

# CHINA'S RISE: MILITARY AND ECONOMIC IMPLICATIONS FOR THE UNITED STATES

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# ABSTRACT

Relations between the United States and China have become immensely complex since China's militaristic and economic rise in the 1990s and the convulsion of their relationship continues to grow as China begins to play a more prominent role on the world stage. This thesis examines three areas of how the United States is affected by China's militaristic and economic rise to include the United States ability to aid Taiwan, threats to US space-based assets, and the emergence of China as an economic superpower. Although each area being examined is inherently different, all three areas illustrate an evolving China that the United States will have to contend with in the future. Each chapter demonstrates the varying degrees of how the United States is affected and analyzes the potential implications produced as a result of a growing China. Through the examination of existing literature, each chapter depicts a China prior to a particular militaristic or economic advancement and then explores the effects of those changes and how they affect the United States. The aftermath of these military or economic advancements by China reveal a willingness to grow, modernize, and contend with the major players in the international community. This thesis demonstrates the direct contention in which China's advancements bring to the United States, clarifies the realities of this rivalry, and offers alternatives in relation to strategy and policies for each set of independent issues that the varying chapters address.

Thesis Advisors: Dr. Rameez Abbas and Dr. Kathryn Wagner Hill

## **PREFACE**

All of the work presented henceforth was conducted in pursuit of continuing to be a lifelong learner and advance my academic career. The skills cultivated over the duration of this program are something that I will continue to use throughout my life, both professionally and academically. For the skills and knowledge acquired I would like to thank the faculty and staff at Johns Hopkins University. I would also like to extend special thanks to Dr. Rameez Abbas and Dr. Kathryn Wagner Hill for reading and editing the chapters in this portfolio multiple times and pushing me to continuously improve each paper. I would also like to extend my gratitude to Mr. John Gans Jr. who at the time this paper was being written was in the midst of pursuing his doctorate degree. Mr. Gans Jr. taught me how to write concisely and include only the most pertinent information. Lastly, I would like to thank my family and friends who had to compete for my time between my crazy work schedule and school. Without their love and support this would not have been possible.

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# Introduction

The United States is often regarded as the most powerful country in the world from both an economic and militaristic perspective. As a superpower currently unmatched by any single country, the United States has exhibited why it is the most powerful country in the world through its “power of influence, persuasion, and leadership on the international stage,”<sup>1</sup> as well as displaying its military technological prowess and economic might. While the United States currently enjoys the advantages that come with being the most powerful country in the world, other countries are jockeying for authority and power, and no country is currently pushing to challenge the United States more than China.

The developing country of China has shown its eagerness for authority and power, and the economic and militaristic advancements that China is striving towards will continue to provide the country with increasing leverage. The swift turn around in what was once considered a backwards country began in the late 1970s when China renounced its Soviet-style central planning and instituted a market economy. The opening of its doors to western countries ushered in an economic revolution that would turn China into an economic powerhouse that many believe will challenge the United States in the near future. China’s open-door policy opened the eyes of the country’s leaders, helping them to realize the economic potential that China possessed.

And with their eyes opened, China’s leaders would realize how antiquated their military was when compared to the United States as they watched the events of the Gulf War unfold in the early 1990s. The realization of having an outdated military would put

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<sup>1</sup> Thomas White, “Why U.S. Hegemony Is Here to Stay,” *Huff Politics Blog*, Huffington Post, [http://www.huffingtonpost.com/thomas-white/why-us-hegemony-is-here-t\\_b\\_4258264.html](http://www.huffingtonpost.com/thomas-white/why-us-hegemony-is-here-t_b_4258264.html).

China on a path to improving its military; however, the price of building a modern military would prove costly for the still developing nation. Understanding that an overhaul of their entire military would be exorbitant, China would instead focus on advancing specific elements of its military. The military elements that China elected to update were tailored to fit the country's national security interests, as well as focus on the weaknesses of countries that posed a potential threat.

This thesis paper is an amalgamation of three research studies that concentrate on how the United States is affected by China's economic growth and advancements in military technology. While other research has been conducted on the topic of China's rise, this paper focuses on specific areas of contention between the United States and China, and provides a unique perspective on China's military and economic rise. Each chapter in this paper focuses on potential issues that have risen as a result of China's economic growth or advancements in military technology, and addresses these concerns through the use of historical research, counterfactual arguments, and predictive analysis. While each paper tackles a different question pertaining to either China's economy or military, the culmination of all three studies aids in illustrating how China's rise affects the United States.

The first chapter of this paper illustrates where China's rise began and focuses on the rapid growth of the Chinese economy. Although China's economic growth began in the late 1970s this chapter primarily focuses on China's economic rise since 2001 and how their rise constrains the US economic instruments of power. As the only country currently positioned to overtake the United States economic output, China's rapid economic growth has some US policymakers concerned. Using existing literature and

studies on the topics of economic power transition, China's economic rise, and the Sino-US symbiotic relationship, this chapter illustrates the constraints that China's rise places on the United States. After weighing the positive and negative consequences of the Sino-US economic relationship and comparing previous economic power transitions to today's Sino-US economic transition, this chapter predicts the likely outcome as a result of China becoming the world's largest economy. Although China is poised to surpass the United States as the world's largest economy and the continuing growth of China's economy may hinder the United States ability to exercise its economic powers, this chapter argues that China's challenge to the United States is not as dire as some might believe because the economic instruments of power are far more complex than other instruments of power. Combined with the lack of trust in the Chinese government and concerns about China's political stability and social unrest, the United States will continue to lead the world economy and direct the international community.

The second chapter of this paper explores how the United States' ability to aid Taiwan during a cross-strait battle with China would be affected by the military technological advancements that China has made since the 1996 cross-strait conflict. Through historical research this chapter illustrates how antiquated China's military was prior to the mid-1990s and the steps that the country has taken to improve its military power. With no event between the United States and China equal to the 1996 cross-strait conflict, it is difficult to assess how effective the military improvements that China has undergone are against the United States. Using the 1996 cross-strait conflict as a baseline, this chapter creates counterfactual arguments to assess how US forces would be constrained as a result of China's military modernization. Considering varying plausible

scenarios, this chapter provides context in how China might utilize its military improvements against the United States if another cross-strait crisis were to occur and argues that the United States will likely have to pursue other avenues as a result of China's military improvements.

The third and final chapter of this thesis portfolio examines the impact that China's development of direct ascent anti-satellite (ASAT) weapons will have on the United States' ability to rely on its space-based military advantages in the future. As a country that is heavily invested in space-based assets and relies on satellites for both military and civilian use, the United States has a vested interest in taking steps to protect these assets. Until early 2007, it was believed that only the United States and Russia had the capability to destroy satellites in space with direct ascent weaponry. When China decided to display their ability to destroy assets in space, it showed the United States that they would have to take steps to protect their space-based assets in the event that a Sino-US conflict erupted or if the United States elected to aid Taiwan during a cross-strait conflict with China. This chapter relies on existing literature regarding the topic of implications resulting from China's successful trial of its direct ascent ASAT weapon in early January of 2007 and how the weapon is a persisting threat towards US space assets to create counterfactual arguments. With a lack of space based policies in place and space emerging as another domain of war, this chapter attempts to draw out the discussion of the significance of China's direct ascent ASAT program and explore what options the United States could exercise in response to this developing threat. Options explored to combat China's use of direct ascent weaponry include diplomatic actions, technological responses, and military options. The end of this chapter will argue that the United States

cannot exercise just one option, but must take a multifaceted approach to solving how to protect its space-based assets against this growing threat.

These three topics were selected to highlight China's rise because together they epitomize the growing strength of this developing nation. This paper begins with China's economy because it accentuates where China was prior to opening its doors to trade and becoming an economic powerhouse that is able to rival the other major economies of the world today. Through the creation of a strong economic basis, China was then able to focus on developing its military. The topic on how China's military technological advancements affect the United States ability to aid Taiwan is important to explore because it illustrates how China's military is gaining parity with regards to being able to contend with the military superpowers of the world. The last paper also focuses on China's military advancements; however, the topic of how China's direct ascent weaponry affects the United States space-based military advantages was selected largely because the accomplishment that China achieved is one of the pinnacles of military technology, only two other countries had achieved this ability, and it has major implications for the United States military. Together, these three topics depict a country that is striving to advance and will continue to play a larger role on the world stage.

# **How China's Booming Economy Affects the United States Economic Instrument of Power**

## **Introduction**

For two thousand years China had been the largest economy in the world until it was overtaken in the late nineteenth century by the United States (US).<sup>2</sup> Now, after a one hundred and fifty year hiatus and “being a weak player on the world stage,”<sup>3</sup> China has awakened and reemerged as a major power, spawning competition between the rapidly rising power and the United States. The rise of China has sparked interest and opportunity, as well as doubt and fear for many Americans. Across the spectrum China's leaders are making strides to advance the country, but no area of progression is more evident than the ascension of China's economy. Although China lacks the leadership experience of the United States within the international community and would not challenge the United States with its military in the midst of modernization, the emergence of China as an economic superpower has forced the United States to make difficult adjustments and make room for the country that will soon surpass the United States economically barring any setbacks.

The effort of this paper is to assess how China's economic rise since 2001 constrains the US economic instruments of power. Using the British transfer of economic power to the United States after World War II as a case study, an attempt will be made to explain how China's growing economic power will constrain US economic instruments of power as China emerges as a world economic superpower. The paper argues that China's economic challenge to the United States is not as dire as many fear. China today

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<sup>2</sup> Susan L. Shirk, *China: Fragile Superpower*, (Oxford: Oxford University Press, 2007), 4.

<sup>3</sup> *Ibid.*, 4.

is still a developing country and is currently positioned to extend its growth over the next two to three decades<sup>4</sup>, eventually overtaking United States economic output in 2039.<sup>5</sup> However, because the economic instruments of power are more complex than other instruments of power, the United States will continue to lead and direct the international community and world economy. Although China is positioned to surpass the United States in terms of global gross domestic product (GDP), reasons for why China will not replace the United States as the country that will direct the international community and world economy includes lack of trust in the Chinese government and concerns about China's political stability and social unrest.

## Methodology

To assess how China's booming economy effects and constrains the various instruments of US economic power, this paper will compare and contrast previous economic power transitions to today's Sino-US economic transition, and attempt to predict the likely outcome as a result of China becoming the world's largest economy. Through the examination of existing literature and studies on the topics of economic power transition, China's economic rise, and the Sino-US symbiotic relationship, this paper attempts to bring to light the economic constraints that China's rise places on US economic instruments of power. Beginning with an introduction of the United States ascension to economic superiority and transition of economic power from the British to the United States, a brief history will be provided in order to have an understanding of what previous economic power transitions during the era of freer trade resembled.

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<sup>4</sup> Shirk, *China: Fragile Superpower*, 20.

<sup>5</sup> Peter Katel, "Emerging China: Can the United States successfully compete?," *The CQ Researcher* 15, no. 40 (2005): 957, <http://www.library.cqpress.com>.

In order to compare and contrast China's economic rise to the United States' economic rise, it is paramount to illustrate the history behind China's rise prior to 2001 when China joined the World Trade Organization (WTO) and opened its markets to foreign investors. An understanding of where China was in terms of being an economic leader prior to this time will further lend hand to comprehend how China is able to quickly climb the economic ladder and why their climb could constrain the US economic instrument of power.

After depicting what China was like prior to 2001 and how China has risen in economic standing, a portrayal of the Sino-US symbiotic relationship and how failure on either side could be detrimental to the health of both economies will be conveyed. Research demonstrates that while China and the United States are intertwined and enveloped in an interdependent relationship, it is through this symbiotic relationship that US instruments of power are constrained. This paper then addresses the various areas of economic influence that the United States is unable to tackle as a consequence of the symbiotic relationship and how that affects the overall United States economy. Afterwards, a segment depicting the international community's view of China is provided in order to illustrate why the international community will continue to follow the United States as the director of the economic world even though China will surpass the United States' economic output.

After examining the rise of United States' economic power and the rise of China's economic power, the constraints of the symbiotic relationship between the two countries, and the international community's views of China, an assessment will be made on whether or not China will replace the United States as the top economic superpower and

how that may constrain US economic instruments of power. Through comparing and contrasting the rise of the two countries and examining the relationship between them, this chapter explains why the threat of China's economic rise is not so imminent, great, or multifaceted that it can replace the United States as the world leader.<sup>6</sup>

## Defining Terminology

For the purposes of this assessment it is critical to understand the definition of power from a broader perspective and then briefly dwell into the varying categories of economic power and how they are interconnected. According to Edward Carr, power, in relation to foreign affairs, is defined as 'the ability to influence the behavior of others to achieve a desired outcome.'<sup>7</sup> To have economic power is the ability to utilize a nation's wealth as leverage in order to influence others.<sup>8</sup> What consists of the economic instrument of power expands from sanctions and foreign aid to export controls and trade policies, and further "includes the sheer size of the U.S. economy as having an influence on the rest of the world" and the effects of the world on the United States economy.<sup>9</sup>

Economic competition is not a zero-sum game and is far more complex than any other instrument of power.<sup>10</sup> In essence, "Country A may be richer than Country B, but both will be better off through trade if the other grows richer."<sup>11</sup> This is not meant to insinuate that economic power is meaningless and for governments the ability to wield

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<sup>6</sup> Arvind Subramanian, "The Inevitable Superpower: Why China's Dominance is a Sure Thing," *Foreign Affairs* 90, no. 5 (2011): 67, <http://search.proquest.com>.

