritime forces could continue to develop overseas places in foreign countries that can be used as logistics hubs, but would refrain from developing any large, overseas military bases.

The question arises: If China and an opponent have reached technological parity, do all of these advances really change anything? Yes, because the advance of technology creates new strategies and results in new capabilities being developed and deployed on the battlefield. Looking back at the history of warfare, advances in technology are normally quickly copied by opponents, resulting in a new status quo ante. However, even though both sides now have access to the same technology, the winners in future conflicts are the ones that find new strategies and develop new capabilities to harness the technology. World War I and World War II serve as good examples. At the beginning of World War I, the machine gun became an important tool that led to the development of trench warfare. At this point, each side had access to similar technology. Yet military technology development continued in order to find a way to defeat trenches and the machine gun. This culminated in new technology designed to defeat the machine gun, such as chemical weapons and early versions of the tank. It is important to note that the establishment of a new technological status quo it did not result in older weapons becoming useful again. Both sides gained machines guns, but nobody decided to go back to cavalry.

³⁵⁵ "UAVs to Replace Manned Aircraft in Marine Surveillance," *People's Daily Online*, Sept. 1, 2012, <http://english.peopledaily.com.cn/90786/7932405.html>.

World War II demonstrates a similar concept. At the beginning of the war, Japan had the superior aircraft with the Zero. However, the American military strove to develop a better aircraft. At a certain point in the war, both sides reached a new status quo concerning naval aviation and aircraft carriers. Yet the Americans were able to create a better plane that could outperform the Japanese Zero and were able to start winning the air war in the Pacific. In this example, it is important to note that both sides developed comparable fighters, but the winning side continued to improve on the fighter design while it developed new strategies and tactics that allowed it to be victorious. Similar to the World War I example, with the new aviation capability, aircraft carriers became the center of naval combat and the battleship began to play a supporting role.

This thesis argues that a similar transition is happening concerning new technology like cyber, space, and unmanned vehicles with the older “technology” being large, overseas military bases. While it is very likely that a new status quo will be reached in the realms of cyber, space, and unmanned vehicles, it is also possible that these new technologies will make large overseas bases less effective in a way that the aircraft carrier made battleships less effective. The winning side in the next war or skirmish will be the side that makes more improvement in these new technological areas, or develops better strategies or capabilities. Either way, according to this logic, large overseas military bases are reduced to secondary roles.

This revolution in military affairs has also led to a shift in the importance of strategic geography. Previous to the RMA, force projection was limited in its capability. If a country wanted to attack the United States, it needed to have a military base close enough to the United States to launch airplanes or a naval base to defend naval ships. The exception to this was nuclear weapons. If a country wanted to make sure it could attack any adversaries, it was important to maintain these military bases at all times. Additionally, these military bases had to have significant defenses because they would likely be the first location to be attacked in a conflict.

Today, the strategic calculus has changed. If a country wants to attack the United States, it no longer needs a military base close to the United States. A good example of this is Stuxnet and cyber skirmishes. Previously, if Israel wanted to attack a nuclear

facility in a foreign country, it would need to send in military aircraft to bomb the facility. Now it has a new option that does not require it to use traditional military methods, and it can be launched from anywhere—including inside Israel. With weapons of war now directly effective from a home country, it reduces the need of military bases to project this power or gain intelligence.

So what are the implications for the United States? One implication is that the importance of overseas bases for both the United States and China should be constantly reevaluated. Unlike in the past, the United States can no longer automatically assume that overseas military bases will be functional at the start of the conflict. Previously this was only a concern with overseas military bases located close to adversary countries, such as those in South Korea or Japan. It was assumed that overseas military bases located far from adversary countries would have minimal concerns at the beginning of a conflict. However, with recent developments in cyber, space, and unmanned vehicles, this might no longer be the case.

In the future, instead of developing overseas military bases, a country like China could continue to refine a new strategy of war. This new strategy could focus on information attacks that attempt to cripple and isolate United States overseas military bases from a larger conflict. Hence, United States overseas military bases might have to be prepared to operate independently with little to no coordination with higher headquarters before a conflict officially begins. This possibility could require the United States to develop new strategies to secure the cyber realm and space realm, starting from a defensive perimeter and working outward in the case of a future conflict. Another concern would be the capabilities of future UAVs to conduct strategic offensive operations against bases that have traditionally been viewed as being far enough away from a conflict zone to not have to worry about an airborne attack.

The implications for how we evaluate Chinese activities abroad is that the United States should expand the realm of possibilities that China could take to achieve its international goals. While there is a possibility that China could develop overseas military bases in the Indian Ocean, it should not be the default assumed position. Instead, the United States should observe to see if China is pursuing “places” instead of bases.

These places would not involve large military developments, but instead would be focused on resupply activities. Thus, if China were to sign an agreement with a country like the Seychelles, it is important to see what the agreement authorizes. As China becomes more involved in the Indian Ocean, it will be important to evaluate whether China decides to change positions on overseas bases. By monitoring Chinese maritime activities, the default position should be that China is establishing resupply points. If future evidence points to more substantial development than required for a resupply point, questions about China creating overseas military bases should be raised.

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