<sup>7</sup> D. Robert Worley, *Aligning Ends, Ways, and Means: An Examination of the U.S. National Security System*, (D. Robert Worley, 2011), 203.

<sup>8</sup> *Ibid.*, 208.

<sup>9</sup> *Ibid.*, 208.

<sup>10</sup> Deanne Julius, "US Economic Power: Waxing or Waning?," *Harvard International Review* 26, no. 4 (2005): 15, <http://search.proquest.com>.

<sup>11</sup> *Ibid.*, 15.

economic power is of great concern. According to Deanne Julius, author of “US Economic Power: Waxing or Waning?,” there are five types of economic power. Although these types of power are not referred to directly in this paper, it is important to briefly address the varying types of economic power in order to conceptualize how instruments of power beyond the economic are affected. The first is the ability to ‘buy more might’ or to build up a country’s military power.<sup>12</sup> The second type of economic power, termed ‘carrot sticks,’ is the “ability to achieve foreign policy objectives through the deployment of national economic resources.”<sup>13</sup> The third economic power type is the ability to ‘tilt the playing field’ by bending the rules of economic engagement towards favoring a country’s domestic firms or consumers.<sup>14</sup> Hyper-competitiveness which is the fourth type of economic power is defined as having such a “favorable economic climate that its firms would gain dominant positions in key industries or innovative areas so that firms from other countries could not catch up” or successfully compete.<sup>15</sup> The fifth and final category is referred to as soft power which is the ability to ‘attract others by the legitimacy of [a country’s] policies and values that underlie them.’<sup>16</sup> For the United States, economic soft power is dependent on the attractiveness of its economic model and values.

As economic globalization continues to progress and United States interdependency grows, poorer countries will continue to benefit and grow faster, and the United States will see an erosion of economic power in return for a stimulus for United

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<sup>12</sup> Julius, “US Economic Power: Waxing or Waning?,” 15.

<sup>13</sup> Ibid. 16.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid., 17.

States economic growth.<sup>17</sup> The eventual outcome will be a multi-polar world economy in which no economic bloc or country dominates, and every country is constrained by the international rules of open trade and fair competition which will benefit every country.<sup>18</sup>

## Transition of Economic Power: Britain to the US

After the Napoleonic Wars, Britain emerged as the global economic power becoming the “foremost trading nation and the first to industrialize.”<sup>19</sup> The first golden age of the liberal world economy began with the freer trade era in the 1860s when Britain and France signed the Cobden-Chevalier Treaty, which began as a simple bilateral agreement that later laid the foundation for a wider liberalization of trade.<sup>20</sup> By 1867, Britain with the assistance of France had developed a working system that lowered tariff barriers and reduced restrictions on trade with colonies, allowing the trade agreements to expand to thirteen European nations.<sup>21</sup> While Britain resumed its status as the economic power, especially within the European trade bloc, the country saw a relative decline in economic power during the last quarter of the 19<sup>th</sup> century; however, the undoing of the British trade system began with World War I.<sup>22</sup> Wartime protectionism destroyed the liberal economic order and any hope of restoring the prewar system of trade and finance.<sup>23</sup> The onset of the Great Depression dealt the final blow as nations raised tariffs

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<sup>17</sup> Julius, “US Economic Power: Waxing or Waning?,” 17.

<sup>18</sup> Ibid.

<sup>19</sup> Arthur A. Stein, “The hegemon’s dilemma: Great Britain, the United States, and the international economic order,” *International Organization* 38, no. 2 (1984): 361, <http://search.ebscohost.com>.

<sup>20</sup> Stein, “The hegemon’s dilemma: Great Britain, the United States, and the international economic order,” 366.

<sup>21</sup> Ibid., 367.

<sup>22</sup> Ibid., 373.

<sup>23</sup> Ibid., 374.

and devalued their currency.<sup>24</sup> The United States followed suit in 1930 adopting the “ultraprotectionist Smoot-Hawley Tariff...[displaying] their reluctance to assume the mantle of leadership,” and their unwillingness to follow the British.<sup>25</sup>

Only after World War II (WWII) had the United States learned its interwar lessons and utilized its “formidable power and prestige”<sup>26</sup> to reorganize the global economy and rebuild Europe. Understanding that worldwide recovery was contingent upon intra-European trade, the United States offered aid under the Marshall Plan in exchange for reduced discrimination within the intra-European trade.<sup>27</sup> Like 19<sup>th</sup> century Britain, the United States role as the economic hegemon after WWII was to make an asymmetric bargain.<sup>28</sup> The United States opened its own borders in return for easing protectionism,<sup>29</sup> “nondiscrimination, and stable exchange rates.”<sup>30</sup> Under the Bretton Woods system the capitalist world flourished and the economies in Europe and Japan recovered from the war.<sup>31</sup> Established in 1944, the Bretton Woods system created a basis for exchanging international currency and led to the establishment of the International Monetary Fund and the International Bank for Reconstruction and Development, which later became known as the World Bank.<sup>32</sup> Under the Bretton Woods system, states that decided to become members agreed to fix their exchange rates by linking their currencies

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<sup>24</sup> Stein, “The hegemon’s dilemma: Great Britain, the United States, and the international economic order,” 375.

<sup>25</sup> Ibid., 376.

<sup>26</sup> Michael Mastanduno, “Rivals or Partners? Globalization and US-China Relations,” *Harvard International Review*, (2007): 45, <http://search.ebscohost.com>.

<sup>27</sup> Stein “The hegemon’s dilemma: Great Britain, the United States, and the international economic order,” 379.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Mastanduno, “Rivals or Partners? Globalization and US-China Relations,” 45.

<sup>31</sup> Ibid., 45.

<sup>32</sup> M.J. Stephey, “A Brief History of Bretton Woods System,” *Time*, October 21, 2008, <http://content.time.com/time/business/article/0,8599,1852254,00.html>.

to the United States dollar and would agree to purchase and sell US dollars to keep their currencies within 1% of the fixed rate.<sup>33</sup> In order to assure the rest of the world that the dollar was dependable, the United States linked the dollar to gold; “\$1 equaled 35 oz. of bullion.”<sup>34</sup> With the establishment of the Bretton Woods system the golden age of dollar would begin.<sup>35</sup>

By the early 1960s the United States ran a habitual “balance-of-payments” deficit resulting in the United States inability to cover foreign-held external dollar liabilities with US gold reserves.<sup>36</sup> With an expanding deficit and the United States economic priorities focused on funding the war in Vietnam and full employment instead of issues surrounding the dollar, the United States boosted inflation which prevailed throughout the world causing “countries participating in the Bretton Woods system, which disfavored inflation,” to lose trust in the United States.<sup>37</sup> The Bretton Woods system would eventually collapse due to foreign exchange markets expecting parity adjustments and increased speculation in the United States ability to cover foreign-held debt.<sup>38</sup> In 1971, President Richard Nixon would sever the link between the dollar and gold ending the Bretton Woods system.<sup>39</sup> The aftermath of the collapse of the Bretton Woods system eventually led to most of the major world economies allowing their currency to float

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<sup>33</sup> Stephey, “A Brief History of Bretton Woods System.”

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> Yukio Fukumoto, “Another Look at the Underlying Cause of the End of the Bretton Woods System: International Price Differences Perspective,” *Review of International Economics* 19, no. 5 (2011): 852, <http://search.ebsost.com>.

<sup>37</sup> Fukumoto, “Another Look at the Underlying Cause of the End of the Bretton Woods System: International Price Differences Perspective,” 853.

<sup>38</sup> Ibid.

<sup>39</sup> Stephey, “A Brief History of Bretton Woods System.”

freely against the dollar by 1973.<sup>40</sup> During the 1970s in wake of the global oil crisis and the Vietnam War, the United States lost some of its prestige and leadership and from it a collective leadership between the United States, Japan, and West Germany emerged.<sup>41</sup> As the Cold War came to a close in the 1990s, the collective leadership faltered as Japan's economy slowed to a crawl and "Europe turned inward to pursue an ambitious regional integration project."<sup>42</sup> The United States emerged as the sole economic superpower and led the world economy into the new century by sustaining global economic growth with its boom in consumer spending and imports.<sup>43</sup>

The liberal world economy has held up considerably well despite the terrorist attacks on 9/11 and the subsequent attacks in Madrid, London, and Indonesia. Having endured two recent wars in Iraq and Afghanistan, and despite high defense spending and consumer profligacy, the United States is still continuing its leadership but from a position of weakness rather than strength.<sup>44</sup> With China joining the WTO in 2001, China has rapidly emerged as an economic superpower, rivaling the United States.

## A Brief Description of China Prior to 2001 and how China Climbed the Economic Ladder

In order to comprehend China's economic rise since 2001, it is imperative to have a broad understanding of China's economy prior to the turn of the century. Illustrating what China's economy was like before the turn of the century will give the reader a better understanding of why China was previously not considered an economic powerhouse and

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<sup>40</sup> Stephey, "A Brief History of Bretton Woods System."

<sup>41</sup> Mastanduno, "Rivals or Partners? Globalization and US-China Relations," 45.

<sup>42</sup> Mastanduno, "Rivals or Partners? Globalization and US-China Relations," 45.

<sup>43</sup> Ibid., 45-46.

<sup>44</sup> Ibid., 46.

explain how China was able to grow its economy at such a rapid rate. Before China became the global economic powerhouse that it is today, a much different China existed. Beginning in the 11<sup>th</sup> century, countries in Europe began surpassing China in fields such as “science and technology, the utilization of natural resources...the management of a country with a huge territory,” and real income per-capita.<sup>45</sup> From 1820-1952 the world experienced great growth and European countries and Japan had seen the growth of total world gross product increase eightfold and per-capita income increased fourfold and threefold respectively.<sup>46</sup> China on the other hand had seen a decline in its GDP from 32.4 percent of the world in 1820 to just 5.2 percent in 1952.<sup>47</sup> From 1952-1978 China went through a process of industrialization that accelerated its economic growth, however this developmental process was relatively slow in comparison with the rest of the prospering world at the time.<sup>48</sup>

In the early 1970s China was a poor, backwards totalitarian country that was isolated from the rest of the world and still enwrapped in Mao Zedong’s Cultural Revolution which began in 1966.<sup>49</sup> Mao had turned society upside down, closing schools and calling on students to become “Red Guards” and make revolution on those professionals who were defined as bourgeois experts.<sup>50</sup> In 1969 the country was on the brink of total anarchy until the People’s Liberation Army was able to restore order and by 1971 Mao had reached out to US President Nixon in hopes of ending China’s “two-

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<sup>45</sup> Shuxun Chen and Charles Wolf, ed. *China, the United States, and the Global Economy* (Santa Monica, CA: RAND Corporation, 2001), 100, [http://www.rand.org/pubs/monograph\\_reports/MR1300](http://www.rand.org/pubs/monograph_reports/MR1300).

<sup>46</sup> Ibid.

<sup>47</sup> Ibid.

<sup>48</sup> Ibid.

<sup>49</sup> Shirk, *China: Fragile Superpower*, 13.

<sup>50</sup> Ibid., 13.

decade-long self-imposed isolation.”<sup>51</sup> China under Soviet-style central planning had one of the lowest per capita incomes in the world despite a respectable economic growth at 6% a year in 1975.<sup>52</sup> By 1978 the de facto leader of the People’s Republic of China, Deng Xiaoping, had renounced the Stalinist-style central planning and instituted a market economy, opening the country up to foreign trade and investment.<sup>53</sup> Deng had realized that China’s backwardness stemmed from its closed-door policy while Western countries had undergone the industrial revolution that included trade and open markets, and he intended to roll out the welcome mat for foreign investors.<sup>54</sup>

After a 30-year-plus market-oriented reform and the shift from an isolationist country to one that embraces economic globalization, China had gone from rags to riches in some respects.<sup>55</sup> From 1978-1997 foreign trade in China increased at an average pace of 15.6 percent annually, surpassing the growth rate of its economy.<sup>56</sup> The quality of China’s products were raised due to the rigors of international competition and consequently improved businesses, “so that by the late 1990s China was ready to take the big step of joining the WTO and opening up its domestic markets.<sup>57</sup> Just as the United States economically caught up with Britain and when Japan caught up with the United States, China, with one-fifth of the world’s population is destined to catch up with the world economic leaders.<sup>58</sup>

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<sup>51</sup> Shirk, *China: Fragile Superpower*, 14.

<sup>52</sup> *Ibid.*, 18.

<sup>53</sup> *Ibid.*, 15.

<sup>54</sup> Shirk, *China: Fragile Superpower*, 19.

<sup>55</sup> Chen and Wolf, ed. *China, the United States, and the Global Economy*, 35.

<sup>56</sup> *Ibid.*, 103.

<sup>57</sup> Shirk, *China: Fragile Superpower*, 19.

<sup>58</sup> Chen and Wolf, ed. *China, the United States, and the Global Economy*, 107.

## Sino-US Symbiotic Relationship

The interdependent economic relationship between China and the United States is one of great concern for many Americans. However, because of the symbiosis between the two countries' massive economies, there is a distinct incentive for both countries not to shake the relationship or politically stir things up.<sup>59</sup> Currently the United States is China's largest overseas market and is the "second largest source of its foreign direct investment."<sup>60</sup> With a high degree of openness to the world economy and foreign trade accounting for 75% of China's GDP, the functionality of China's economy is contingent on "other countries for its domestic prosperity and stability."<sup>61</sup> Keeping good political relations with key market countries such as the United States, Japan, and European countries is essential to preventing backlash and shutting China out of their markets.<sup>62</sup> Shutting down any of these key markets could be devastating for China's economy, causing an economic slowdown and raising domestic unemployment to hazardous levels.

As a country with over 1 billion people, 300 million Chinese remain desperately poor and only 300 million are considered middle class when measured against American middle class standards.<sup>63</sup> High unemployment, growing social unrest, and pervasive poverty have further fueled the demand for China to expand its economy.<sup>64</sup> According to one Senior Chinese official, political and business leaders are tasked with having to find jobs for 24 million people a year due to 10 million new workers entering the labor market

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<sup>59</sup> Shirk, *China: Fragile Superpower*, 25.

<sup>60</sup> Ibid.

<sup>61</sup> Shirk, *China: Fragile Superpower*, 24.

<sup>62</sup> Ibid.

<sup>63</sup> Peter Katel, "Emerging China: Can the United States successfully compete?," *The CQ Researcher* 15, no. 40 (2005): 959-60, <http://www.library.cqpress.com>.

<sup>64</sup> Ibid., 957.

annually.<sup>65</sup> At the time this article was written in 2005, China was only able to fulfill under half of that order, putting more pressure on China's leaders to expand the economy.<sup>66</sup> Because the United States is China's largest overseas market, China can ill afford to have the United States close its markets.

In 2013 China acted as one of America's main bankers, holding approximately \$1.6 trillion in "U.S. Treasury securities, U.S. agency debt, U.S. corporate debt, and U.S. equities," which was ranked second only to Japan.<sup>67</sup> The United States debt at the time, according to the Congressional Budget Office, was estimated at roughly \$16.7 trillion.<sup>68</sup> What has allowed China to purchase such a large amount of US debt is the manipulation of the system and keeping China's currency, the renminbi (RMB), artificially low by applying a fixed rate instead of pegging their value to the dollar.<sup>69</sup> The fixed rate of the RMB has provided comfort for foreign investors, protecting them from inflation and currency inflation.<sup>70</sup> With incentives such as a fixed currency and cheap labor, companies and industries are moving their jobs and factories to China where products can be produced "20 to 200 percent cheaper than their competitors."<sup>71</sup> This makes it exceedingly difficult for other countries to compete.

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<sup>65</sup> Katel, "Emerging China: Can the United States successfully compete?," 960.

<sup>66</sup> Ibid., 960.

<sup>67</sup> Wayne M. Morrison and Marc Labonte, "China's Holdings of U.S. Securities: Implications for the U.S. Economy," *Congressional Research Service*, <http://www.fas.org/sgp/crs/row/RL34314.pdf>.

<sup>68</sup> Jared Brewster, "Federal Debt and the Statutory Limit, June 2013," *Congressional Budget Office*, <http://www.cbo.gov/sites/default/files/cbofiles/attachments/44324-FederalDebt.pdf>.

<sup>69</sup> Jehangir S. Pocha, "Renminbi: Up, Where It Belongs," *New Perspectives Quarterly* 22, no. 4 (2005): 38, <http://search.ebscohost.com>.

<sup>70</sup> Ibid.

<sup>71</sup> Ibid.

While it is often argued that China has artificially set the value of the RMB low, approximately 8.3 RMB to the dollar, thereby making “China’s goods unbeatably priced to foreign buyers,” and contributing to the US trade deficit and hurting US manufacturing, consumers worldwide acknowledge that they have enjoyed a higher standard of living.<sup>72</sup> Any surplus gained by China can be attributed to its dominance in the market system and that system also allows “nations to maintain current account surpluses, as long as their surpluses...[are] recycled back into funding the US current account deficit.”<sup>73</sup> The purchasing of US T-bills (Treasury bonds) by China and other countries lends the money back to the United States so that the cycle can repeat itself over and over again.<sup>74</sup> Through keeping the demand of these securities high, China has kept the repayment interest rate low, which in turn has allowed the American consumer to enjoy relatively low interest rates.<sup>75</sup> Furthermore, the purchasing of foreign exchange holdings has proven necessary in order to stabilize the RMB and US T-bills provide the safest return on investment.<sup>76</sup>

Of the other benefits that result from the Sino-US symbiotic relationship is the movement of environmentally damaging businesses to China. The United States manufacturing industry is forced to adhere to environmental regulations that their Chinese competitors are not plagued with.<sup>77</sup> China has continuously failed to enforce internationally recognized labor and environmental standards, providing yet another

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<sup>72</sup> Katel, “Emerging China: Can the United States successfully compete?,” 963.

<sup>73</sup> Pocha, “Renminbi: Up, Where It Belongs,” 39.

<sup>74</sup> Ibid.

<sup>75</sup> Katel, “Emerging China: Can the United States successfully compete?,” 963.

<sup>76</sup> Shirk, *China: Fragile Superpower*, 27.

<sup>77</sup> Katel, “Emerging China: Can the United States successfully compete?,” 961.

advantage that allows for quicker and cheaper production.<sup>78</sup> Evidence of China ignoring factory pollution control standards can be observed in the haze over Los Angeles, which according to the Environmental Protection Administration, 25% can be attributed to China.<sup>79</sup> While the loss of American jobs is a negative repercussion of moving hazardous industries from United States soil, the positive side is that there is a reduction in environmentally hazardous industries and less pollution in the United States.

## The Constraints of the Sino-US Economic Relationship: RMB, Labor and Trade Practices, and Environmental

### RMB

Some Americans perceive the economic relationship between China and the United States in a negative light and view China's economic rise as a national security threat. Over the last 10 years China's semi-capitalist system has grown at an average GDP rate of 9% a year, eclipsing the United States 3.3% over that same time period.<sup>80</sup> It is important to remember that a developing country, such as China, is expected to benefit and grow more quickly than a country that is already developed and established. At some point in the future China's growth is expected to slow and plateau. While a symbiotic relationship exists between the two giant economies, many in the United States are concerned about the consequences of that relationship and how that affects businesses in the United States.

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<sup>78</sup> Katel, "Emerging China: Can the United States successfully compete?," 961.

<sup>79</sup> Ibid.

<sup>80</sup> Ibid., 962.

One of the major concerns that some top level officials are troubled with is the United States dependency on China to finance our budget deficit.<sup>81</sup> United States overspending and lack of saving, by both the government and consumer, have cast the United States into its current situation. United States profligacy has allowed countries such as China to take advantage of these circumstances and become enablers of United States overspending by allowing the United States to “rack up huge budget deficits without raising interest rates that would hurt [US] consumer spending.”<sup>82</sup> Due to the United States need for China to continue to buy up US debt through T-bills and other dollar assets, the United States has handcuffed itself and is constrained in utilizing its other instruments of power to coerce China to make changes to some of its policies.

An example of one constraint is the United States inability to force China to raise the value of the RMB or force China to allow its currency to float on the world currency market. According to Carolyn Bartholemew, a member of the US-China Economic and Security Review commission, China is “not playing by the rules,” echoing the concern of the American business sector.<sup>83</sup> Suppressing currency or keeping the value of currency artificially low is a “form of government subsidy prohibited under WTO rules.”<sup>84</sup> The low labor costs and unethical trade practices in conjunction with an artificially low currency and the dismissal of environmental standards have allowed China to put out a product at an unbeatable price that has not only affected United States manufacturers in a negative way, but also “factories and workshops from Mexico to Africa and South

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<sup>81</sup> Shirk, *China: Fragile Superpower*, 26.

<sup>82</sup> Shirk, *China: Fragile Superpower*, 27.

<sup>83</sup> Katel, “Emerging China: Can the United States successfully compete?,” 960.

<sup>84</sup> *Ibid.*, 960.

Asia,”<sup>85</sup> and other countries around the world. While the United States has put pressure on China to reevaluate the RMB or let the RMB float by threatening to take China before the WTO, a conundrum persists that is twofold.

First, while China’s leaders have attempted to accommodate United States interests by slightly increasing the value of the RMB from 8.3 to 8.1 against the dollar, and allowing the RMB to float within 0.3 percent in either direction,<sup>86</sup> China’s leaders fear that any extensive rise in value of the RMB could be detrimental and further widen the gap between China’s rich and poor. Other subsequent effects from raising the RMB or allowing the currency to float on the world currency market include the loss of “exports, slowing of growth...[an increase] in unemployment, and risking unrest.”<sup>87</sup> While the central bankers of China would like to see the RMB float because it would allow them to “manage the macroeconomy without one hand tied behind their backs,”<sup>88</sup> China’s political leaders don’t want to risk sending their economy into a tailspin in order to accommodate the United States.

The second issue is that a significant increase in the RMB would result in higher prices for the United States consumer. As prices in China rise, other competitors within the same industry would better be able to compete with China’s products. While this could lead to a resurgence in United States manufacturing in some industries, the Oxford Economic Forecasting model predicts that raising the RMB won’t have too much of an impact on the Sino-US bilateral trade deficit because China still exports more products to

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<sup>85</sup> Katel, “Emerging China: Can the United States successfully compete?,” 959-60.

<sup>86</sup> *Ibid.*, 963.

<sup>87</sup> Shirk, *China: Fragile Superpower*, 27.

<sup>88</sup> *Ibid.*, 27.

the United States than the US exports to China.<sup>89</sup> With its global trade surplus, China purchases more than it sells to its Asian neighbors and the rest of the world excluding the United States.<sup>90</sup> While it is unlikely that China's leaders in the near future will allow the RMB to float due to the turmoil it would cause within its own country, the repercussions of China allowing the RMB to float could be equally devastating to the US budget crisis. By allowing the RMB to float, China would "no longer be forced to risk inflation by accumulating dollar assets to keep the...[RMB's] value" stable.<sup>91</sup> Instead of reinvesting some of its surplus into the United States economy, China could select to reinvest its earnings within the country instead of abroad. If China were to stop reinvesting in the United States, dire consequences would be the result for the United States economy.

The Sino-US symbiotic relationship and China's attempts to limit the value of the RMB has its share of risks and benefits. As stated previously, China's purchasing of United States debt has kept interest rates low and has ultimately led to a better quality of life for Americans as well as those in other countries. While bilateral trade between the United States and China weighs heavily in China's favor, Americans benefit from a consumer standpoint being able to consume goods at a low price. The downside to this aspect of the relationship is the reduction of jobs in the United States. Other concerns expressed by some United States policymakers include the fear of China's large and growing holdings of U.S. securities posing a risk to the United States economy,

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<sup>89</sup> Erik Britton and Christopher T. Mark, Sr., "The China Effect: Assessing the impact on the US economy of trade and investment with China," *The China Business Review* 33, no. 2 (2006): 43, <http://search.proquest.com>.

<sup>90</sup> Shirk, *China: Fragile Superpower*, 27.

<sup>91</sup> *Ibid.*, 27.

especially if China elects to divest large amounts of its holdings.<sup>92</sup> Another concern argued is that China's holding of large amounts of debt gives China "leverage over the United States on economic and noneconomic issues."<sup>93</sup> On the other hand, it can be argued that China's large holdings of US securities gives the country very little leverage, since selling off large amounts of US securities would diminish the value of its other foreign exchange holdings and negatively impact their own economy.<sup>94</sup>

## Labor and Trade Practices

Another constraint caused by the Sino-US economic relationship is the United States' inability to affect China's labor and human rights practices, and unethical trade practices. Despite the fact that China may surpass the United States in terms of world GDP in the future, Chinese workers won't surpass United States workers in terms of income per capita anytime soon. As a share of GDP, Chinese worker's wages have fallen from 53 percent of GDP in 1992 to less than 40 percent in 2006<sup>95</sup> and the average manufacturing wage was equal to 60 US cents.<sup>96</sup> As previously stated, unemployment and the discrepancies in economic equality-levels are rising due to corruption and malfeasance. In many factories and mines the working conditions are abysmal and there is significant evidence that China is systematically violating workers' human rights according to Human Rights Watch and Amnesty International.<sup>97</sup> With such a high demand for jobs, it is easy to replace workers if there are disagreements about pay or

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<sup>92</sup> Morrison and Labonte, "China's Holdings of U.S. Securities: Implications for the U.S. Economy."

<sup>93</sup> Ibid.

<sup>94</sup> Ibid.

<sup>95</sup> Martin Hart-Landsberg, "The U.S. Economy and China: Capitalism, Class, and Crisis," *An Independent Socialist Magazine* 61, no. 9 (2010): 22-23, <http://search.ebscohost.com>.

<sup>96</sup> Ibid., 21.

<sup>97</sup> Katel, "Emerging China: Can the United States successfully compete?," 961.

working conditions. According to the Fair Labor Association, there have been serious issues surrounding the veracity of reporting work hours and overtime pay in factories.<sup>98</sup> The ability to force such low wages on workers is due in part to China's labor policies which were "designed to attract foreign investment and boost export competitiveness."<sup>99</sup> In many factories, managers have been coached on falsifying work records to disguise unpaid overtime.<sup>100</sup> While the United States has had labor disputes with China over unfair wages and human rights, many actions with regards to monitoring unacceptable conditions usually result in factories losing large contracts and having to layoff workers.<sup>101</sup> The reduction of jobs only creates a more difficult economic environment and tends to be detrimental to the employees that need the wages.<sup>102</sup> Since becoming a member of the WTO in 2001 and gaining normal trade status with the United States, much of the leverage that the United States once held with respect to reviewing human rights conditions has been lost.<sup>103</sup> If wages of Chinese workers were to rise, the American consumer would also see a rise in the prices of products.

With regards to unethical trade practices, Chinese companies have further hurt industries in the United States through counterfeiting and piracy. Many marquee American companies have lost profits due to a lax enforcement of intellectual property rights to include "widespread piracy of medicines, DVDs, CDs, and brand-name products."<sup>104</sup> While the United States has urged the Chinese government to crackdown

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<sup>98</sup> David D. Schein, "Fair Labor Association," *Encyclopedia of Business Ethics and Society* (Thousand Oaks, CA: Sage Publications Inc., (2008), 853, <http://go.galegroup.com.proxy3.library.jhu.edu>.

<sup>99</sup> Hart-Landsberg, "The U.S. Economy and China: Capitalism, Class, and Crisis," 21.

<sup>100</sup> Schein, "Fair Labor Association," 853.

<sup>101</sup> *Ibid.*

<sup>102</sup> *Ibid.*

<sup>103</sup> Katel, "Emerging China: Can the United States successfully compete?," 970.

<sup>104</sup> Shirk, *China: Fragile Superpower*, 26.

on illegal trade practices,<sup>105</sup> little has been done in terms of enforcement. Many of the intellectual property laws passed in Beijing are not regularly enforced and in many cases local officials are in cahoots with the counterfeiters.<sup>106</sup>

## Environmental

As stated earlier, much of the pollution created in China can be seen in the haze over Los Angeles. Since many companies and industries from all over the world are moving manufacturing, production, and assembly plants to China because of their lax environmental standards, as well as cheap labor, China has become the world's largest greenhouse gas emitter.<sup>107</sup> According to the World Health Organization, 656,000 people are killed annually due to air pollution and another 95,600 due to water pollution, and many more suffer from respiratory and other diseases that can be attributed to poor environmental standards.<sup>108</sup> According to a study published by *Proceedings of the National Academy of Sciences*, air pollution emissions attributed to Chinese manufacturing, production, and assembly plants has "resulted in one extra day or more of noncompliance with the US ozone standard in 2006 over the Los Angeles area and many regions in the eastern United States."<sup>109</sup>

Furthermore, China's preoccupation with expanding the economy and creating jobs has led to neglected agricultural needs. The North China Plain, which stretches from Shanghai to well north of Beijing and is an area that produces half of the country's wheat

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<sup>105</sup> Katel, "Emerging China: Can the United States successfully compete?," 961.

<sup>106</sup> Shirk, *China: Fragile Superpower*, 26.

<sup>107</sup> Salvatore Babones, "The Middling Kingdom," *Foreign Affairs* 90, no. 5 (2011): 83, <http://search.ebscohost.com>.

<sup>108</sup> *Ibid.*

<sup>109</sup> Jintai Lin and others, "China's international trade and air pollution in the United States," *Proceeding of the National Academy of Sciences* 111, no. 5 (2014): 1736, <http://www.pnas.org/content/111/5/1736>.

and a third of its corn, has seen decreasing rainfall due to climate change and depleted water aquifers.<sup>110</sup> As an increasing number of young people continue to move from rural China to the cities to avoid pollution created by Chinese industrialists who have focused on building in the countryside due to lax labor and environmental law enforcement,<sup>111</sup> a growing amount of water is being diverted from farmers to the cities.<sup>112</sup> This mass exodus to the cities by young people has forced China to build dams in the mountainous southwest in order to expand irrigated areas and offset some of the water losses elsewhere.<sup>113</sup> Consequences as a result of building dams includes the displacement of human inhabitants, the flooding of “some habitats...[the reduction of] water flow to others, and...[alterations to] weather patterns.”<sup>114</sup> In addition to taking a toll on plant and animal life, the building of dams, such as the Three Gorges Dam, imperils fish populations downstream where there are dense human populations and fishing is a staple of life.<sup>115</sup> As water scarcity increases, China will turn to the rivers in the Himalayas where neighboring countries including India, Nepal, Bhutan, and Pakistan are engaged in a ‘water grab’ and tensions are high.<sup>116</sup>

Linked to China’s water scarcity is the threat of a food shortage. As a country that is already “struggling to contain food price inflation,”<sup>117</sup> the yearly dust bowls that China

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<sup>110</sup> Lester R. Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse* (New York: W. W. Norton & Company, 2011), 26.

<sup>111</sup> Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse*, 81.

<sup>112</sup> *Ibid.*, 27.

<sup>113</sup> *Ibid.*

<sup>114</sup> Mara Hvistendahl, “China’s Three Gorges Dam: An Environmental Catastrophe?,” *Scientific America*, March 25, 2008, <http://www.scientificamerican.com/article/chinas-three-gorges-dam-disaster/>.

<sup>115</sup> *Ibid.*

<sup>116</sup> John Vidal, “China and India ‘water grab’ dams put ecology of Himalayas in danger,” *The Guardian*, August 10, 2013, <http://www.theguardian.com/global-development/2013/aug/10/china-india-water-grab-dams-himalayas-danger?commentpage=1>.

<sup>117</sup> Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse*, 54.

faces is removing important top soil that is needed for planting crops.<sup>118</sup> After economic reforms in 1978, China shifted farming responsibility from large state-organized production to individual family farms.<sup>119</sup> The shift in farming responsibility has led to a dramatic increase in raising livestock which in turn has led to overgrazing. The stripping of vegetation due to overgrazing has led to reduced agricultural fields and has prolonged dust bowl seasons leading to the expansion of deserts.<sup>120</sup> The reduction of agricultural lands has forced China to begin importing food and lease land in other countries for the purposes of growing crops.<sup>121</sup> Implications for the United States that could emerge as a result of China not being able to feed its people and China purchasing US debt include forcing the United States to share some of their grain harvest.<sup>122</sup> For China, the growing possibility of food and water scarcity threatens China's social and political stability, as well as its ability to expand its economy.<sup>123</sup>

The United States, as well as the international community, have taken notice and are working to “assist in the process of developing China’s approach to environmental protection” and shape the evolution of China’s future.<sup>124</sup> The United States has a strong environmental enforcement apparatus and has a history of public participation in environmental protection practices.<sup>125</sup> The environmental and ecological issues that China faces present the United States with a nonthreatening vehicle to advance United States interests in China and undoubtedly creates an opening for “US multinationals and

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<sup>118</sup> Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse*, 35.

<sup>119</sup> *Ibid.*, 38.

<sup>120</sup> *Ibid.*, 78.

<sup>121</sup> *Ibid.*, 67.

<sup>122</sup> *Ibid.*, 54-55.

<sup>123</sup> *Ibid.*, 13.

<sup>124</sup> Elizabeth C. Economy, *The River Runs Black: The Environmental Challenge to China's Future*, 2<sup>nd</sup> ed. (Ithaca & London: Cornell University Press, 2010), <http://books.google.com/books>.

<sup>125</sup> *Ibid.*

venture capitalists...seeking opportunities in China in the fields of clean energy and environmental technologies.”<sup>126</sup> The challenge for the United States is getting China’s political and industrial leaders onboard because implementing new policies could result in an economic slowdown and concerns regarding full employment continue to weigh heavily on the country’s leaders.<sup>127</sup>

## Constraints Due to Competition for Resources

Now that China has become an industrialized nation and an automotive society, China has cast its “entry into the global competition for Earth’s limited energy supplies.”<sup>128</sup> Due to its expanding economy, China has driven up world commodity prices on materials such as “metals, minerals, and other raw materials.”<sup>129</sup> All the petroleum that China had needed up until the mid-1990s had been produced in-country.<sup>130</sup> Now that China is the second-largest petroleum consumer, at 6.5 million barrels per day in 2004, China is moving outside the country to fulfill their petroleum needs, driving oil prices above \$60 a barrel.<sup>131</sup> China currently believes that the majority of the more reputable energy supplying countries such as Canada, Mexico, and Saudi Arabia have been claimed by the United States, Japan, and various European countries.<sup>132</sup> Under that logic China has turned to less reputable countries such as “Sudan, Venezuela, Iran, and Burma,”

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<sup>126</sup> Economy, *The River Runs Black: The Environmental Challenge to China’s Future*.

<sup>127</sup> Kenneth Rapoza, “China’s Weak Environmental Laws Won’t Last Forever,” *Forbes*, February 23, 2012, <http://www.forbes.com/sites/kenrapoza/2012/02/23/chinas-weak-environmental-laws-wont-lastforever/>.

<sup>128</sup> Katel, “Emerging China: Can the United States successfully compete?,” 961.

<sup>129</sup> Shirk, *China: Fragile Superpower*, 22.

<sup>130</sup> Katel, “Emerging China: Can the United States successfully compete?,” 961.

<sup>131</sup> Shirk, *China: Fragile Superpower*, 23.

<sup>132</sup> *Ibid.*

thereby undercutting the efforts of the United States and its allies to use “boycotts and other economic levers to force these countries to improve human rights.”<sup>133</sup>

While China’s efforts to acquire resources in order to continue its economic expansion add to the friction between Sino-US relations and creates more problems for the United States in attempting to turn China into a responsible world power, the United States must realize that China’s thirst for resources comes from its expanding economy. Although the efforts of the United States and its allies are sometimes rendered ineffective when dealing with China being opportunistic when sanctions and boycotts are in place against rogue or less reputable states, the United States does have some power in managing how much China deals with rogue or less reputable nations.<sup>134</sup> China is often stymied in East Asia because of the US-led coalition of regional states and is often forced to move outside of the region to fulfill its resource needs.<sup>135</sup> If the United States were to ease some of its containment policies in the region, in order to purchase China’s good behavior, the United States might be able to effectively continue with sanctions and boycotts against rogue or less reputable nations.<sup>136</sup>

## Lack of Trust in China

One aspect that should not be overlooked is the reputation that China holds with regards to the international community. The United States has “won over, however begrudgingly, the international community” and wields powers of “influence, persuasion,

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<sup>133</sup> Shirk, *China: Fragile Superpower*, 23-24.

<sup>134</sup> Max Fisher, “Can the U.S. Turn China Into a Responsible Global Player?,” *The Atlantic*, Jan 18, 2011, <http://www.theatlantic.com>.

<sup>135</sup> *Ibid.*

<sup>136</sup> *Ibid.*

and leadership on the international stage that that no other state comes close to.”<sup>137</sup> It is this international legitimacy fueled by a global coalition of the willing that will aid in continuing to propel the United States to the forefront of economic leadership and it is only until state allegiances to the United States breakdown will China potentially have an opportunity to direct the world economy.<sup>138</sup>

China on the other hand has done little to win over any allies and has often found itself in contention with a number of regional neighbors over geopolitical issues. In their never ending quest for resources, China has strained relationships in the region. As noted earlier in the environmental section of this paper, the unilateral decision to build dams in rivers that originate in China and flow to neighboring states facing water scarcity issues, such as India, Nepal, and Bangladesh, has raised regional tensions. Adding to the tension is China’s on-going Himalayan border territorial dispute with India that stems from the 1962 border war.<sup>139</sup>

In addition to causing discomfort to their neighbors to the south, territorial claims by China is also raising tensions to nearby east and southeastern states. While current relations with Taiwan are relatively stable, issues regarding Taiwan joining mainland China arise periodically as China’s impatience grows and Taiwan’s leaders wrestle with claiming independence.<sup>140</sup> Further fueling rising tensions in the East China Sea are

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<sup>137</sup> Thomas White, “Why U.S. Hegemony Is Here to Stay,” *The Huffington Post*, November 12, 2013, [http://www.huffingtonpost.com/thomas-white/why-us-hegemony-is-here-t\\_b\\_4258264.html](http://www.huffingtonpost.com/thomas-white/why-us-hegemony-is-here-t_b_4258264.html).

<sup>138</sup> Ibid.

<sup>139</sup> Brian Spegele, “China Plays Down Border Dispute with India,” *The Wall Street Journal*, February 24, 2014, <http://online.wsj.com/news/articles/SB10001424052702304610404579402833047196794>.

<sup>140</sup> Michal Roberge and Youkyung Lee, “China-Taiwan Relations,” *Council on Foreign Relations*, <http://www.cfr.org/china/china-taiwan-relations/p9223>.

disputes between China, Taiwan, and Japan over who owns the Senkaku Islands.<sup>141</sup> In the South China Sea, China has attempted to lay claim to roughly 90 percent of the region to include the Paracel Islands, Spratly Islands, and Scarborough Shoal.<sup>142</sup> However, both the Philippines and Vietnam are also laying claim the Paracel and Spratly Islands and states such as Malaysia and Brunei are vying for their share of maritime control.<sup>143</sup> In addition to laying claim to the Paracel and Spratly Islands, the Philippines has laid claim to the Scarborough Shoal.<sup>144</sup>

In addition to stirring up regional tensions and striking fear into smaller neighboring states, the international community has often been dissatisfied with how China has conducted itself in relation to both domestic and international issues. With regards to international issues, China has often sat on the periphery of the international decision making process and has cavorted with questionable allies such as North Korea and other states that the United States and its allies have placed sanctions and boycotts against.<sup>145</sup> One recent example of China failing to act was when the international community was creating a UN resolution condemning the brutal oppression of President Bashar al-Assad in Syria.<sup>146</sup> Instead of disavowing President al-Assad's actions, China held up the UN resolution and selected to remain on the sideline arguing that the conflict was part of Syria's internal affairs.<sup>147</sup> From a domestic standpoint, many of the concerns that the international community has with how China conducts itself domestically have

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<sup>141</sup> *Council on Foreign Relations: China's Maritime Disputes*, on-line video, produced by Jeremy Sherlick ( New York: Carnegie Corporation, 2013).

<sup>142</sup> *Ibid.*

<sup>143</sup> *Ibid.*

<sup>144</sup> *Ibid.*

<sup>145</sup> White, "Why U.S. Hegemony Is Here to Stay."

<sup>146</sup> *Ibid.*

<sup>147</sup> Holly Yan, "Syria allies: Why Russia, Iran and China are standing by the regime," *CNN*, <http://www.cnn.com/2013/08/29/world/meast/syria-iran-china-russia-supporters/>.

already been stated above. Such concerns include China not following WTO regulations and currency manipulation, unfair trade practices, human rights and labor practice issues, restrictions on religious freedom, lack of democratic values, and many more. For China to supplant the United States as a country that will direct the world economy, China will have to readdress its approach on how to handle domestic, regional, and international issues, prove to the world that China is capable of leading, and improve its reputation.

## The Relative Decline of the US Economic Instruments of Power and Rise of China as an Economic Superpower

Upon review of the literature on the Sino-US symbiotic economic relationship and the constraints of that relationship, it appears that the Sino-US economic ties and deepening interdependence will continue to constrain and erode United States economic power for the coming two to three decades despite the United States making strides towards more effective budget spending and returning to living within its means. While predictive GDP economic scales and models reveal that China will surpass the United States by 2039, thus cutting into the United States 20.3 percent global GDP, China's economic rise will not be enough to replace the United States as driver of the global economy. The lack of prestige and trust that surrounds China, as well as the frailty of its economy and political instability, will continue to hinder the country and cause many to question the country's overall stability.

During the freer trade era, the United States is currently the only country that has surpassed and replaced the previous economic superpower. China's economic growth comes at a different time and under different circumstances, including the current economic superpower still standing. Using the information throughout this paper, an

effort will be made to compare and contrast the economic rise of the two countries and take into consideration the symbiotic relationship in order to determine how US economic instruments of power may be constrained as China's economy maintains its rise.

It is no surprise that the United States is in a state of economic decline and China is on the rise. After reviewing different articles, economic predictive scales, and current trends, almost every study unanimously predicts that China will surpass the United States as the economic superpower in the coming two to three decades. However, few of the articles attempt to predict the repercussions or consequences of China's rise to surpass the United States and how that affects the US economic instruments of power. This paper concedes that China will surpass the United States, but will not become a dominant leader on the world stage; however the US economic instrument of power will be weakened.

The economic rise of China is developing under different circumstances than the United States economic rise. The United States rise as the economic superpower came in the midst of reconstruction after WWII, in which many of the assembly and manufacturing industries in Europe had been destroyed during the war. Because European countries and Japan were in the midst of recovery, the United States had the strongest economy and was the only country with the ability to produce goods and aid in the reconstruction after the war. This allowed the United States to pick up the mantle of leadership from the British and establish "international systems and institutions"<sup>148</sup> that would allow the United States to become the "world's banker, the guardian of

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<sup>148</sup> Subramanian, "The Inevitable Superpower: Why China's Dominance is a Sure Thing," 70.

international monetary stability, and the open market of last resort, thereby facilitating the international movement of goods, capital, technology, and people.”<sup>149</sup>

China on the other hand had been aloof from the rest of the world because of its closed door policy and remained a backwards state until Deng Xiaoping rolled out the red carpet for foreign investors. Although China arrived late to the game, the opening of China’s markets and joining the WTO in 2001, revealed the need for change within the country to accommodate rapid influx of employment needs. As a result of China pegging the RMB to the dollar and having lax labor and environmental regulations, China has been able to rapidly expand its economy and beat the competition’s prices.

In many ways China is doing for the United States, what the United States did for the European countries after WWII. The tragic events of the 9/11 terrorist attacks led to two simultaneous wars and high levels of defense spending, despite “a weak dollar and record current account and fiscal deficits.”<sup>150</sup> Although China is not reinventing the wheel as the United States re-organized the economic system after WWII, they are now one of the primary creditors to the United States and facilitate much of the international movement of goods. Through the purchases of T-bills, countries such as China have recycled money back into the United States economy, needing it to succeed in order to supplement their own economic growth. The difference in circumstances is that the United States is still considered one of the strongest economies, although the United States economy is in relative decline, and China will have to compete with that

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<sup>149</sup> Mastanduno, “Rivals or Partners? Globalization and US-China Relations,” 45.

<sup>150</sup> *Ibid.*, 46.

superpower. One other difference is the now interdependent relationship that requires both countries to economically succeed for the other to survive.

While many are concerned about China becoming an economic superpower, equal concern needs to be given as to whether or not China can maintain its growth. The research in this paper has shown the consequences of this interdependent relationship and for the United States, the collapse of China's economy could be equally detrimental for the health of the United States economy. Despite its booming economic expansion, China still faces a multitude of inner-country problems such as a growing unemployment rate, an aging labor force, a widening gap between the rich and poor, environmental concerns, health issues, and eventually removing the peg from the RMB. As time progresses, China's political leaders will need to address these issues, and this will inevitably result in a reduction in economic growth. These internal issues will hinder China from gaining further ground past the economic juncture on the world stage for two reasons. First, China may need to put its aspirations of projecting its power internationally on the backburner in order to address domestic challenges.<sup>151</sup> Second, for a relatively poor country such as China to command respect, inspire followers, and have influence abroad, it needs to have "soft power, such as democracy, an open society, or pluralistic values."<sup>152</sup> China's poor business and trade practices, as well as the treatment of its people do not reflect the values of a leader worth following, and its political and social instability remain questionable.

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<sup>151</sup> Subramanian, "The Inevitable Superpower: Why China's Dominance is a Sure Thing," 69.

<sup>152</sup> Ibid.

Being in debt to China provides little wiggle room for the United States to implement its economic instruments of power to address improving human rights practices, and granting individual and religious freedoms,<sup>153</sup> as well as revising labor practices and environmental regulations. While United States political discourse is moving towards protectionism, knowing that the United States is one of China's main markets, China is viewing the United States requests for change as an infringement of its state sovereignty.<sup>154</sup> The prodding by the United States has at times revealed thin veiled warnings of casting the world economy into turmoil by selling off chunks of US holdings if provoked.<sup>155</sup> While China's economy would most certainly suffer the loss of the US markets, it is unclear whether China would be willing to cast the world, as well as its own country into economic turmoil.

With regards to China seeking resources, the United States needs to realize that China is expanding its global reach to keep the economic machine humming. While the United States at times has criticized China for openly undercutting US sanction and boycott efforts by conducting business with these countries, the United States either needs to make room for China or China will take what it needs in order to expand its economy. United States economic power will continue to erode for the foreseeable future but in return the United States will continue to expand its economy.

Although the US economic instruments of power may continue to erode due to the Sino-US economic relationship, this paper has also illustrated the United States' need for China's economy to succeed. When China opened its doors to the world market, it

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<sup>153</sup> Mastanduno, "Rivals or Partners? Globalization and US-China Relations," 46.

<sup>154</sup> Ibid.

<sup>155</sup> Ibid.

was expected that their economy would grow at a quicker rate than the US economy since China would have the most to gain from this economic trade relationship. As trade between the two major economies commenced, Americans began to enjoy a higher quality of life and China's economy began growing at an unprecedented rate. As stated at the beginning of this paper, economic competition between countries is not a zero-sum game, and therefore both countries will continue to grow richer through trade, despite one country surpassing another on an economic scale. As a result of trading with China, the United States was forced to balance the erosion of economic power with growing the United States economy. For the United States to regain some control of its economic instruments of power, especially when leveraging its power against China or less reputable countries that are trading with China, the United States needs to consider ways to revise its spending budget and reduce its deficit with China.

## Conclusion

The conclusion of this paper recognizes that China will supersede the United States in terms of global GDP and eventually cut into the US global share. This does not mean that United States income will fall, but it does mean that those earnings will account for a smaller piece of the world's economic pie.<sup>156</sup> While China's piece of the world economic pie will be larger than the United States, China will not displace the United States as the driver of the world economy. The lack of trust and prestige held by China is great, and concerns surrounding its political stability and social unrest will continue to plague China past 2039. While opening the floodgates and allowing China to

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<sup>156</sup> Katel, "Emerging China: Can the United States successfully compete?," 962.

enter the global economy has constricted and eroded US economic power within China and the corrupt countries that China deals with, the best solution for the United States will be to manage these dealings as much as possible. While the symbiotic relationship between China and the United States presents quite the conundrum for the United States, it would be prudent to begin assessing how to relieve the debt held by China. In the end, their economic collapse could also be ours.

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# **How China's Military Technological Advancements Affect the United States Ability to Aid Taiwan**

## **Introduction**

Since the outbreak of the Korean War in 1950, the United States has stood between China and Taiwan. Although United States involvement between China and Taiwan was originally seen as a short term buffering zone to stop the spread of communism, United States relations with Taiwan have expanded despite a signed joint communiqué in 1979 that reasserted the United States recognition of China and Taiwan as one.<sup>157</sup> With the signing of the Taiwan Relations Act, just months after the joint communiqué, the United States affirmed support for the democratic system of the island and promised to “ensure that Taiwan’s democratic status not be altered by outside force.”<sup>158</sup> According to China, the Taiwan Relations Act violated or stretched the agreement of the joint communiqué. This is the crux of the intermittent friction between China and the United States, and is one of the driving forces behind China’s quest to gain military technological advancements.<sup>159</sup> Since the United States naval deployment to the strait during the 1996 Taiwan Strait conflict, China has accelerated its strive for military modernity in order to balance and deter the United States and its allies.

This paper assesses how China’s military technological advancements since the mid-1990s have affected the United States ability to intervene in a Chinese invasion of Taiwan. Through existing literature, this paper will examine the capabilities and

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<sup>157</sup> Michal Roberge and Youkyung Lee, “China-Taiwan Relations,” *Council on Foreign Relations*, (2009): <http://www.cfr.org/china/china-taiwan-relations/p9223>.

<sup>158</sup> *Taiwan Relations Act*, 1979, <http://www.cfr.org/taiwan/taiwan-relations-act/p8454>.

<sup>159</sup> Ronald O’Rourke, “China Naval Modernization: Implications for U.S. Navy Capabilities-Background and Issues for Congress,” *Congressional Research Service* (2011): 3.

implications of Chinese military advancements in the three areas mentioned above, and how these factors constrain the United States ability to project power in littoral and blue water areas, and forward deployed bases in the region. Littoral, blue water, and forward deployed bases represent the different components of the United States ability to aid Taiwan and how China is attempting to constrain areas of US power projection. Using the 1996 Taiwan Strait conflict as a case study, the paper will explain the outcome of the crisis and how Chinese military advancements may dictate a different outcome today, in which the United States would not be able to preside or aid Taiwan during a cross-strait crisis. Based on the technological advancements that China's military has made since the mid-1990s, this paper assesses three hypothetical scenarios to illustrate the possible outcomes of a future crisis and how China's military technological advancements may constrain US forces. The reason for implementing hypothetical scenarios is that no events of heightened tension have escalated to a point that is equal to the 1996 Taiwan Strait crisis and history has revealed no existing cases through which to ascertain the possible effects of China's changed military capabilities. The conclusion of this paper recognizes the success of past US interventions but argues that China's military advancements may deter future US military involvement resulting in a need for more robust dialogue and diplomacy.

In 1996, a cross-strait conflict between China and Taiwan erupted when Taiwan sought to increase its claims of independence by holding its first presidential election.<sup>160</sup> During the crisis, China deployed 150,000 troops to the Fujian Province bordering the strait, conducted live-fire missile tests close to Taiwan's two most important seaports,

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<sup>160</sup> Chen Qimao, "The Taiwan Strait: Its Crux and Solutions," *Asian Survey* 36, no. 11 (1996): 1055.

and performed live-ammunition amphibious landing exercises to intimidate Taiwan.<sup>161</sup> Claiming that China had been “‘reckless’ and ‘provocative,’”<sup>162</sup> the United States deployed two aircraft carrier battle groups to areas near Taiwan to monitor the situation. Although China had declared that their intentions were to intimidate Taiwan and warned the United States not to intervene, and that no actual invasion or attack was planned, the United States deployed its forces because of lack of trust and miscommunication.<sup>163</sup> At the request not to intervene by the Chinese government, the United States continued to advance toward Taiwan, perceiving China’s conventional missiles as being “‘militarily irrelevant spook weapons” because of their inability to target movers and a high circular error of probability.<sup>164</sup>

With a military that dwarfs the United States in sheer numbers, China’s likelihood to equip the entirety of its forces with the most up to date technology that could rival the United States is unrealistic. Despite drastic economic growth over the past two decades,<sup>165</sup> the cost of equipping all facets of China’s military with modern technology would be a hefty expenditure that China could ill afford. At the close of the Cold War, China perceived the influence of superpowers as diminishing,<sup>166</sup> leading to a multi-polar world. Both the cost of developing a technologically advanced military and realizing that future wars between major powers would most likely occur on a regional scale<sup>167</sup>, in addition to studying the United States display of technology during the Gulf War, gave

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<sup>161</sup> Qimao, “The Taiwan Strait: Its Crux and Solutions,” 1055.

<sup>162</sup> Ibid.

<sup>163</sup> Andrew Scobell, “Show of Force: The PLA and the 1995-1996 Taiwan Strait Crisis,” 16.

<sup>164</sup> Vitaliy O. Pradun, “From Bottle Rockets to Lightening Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” *Naval War College Review* 64, no. 2 (2011): 9.

<sup>165</sup> Robert J. Art, “The United States and the Rise of China: Implications for the Long Haul,” *Political Science Quarterly* 125, no. 3 (2010): 359.

<sup>166</sup> Kenneth S. Fu, “China’s Modernizing Military: Credible Conventional Threat to Taiwan?,” (MA thesis., United States Military Academy, West Point, 1990), 11.

<sup>167</sup> Ibid.

way to China attempting to develop what might be perceived as a western military. This smaller force would be more maneuverable and equipped with high-tech gadgets that would pack precision, accuracy, and lethality. Thus, China had selected to “focus in on areas where it can immediately improve [its] military”<sup>168</sup> capabilities, centering its efforts on developing technology that maximizes China’s relative strengths, while exploiting adversarial weaknesses.<sup>169</sup> Although China has made vast technological improvements in all facets of their military, advancements in three areas, C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance), the ability to attack an adversary’s C4ISR network, and strategic missile forces will have the greatest affect on constraining US capabilities to aid Taiwan.

## Methodology

This paper uses counterfactual arguments to assess China’s military technological advancements and how they constrain US forces. As stated above, the basis of this paper is existing literature on the topic of China’s military technological advancements since the mid-1990s. To depict the advancements in military technology, it is necessary to illustrate the posture of China’s military prior to the acquisition of advanced military technology. While information on the status of China’s military preceding the 1996 Taiwan Strait crisis is limited and vague, this paper attempts to re-construct a Chinese military prior to gaining advanced military technology.

After illustrating how China’s military was equipped prior to the mid-1990s, the research then shifts focus to military technological advancements that China made,

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<sup>168</sup> Fu, “China’s Modernizing Military: Credible Conventional Threat to Taiwan?,” 68.

<sup>169</sup> Roger Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, Santa Monica, CA: RAND Corp. (2007): XV.

specifically to disrupt the United States ability to aid Taiwan in a future conflict.

Research demonstrates that China has made strides to improve all aspects of its military, but specifically sought advancements in three areas: strategic missiles, C4ISR, and the ability to attack an adversary's C4ISR network. After evaluating why China selected to focus on those military core competencies, this paper explains how technological advancements in these areas constrain United States power projection.

To test the theory that China's advancements in military technology would constrain the United States ability to aid Taiwan in a cross-strait conflict, it is necessary to create counterfactual arguments. Since there has not been an event equivalent to the 1996 cross-strait conflict, it would be difficult to assess the utilization of these advanced technologies and how they constrain US forces. Using the 1996 conflict as a baseline for creating a hypothetical scenario, this paper examines three plausible scenarios based on how US forces would be constrained if China had more technological advancements in strategic missiles, C4ISR, and attack C4ISR. The first of these scenarios will illustrate how China will utilize its military technological assets to reduce US capabilities and prevent US forces from intervening in a cross-strait conflict. In the second scenario, China demonstrates the seriousness of the situation by launching a missile to the perimeter of the theater of operations, forcing US naval assets to operate further from the locus of conflict. And the last scenario illustrates the plausible courses of action that the United States could take in the event that China's military successfully deterred US military involvement.

## Defining Terminology

It has been more than 30 years since the joint communiqué and China has remained undeterred from its goal of reunifying Taiwan with the mainland. While past attempts have failed, largely due to the aid of US forces deployed to the region in times of conflict, China has bolstered its military through technological advancements. For the purposes of this assessment, the definition of military technological advancements will be limited to the military capability or means that China has developed or acquired in order to deter the United States (and its allies) from interfering in a Chinese invasion of Taiwan. The term “blue water” navy refers to the ability to operate across the open oceans versus littoral or “brown water” navy that operates relatively close to shore.

The acronym C4ISR, as spelled out above, can be broken out into C4 and ISR. The term C4 refers to “technologies and systems that provide command, control, communications, and computer processing,” allowing coordinated attacks and the use of precision force.<sup>170</sup> C4 is what allows a technologically advanced military, such as the United States, to use “deadly violence with greater speed, range, and precision.”<sup>171</sup> ISR technologies provide “the ability to gather, sort, process, transfer, and display information about highly complex events that occur in wide geographic areas,” giving the military a more real-time understanding of a situation.<sup>172</sup> Together, the core capabilities of these systems render a “dominant situational knowledge” allowing a military to quickly reduce the “ambiguity of violent situations, to respond flexibly, and to use force” with precision

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<sup>170</sup> Joseph Nye and William Owens, “America’s Information Edge: The Nature of Power,” *The Institute of Communications Studies*, September 13, 2011, <http://ics.leeds.ac.uk/papers/vp01.cfm>.

<sup>171</sup> *Ibid.*

<sup>172</sup> *Ibid.*

and accuracy where necessary.<sup>173</sup> Because C4ISR encompasses such a broad range of capabilities, this paper will highlight only a few of those core competencies in order to illustrate how China would employ a more advanced C4ISR network.

## A Brief Description of Early 1990s Chinese Military Power to Understand Military Technological Advancements

In order to understand China's military technological advancements since the mid-1990s, it is important to have a broad understanding of what China's military was like in the early 1990s. Throughout the 80's and into the early 90's China's military could be categorized as a 'bare-bones'<sup>174</sup> military, with basic military capabilities and no sophisticated modern technology.<sup>175</sup> Well into the mid-90's, China's forces were armed with 1980s vintage armor and utilized dated "command and control, air defense, logistics, and communications."<sup>176</sup> Their military, although large, was equipped with weapons that were of low quality, limited range, and were not very maneuverable.<sup>177</sup> In 1991, during the Gulf War, the United States displayed an awe-inspiring show of military power and technological prowess. At the time the Iraqi army was the fourth largest army in the world and equipped with Warsaw Pact military hardware.<sup>178</sup> This large but outdated Iraqi military was quickly "demolished by better-equipped Western forces."<sup>179</sup> The United States unleashed some of its most advanced weapons including "stealth

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<sup>173</sup> Nye and Owens, "America's Information Edge: The Nature of Power."

<sup>174</sup> Jayshree Bajoria, "Countering China's Military Modernization," *Council on Foreign Relations* (2009): <http://www.cfr.org/china/countering-chinas-military-modernization/p9052>.

<sup>175</sup> Ibid.

<sup>176</sup> Ibid.

<sup>177</sup> Fu, "China's Modernizing Military: Credible Conventional Threat to Taiwan?," 32.

<sup>178</sup> Drew Thompson, "Think Again: China's Military," *Foreign Policy*, no. 178 (2010).

<sup>179</sup> Ibid.

technology...precision-guided munitions,”<sup>180</sup> and a space network capable of providing “warning, communications, weather, multi-spectral imagery...navigation,” and superior command and control of its forces.<sup>181</sup> The similarities in size and military capabilities shared between the Chinese and Iraqi military gave China’s military cause for concern. To China, this was a revelation and an “introduction to 21<sup>st</sup> century tactics and weaponry that pointed out...the limits of China’s massive but antiquated military.”<sup>182</sup>

The Chinese military is comprised of four branches: the People’s Liberation Army (PLA), PLA Navy, PLA Air Force, and the strategic missile force known as the Second Artillery.<sup>183</sup> Into the early 90s China’s ground army continued to be the “center of gravity”<sup>184</sup> of their armed forces since China perceived that their major potential threat would be the Soviet Union and the idea of using “force to unify Taiwan with the mainland was relatively low on the list of China’s military priorities.”<sup>185</sup> Equipped with dated Soviet T-55 tanks from the 1950s and 1960s, the same equipment fielded by the Iraqis during the Gulf War, and employing Mao Zedong’s doctrine of “‘human wave attacks’- having more soldiers than your enemy has bullets,” China was employing a tactic that would overrun the enemy with sheer numbers.<sup>186</sup>

The Gulf War forced China’s leaders to reevaluate and restructure the military. Once comprising of 3 million poorly equipped soldiers in 1995, China had reduced the size of

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<sup>180</sup> Thompson, “Think Again: China’s Military.”

<sup>181</sup> Donald J. Kutyna, “Indispensable: Space Systems in the Persian Gulf War,” *Air Power History* 46, no. 1 (1999): 1.

<sup>182</sup> Douglas Waller, Jaime A. FlorCruz, and Mark Thompson, “China’s Arms Race,” *Time*, February 1, 1999, 32, <http://web.ebscohost.com.proxy1.library.jhu.edu/ehost>.

<sup>183</sup> Lieutenant Colonel Dennis J. Blasko, “Chinese Army Modernization: An Overview,” *Military Review*, November 20, 2011, 68, <http://merln.ndu.edu/archive/MilitaryReview/blasko.pdf>.

<sup>184</sup> *Ibid.*

<sup>185</sup> Blasko, “Chinese Army Modernization: An Overview,” 68.

<sup>186</sup> Thompson, “Think Again: China’s Military.”

its force to 2.3 million by 2005, largely cutting personnel from the ground army.<sup>187</sup> By decreasing the size of the military, China hopes to build “a smaller, more technologically advanced force” and focus on “applying information technologies to procedures and equipment to enhance capabilities.”<sup>188</sup> In addition, China’s war doctrine was revised to “prepare the PLA to fight and win local wars under modern high-technology conditions or local wars under informationalization conditions.”<sup>189</sup>

By the late 1990s China still “possessed one of the most technologically backward defense industries,” with a “‘few pockets of excellence’ such as ballistic missiles.”<sup>190</sup> With a labor force of 600,000, China was only able to manufacture a dozen or so fighter aircraft a year, “mainly 1960s and 1970s-vintage J-8IIs and J-7s.”<sup>191</sup> Even worse was the development of China’s navy, only able to manufacture one surface destroyer a year.<sup>192</sup> Deficient in several critical areas such as systems integration, electronic warfare, sensors and seekers, and aeronautics, China sought to bolster its military by procuring advanced technology from the Soviets.<sup>193</sup>

Lagging behind the major military superpowers, China selected to focus its efforts on niche military capabilities such as their strategic missile force and C4ISR, while treading water elsewhere.<sup>194</sup> Because China’s military is focused on targeting the weaknesses of the United States, China has only moderately invested in developing a modern air force

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<sup>187</sup> Blasko, “Chinese Army Modernization: An Overview,” 68.

<sup>188</sup> Ibid.

<sup>189</sup> Ibid.

<sup>190</sup> Ron Huisken, *Rising China: Power and Reassurance*, (Australia: ANU E Press, 2009), 129.

<sup>191</sup> Huisken, *Rising China: Power and Reassurance*, (Australia: ANU E Press, 2009), 129.

<sup>192</sup> Ibid.

<sup>193</sup> Ibid.

<sup>194</sup> Charles F. Hawkins, “Looks to the Future,” *Joint Force Quarterly*, no. 25 (2000): 12.

and navy, and often selecting to purchase and acquire military equipment from the Russians.

Subordinate to the PLA, the Second Artillery Corps (SAC) is tasked with integrating and deploying China's strategic missile force, and has emerged as the keystone of PLA military capability.<sup>195</sup> Although missiles have been an integral part of China's defense strategy since the 1950s,<sup>196</sup> SAC first established a short-range ballistic missile (SRBMs) brigade targeting Taiwan in 1993.<sup>197</sup> The first use of these SRBMs during the 1995-96 strait conflict showcased the ability of SAC's strategic missile-firepower. Despite the display, China's missiles were ill-equipped for targeting moving vessels, such as the two US carrier groups deployed to the region during the 95-96 strait conflict, and were regarded as "militarily irrelevant spook weapons."<sup>198</sup>

The military and technological prowess that the US displayed during the Gulf War has led China to believe that the United States heavy reliance on information and C4ISR network is where the US military derives its power and advantage.<sup>199</sup> Often defined as the "military nerve center," disrupting United States C4ISR could paralyze components of the US military and/or drastically degrade the capabilities of individual platforms such as missile defense, fighters, and aircraft carriers.<sup>200</sup> While the Gulf War in 1991 tipped the Chinese off to the importance and reliance of the US military on information networks

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<sup>195</sup> Mark A. Stokes and Ian Easton, "Evolving Aerospace Trends in the Asia-Pacific Region: Implications for Stability in the Taiwan Strait and Beyond," *The Project 2049 Institute*, May 27, 2010, 11, [http://project2049.net/documents/aerospace\\_trends\\_asia\\_pacific\\_region\\_stokes\\_easton.pdf](http://project2049.net/documents/aerospace_trends_asia_pacific_region_stokes_easton.pdf).

<sup>196</sup> Select Committee United States House of Representatives, *U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, 1999 (Washington, DC: GPO, 2011).

<sup>197</sup> Stokes and Easton, "Evolving Aerospace Trends in the Asia-Pacific Region: Implications for Stability in the Taiwan Strait and Beyond," 8.

<sup>198</sup> Pradun, "From Bottle Rockets to Lightning Bolts: China's Missile Revolution and PLA Strategy Against U.S. Military Intervention," 11.

<sup>199</sup> Cliff and others, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 45.

<sup>200</sup> *Ibid.*

and C4ISR, the vast majority of China's capabilities to affect or constrain United States C4ISR occurred after the conflict in 1995-96. Before 1991, China's C4ISR system was "disjointed and void of interconnectivity" due to an aged and lagging national telecommunications infrastructure.<sup>201</sup> However, by the end of 1995 China had assembled ten of the largest telecommunications networks in the world, creating a revolutionary leap in China's command and control of its forces and ability to conduct electronic warfare.<sup>202</sup>

## Chinese Niche Technological Advancements: C4ISR Attack Capabilities, C4ISR, and Strategic Missile Forces

The following section provides a brief overview of the technological advancements in these niche areas and how China may employ these niche capabilities in a future cross-strait conflict. Current literature available on the subject of Chinese military modernization in relation to US involvement in a strait conflict focuses on China's ability to deter and delay the United States involvement long enough to conquer Taiwan. The vast amount of research done on Chinese military technological advancements has centered on how these emerging technologies will be integrated into a strategy, first to deter the United States involvement, second to delay the United States involvement, and third to win a regional war if the United States intervenes.<sup>203</sup> Deduced from this strategy and what has become the "dominant view in American Policy circles is that China is pursuing...an 'access-denial strategy,' aimed not at directly confronting U.S. forces but at

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<sup>201</sup> Mark A. Stokes, "China's Strategic Modernization: Implications for the United States," *Strategic Studies Institute*, September 2010: 43.

<sup>202</sup> Ibid.

<sup>203</sup> Pradun, "From Bottle Rockets to Lightning Bolts: China's Missile Revolution and PLA Strategy against U.S. Military Intervention," 7.

circumscribing, slowing down, and imperiling their access to the theater of operation.”<sup>204</sup> Similarly, the RAND Corporation employs the term “antiaccess strategy.”<sup>205</sup> The difference between the two terms is subtle, but RAND’s definition includes a strategy that forces the US to operate “farther from the locus of conflict than they would normally prefer.”<sup>206</sup> The development of Chinese military technology to deny US forces access to the theater of operations seems to be the main consensus among the literature currently produced.

Although access-denial is the widely popular American interpretation of China’s strategy with regards to China developing new technology, Vitaliy O. Pradun of the Naval War College suggests that the military restructuring and organization of China emphasizes a missile-centric focus reflective of a more destructive purpose rather than merely pursuing access-denial.<sup>207</sup> After examining the PLA’s wartime doctrine, Pradun makes the argument that the PLA’s doctrine contradicts the access-denial approach, suggesting the development of missile technology was to not only “achieve strategic surprise but to dismember U.S. assets,”<sup>208</sup> and level the playing field.<sup>209</sup>

Although the display of China’s missile forces during the 1995-96 conflict did little to deter the United States from entering the theater of operations, today’s SAC forces will force the United States to think twice before involving themselves in another cross-strait conflict. Now viewed as a “highly accurate, flexible, and lethal mode of precise and

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<sup>204</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” 8.

<sup>205</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, XIV.

<sup>206</sup> Ibid.

<sup>207</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” 15.

<sup>208</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” 11.

<sup>209</sup> Ibid.

concentrated firepower,”<sup>210</sup> the SAC’s missile forces, which are comprised of a vast portfolio of missile capabilities and payloads, have become a force to be reckoned with. Advancements in missile technology have given China’s missiles the range, distance, and appropriate payloads that enable their forces to hold hostage any forward deployed base in the region. With the introduction of the medium-range ballistic missile (MRBM) in 1997, China would gain the capability to extend its defensive perimeter to approximately 3,000 km and would enable the firepower of their SRBM units to focus on targeting Taiwan.<sup>211</sup> A major technological advancement and a concern for the US navy is the advent of the anti-ship ballistic missile (ASBM). Equipped with a seeker capable of targeting US naval vessels,<sup>212</sup> the only true blue water navy capable of sailing anywhere in the world without fear, may soon need to exercise caution before deciding to involve itself in China and Taiwan’s affairs. Over the next decade, China hopes to improve the accuracy and range of SAC’s missile forces via incorporating “more advanced inertial and satellite aided navigation systems, sophisticated terminal guidance systems, and increasingly powerful solid rocket motors.”<sup>213</sup>

Through buttressing their C4ISR capabilities with more advanced and reliable technology, China hopes to gain information superiority and “gain the initiative in operations by making full use of various information fighting platforms in three dimensional space.”<sup>214</sup> In order to accomplish these lofty goals, an advanced C4ISR platform capable of integrating human and mechanical functions, in “every single-

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<sup>210</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” 9.

<sup>211</sup> Stokes and Easton, “Evolving Aerospace Trends in the Asia-Pacific Region,” 15.

<sup>212</sup> *Ibid.*, 12.

<sup>213</sup> Stokes and Easton, “Evolving Aerospace Trends in the Asia-Pacific Region,” 16.

<sup>214</sup> Jacqueline Newmyer, “The Revolution in Military Affairs with Chinese Characteristics,” *The Journal of Strategic Studies* 33, no. 4 (2010): 497.

dimensional space, such as ground, sea, air, space, and electronics,”<sup>215</sup> is required.

Although acquiring assets to enhance China’s C4ISR really began in the early 90s, the maturity, integration, and connectivity of these systems did not occur until after the 1995-96 conflict. Through building up infrastructure to support C4ISR capabilities, China has made “informatization” the guiding PLA objective for developing its military.<sup>216</sup> The principle of “informatization” stresses the integration of “information technology in weapons systems and their operation,” in order to conduct a comprehensive campaign.<sup>217</sup>

Attack C4ISR assets that China has acquired and/or developed include the SC-19 anti-satellite weapon,<sup>218</sup> high-energy lasers, both nuclear EMP and nonnuclear EMP attacks, and the ability to conduct computer network attacks.<sup>219</sup> The advent of high-energy lasers has given China the ability to temporarily blind and possibly destroy United States intelligence, surveillance, and reconnaissance (ISR) satellites, leaving the US military blind to developments occurring on the other side of the world.<sup>220</sup> With the addition of the SC-19 direct ascent anti-satellite weapon, China also has obtained a way to permanently disable US ISR satellites in low elliptical orbit.<sup>221</sup> The use of nuclear and nonnuclear EMP attacks will allow China to disable or degrade the United States and

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<sup>215</sup> Newmyer, “The Revolution in Military Affairs with Chinese Characteristics,” 497.

<sup>216</sup> Stokes and Easton, “Evolving Aerospace Trends in the Asia-Pacific Region,” 6.

<sup>217</sup> Ibid.

<sup>218</sup> Phillip C. Saunders and Charles D. Lutes, “China’s ASAT Test: Motivations and Implications,” *Joint Force Quarterly* 46, (2007): 39.

<sup>219</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 56.

<sup>220</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 84.

<sup>221</sup> Saunders and Lutes, “China’s ASAT Test: Motivations and Implications,” 39.

Taiwanese radars, communications equipment, weapons systems, and command and control assets.<sup>222</sup>

The following section will focus on the three theaters of operations from which the US forces have the ability to aid Taiwan and how China is attempting to constrain areas of United States power projection with the technologies exemplified above.

Understanding of the key areas that China has focused on developing technologically and the strategy behind these developments will enhance the comprehension of how China will constrain US forces with its technological advancements.

## Factors that Constrain US Blue Water Power Projection

Currently the US navy is the only true blue water navy in existence, allowing them to project their power anywhere in the world. China understands US naval and air superiority, and acknowledges that they cannot win in a direct military conflict with the United States.<sup>223</sup> Marshall Hoyer, a former professor at the Naval War College, agrees with Pradun's assessment that China's developmental military technology is missile-centric, however he sides with the popular majority that believes China is integrating this technology with an access-denial strategy.<sup>224</sup> Hoyer argues that China's home field advantage allows China to retain a numeric advantage that can overwhelm the US navy.<sup>225</sup> What Hoyer is referring to is that the anti-ballistic missiles (ABM) aboard US naval carriers and vessels would not be able to intercept an overwhelming concentration

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<sup>222</sup> Cliff and others, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 85.

<sup>223</sup> Pradun, "From Bottle Rockets to Lightning Bolts: China's Missile Revolution and PLA Strategy against U.S. Military Intervention," 7.

<sup>224</sup> Marshall Hoyer, "China's 'Antiaccess' Ballistic Missiles and U.S. Active Defenses," *Naval War College Review* 64, no. 4(2010): 84.

<sup>225</sup> *Ibid.*, 85.

of incoming anti-ship ballistic missiles (ASBM), thus deterring US involvement.<sup>226</sup> Both the procurement and development of ASBM systems by China was something that US forces did not have to worry about during the last cross-strait conflict, but will be something to contend with if a future conflict were to ensue.

Another integral military advancement that China has sought out is the ability to attack US C4ISR.<sup>227</sup> In the mind of the Chinese, the biggest US military vulnerability is their reliance on technology and information from C4ISR networks.<sup>228</sup> According to Pradun, an attack on US C4ISR capabilities would offset or render irrelevant “American superiority in several key areas, including air defense and integrated naval warfare.”<sup>229</sup> While degradation in US C4ISR would not prevent the deployment of forces to the perimeter of the theater, US forces would be confined to operating further away from Taiwan due to an inability to coordinate operations, and collect and transmit early warning information.<sup>230</sup> China’s acquisitions in capabilities that enable them to attack US C4ISR assets were an ability that was lacking during the last cross-strait crisis.

Despite the fact that China has invested in an aircraft carrier and is developing naval aircraft, the current belief is that China would not deploy their aircraft carrier to engage with the US navy in a cross-strait conflict.<sup>231</sup> In Daniel Kostecka’s article *From the Sea*, Kostecka states that the acquisition of an aircraft carrier was for future missions and is

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<sup>226</sup> Hoyler, “China’s ‘Antiaccess’ Ballistic Missiles and U.S. Active Defenses,” 85.

<sup>227</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 23.

<sup>228</sup> *Ibid.*, 45.

<sup>229</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military intervention,” 16.

<sup>230</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 85.

<sup>231</sup> Bradley Perrett, “Get Used to It,” *Aviation Week & Space Technology* 173, no. 29 (2011): 24.

more of a “nationalistic showpiece, with very little operational value.”<sup>232</sup> The future missions that Kostecka was referring to were regional in nature and involved defending maritime territory and disputed islands in the South China Sea.<sup>233</sup> While the article does not expand upon why China’s naval aircraft carrier would not be involved in a cross-strait conflict, Kostecka mentions that land-based aircraft was more likely to be used.<sup>234</sup>

There are at least three reasons why the Chinese would not deploy the carrier: 1) China’s blue water navy would be out numbered, 2) out gunned, and 3) the purpose of a missile-centric force is either to deter the enemy from entering a territory or to draw the enemy within range of the missiles without sacrificing military hardware. As previously stated, China has only been able to produce a handful of destroyers capable of operating in the open ocean and have purchased too few Sovremenny class destroyers.<sup>235</sup> With so few ships capable of supplementing and protecting a carrier from enemy destroyers and aircraft, it would be difficult to contend with two carrier battle groups. Additionally, the reason for employing missiles is that they are “cheap, fast, expendable, risk no friendly casualties, and...are difficult to preempt.”<sup>236</sup> Furthermore they do not require air superiority and offer a high rate of defensive penetration,<sup>237</sup> allowing air and naval assets to be allocated elsewhere.

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<sup>232</sup> Daniel J. Kostecka, “From the Sea: PLA Doctrine and the Employment of Sea-Based Airpower,” *Naval War College Review* 64, no. 3 (2011): 12.

<sup>233</sup> *Ibid.*, 16-17.

<sup>234</sup> Kostecka, “From the Sea: PLA Doctrine and the Employment of Sea-Based Airpower,” 16.

<sup>235</sup> Dennis J. Blasko, “Evaluating Chinese Military Procurement from Russia,” *Joint Force Quarterly* (1997), <http://www.fas.org/nuke/guide/china/doctrine/1917pgs.pdf>.

<sup>236</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military Intervention,” 11.

<sup>237</sup> *Ibid.*

## Factors that Constrain US Littoral or Brown Water Power Projection

Research on constraining United States power projection in littoral waters is sparse. If the United States were able to gain access to the strait, it can probably be assumed that the United States defeated or were able to evade China's missile forces and project both air and sea power in the theater of operations. At this point it would seem that China would have to contend with a vastly superior US navy. While one can speculate as to why literature is lacking on China's littoral naval capabilities it is important to note that China has invested in bolstering its littoral navy. According to David Slayton and Craig Hooper, China has invested in a large amphibious force that would enable China to "unilaterally project power well beyond Taiwan."<sup>238</sup> While this does pose a threat to US forces in the strait and along the coast of Taiwan, the authors stress multiple times that Washington believes China's amphibious force is "almost entirely a non-issue."<sup>239</sup> According to Lyle Goldstein and William Murray, China has also invested itself heavily in a submarine force.<sup>240</sup> At the time of the 1996 conflict, China's submarine fleet had consisted of four KILO class submarines that were acquired from the Russians and five indigenous HAN class submarines.<sup>241</sup> While the timeline is unclear on whether or not China had a submarine force at its disposal during the conflict, what is clear is that China is pursuing a submarine fleet, developing a new SONG class diesel submarine and contracting out to the Russians for at least eight new KILO class submarines in 2002.<sup>242</sup>

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<sup>238</sup> David M. Slayton and Craig Hooper, "China at Sea," *Hoover Digest* (2011): 138-50.

<sup>239</sup> Slayton and Hooper, "China at Sea," 138-50.

<sup>240</sup> Lyle Goldstein and William Murray, "Undersea Dragons: China's Maturing Submarine Force," *International Security* 28, no. 4 (2004): 162.

<sup>241</sup> Blasko, "Evaluating Chinese Military Procurement from Russia."

<sup>242</sup> Goldstein and Murray, "Undersea Dragons: China's Maturing Submarine Force," 162.

Goldstein and Murray believe that the Chinese could create an effective submarine blockade in the shallow waters of the strait where US anti-submarine technology would have difficulty with submarine detections.<sup>243</sup>

## Constraints of Forward Deployed Bases in the Region

Research on constraining US airpower from forward deployed bases is another area that little is written about. Existing literature on the subject demonstrates that the RAND Corporation's report on China's anti-access strategy is the only report that incorporated the use of China's military technology to disable forward deployed air bases in the region. According to the Mark Stokes's study of PLA doctrine, China has reserved the "right to attack enemy targets on the territory of a third country if that country allowed the enemy to use bases on its territory in a conflict with China."<sup>244</sup> Through the use of airpower and China's sophisticated missile force in conjunction with the access-denial strategy, China hopes to deter or delay the United States from projecting air power through targeting airfields. According to the RAND Corporation, the PLA Air Force doctrine aims to strike enemy air bases and surface-to-air missile (SAM) sites, in the initial campaign in order to quickly degrade the enemy's offensive capabilities.<sup>245</sup>

Similar to how China would keep the US navy at bay through a C4ISR attack, China would apply an attack to bring down command facilities in Japan and South Korea, leaving the air bases without early warning and defensive capabilities.<sup>246</sup> While China

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<sup>243</sup> Goldstein and Murray, "Undersea Dragons: China's Maturing Submarine Force," 185.

<sup>244</sup> Mark A. Stokes, "The Chinese Joint Aerospace Campaign: Strategy, Doctrine, and Force Modernization," draft paper (2001): 38.

<sup>245</sup> Cliff and others, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 62.

<sup>246</sup> *Ibid.*, 86.

had the capability to attack US forward deployed bases during the 1996 cross-strait crisis, the new capabilities of coordinating attacks and having the capacity to attack US C4ISR would allow China to direct its missile forces towards Taiwan.

## Research Hypothesis

Upon review of the literature on how China's military technological advancements affect the United States ability to aid Taiwan in a cross-strait conflict, it appears that China's military advancements integrated with a strategy to deny the United States access to the theater of operations would negatively affect the United States ability to intervene in a cross-strait conflict. Unlike previous US intervention in the Taiwan Strait when the United States could rely on its technological and military superiority, the technological advancements that China has made, especially pertaining to its missile force and C4ISR attack capabilities, will force the United States to reassess its strategy and capabilities, along with its willingness to intervene. Since China's military equipment is not combat proven in the field, it is difficult to predict any affects that China's military advancements would have on the outcome of a cross-strait conflict involving Taiwan and the United States. However, in a scenario where China has achieved a fully operational arsenal of technologically advanced equipment, as mentioned throughout this paper, it seems inconceivable that the US navy would be able to gain access to the locus of conflict, forcing the US navy further or outside the theater of operations. Without the operational support of the navy, any US military bases in the region would be held hostage. In the end, the combination of operating further from the locus of conflict and China's ability to

hold US bases hostage will force the United States to seek non-military countermeasures such as diplomacy or economic sanctions.

## If China's Military Reached Technological Maturity and a Cross-Strait Conflict Ensued

Since the 1995-96 Taiwan Strait conflict there have been only a few instances of heightened tension between the United States and China in which the possibility of damaged relations or war may have been on the horizon. In 1999 US intelligence errors led to the North Atlantic Treaty Organization's accidental bombing of the Chinese embassy in Belgrade, Yugoslavia during the campaign against Serbian forces in Kosovo.<sup>247</sup> In 2001 a United States EP-3E reconnaissance plane collided with a Chinese fighter, forcing the United States spy plane to make an unauthorized emergency landing on China's Hainan Island.<sup>248</sup> The twenty-four-member United States crew was detained for a period of twelve days, creating a tense standoff between the two countries.<sup>249</sup> And again tensions were high as arms-transfers between Taiwan and the United States were proposed in 2011. China threatened to cut military and bilateral ties with the United States if they were to make the sale of 66 F-16 C/D fighters to Taiwan.<sup>250</sup> So not to aggravate United States attempts to deepen relations with China, while adhering to the 1979 bill passed by Congress that states that the United States is obligated to sell weapons to Taiwan for self-defense, the Obama administration selected to compromise

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<sup>247</sup> "U.S. Relations With China (1949-Present)," *Council on Foreign Relations*, <http://www.cfr.org/china/us-relations-china-1949---present/p17698>.

<sup>248</sup> *Ibid.*

<sup>249</sup> "U.S. Relations With China (1949-Present)."

<sup>250</sup> Matthew Pennington, "Analysis: US-Taiwan F-16 sale aims at compromise," *The Associated Press*, 20 September 2011, <http://www.cbsnews.com/stories/2011/09/20/opinion/main20108642.shtml>.

and upgrade Taiwan's existing forces.<sup>251</sup> To this day the probability of a United States war with China over the independence of Taiwan has remained relatively low, despite the inkling of Taiwan to assert its independence on occasion.

Without a period of tension equal or surpassing the 1995-96 cross-strait conflict, a comparative study of how China's military technological advancements would affect the United States ability to aid Taiwan would be difficult to assess. However, in a hypothetical scenario where a cross-strait conflict between China and Taiwan was to occur in the present time, counterfactual arguments could be made to assess the United States ability to aid Taiwan and how China's advanced military would constrain US forces. Although there can potentially be an infinite number of scenarios, the primary analysis of this study will focus on three scenarios depicting how the United States would be constrained if the only variable that changed was China's deployment of a more sophisticated, technologically advanced military. Using the 1996 Taiwan Strait crisis as a baseline for the circumstances in each scenario, a hypothetical explanation for how China might deploy its military assets to constrain US forces can be developed. The first scenario will illustrate complications that the United States would endure if they selected to send carrier groups to the strait to assist Taiwan in a crisis situation with China. The second scenario will portray how advancements in China's military technology would force the United States to operate further away from the locus of conflict. And the third scenario will depict the political or diplomatic approach that the United States may seek in lieu of putting troops at risk.

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<sup>251</sup> Pennington, "Analysis: US-Taiwan F-16 sale aims at compromise."

## Setting the Stage for the Scenarios

China has upgraded its niche military capabilities to include its missile forces and C4ISR capabilities. Their navy and air force have been moderately upgraded, but still are lacking in modern capabilities and would still have to compete with a vastly superior US air force and navy. The Taiwanese government has strongly been advocating a push for independence, rejecting China's 'one country, two systems' strategy that was prescribed for the 1997 handover of Hong Kong to China.<sup>252</sup> The ultimate goal of attempting to institute the 'one country, two systems' strategy with Hong Kong was to use it as a framework to reunite China and Taiwan.<sup>253</sup> Taiwan is teetering on the cusp of calling for independence and their actions have forced China to mobilize its missile forces, creating a defensive perimeter around the theater of operations. During this time the US is preparing its forces for a possible conflict with China.

It is important to keep in mind that even though China is willing to use military force against Taiwan, China would most likely refrain from complete destruction of the island and civilian infrastructure, in order to ease the rebuilding of the island in the aftermath of the conflict. Additionally, China may also attempt to exhibit restraint on causing civilian casualties by only targeting military installations to minimize Taiwanese resentment toward China. However, it is also important to bear in mind that China will not accept Taiwanese independence and it is unclear what actions the Chinese government would be willing to take in order to prevent a declaration of Taiwanese independence.

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<sup>252</sup> Chris Young, "Hong Kong Under One Country Two Systems: Promises and Realities," *Brookings Institute*, (2001):2, [http://www.brookings.edu/fp/cnaps/papers/yeungwp\\_01.pdf](http://www.brookings.edu/fp/cnaps/papers/yeungwp_01.pdf).

<sup>253</sup> *Ibid.*, 3.

It is doubtful that China would attempt to conduct a preemptive kinetic attack against US bases in the region. Reasons that China would avoid a preemptive kinetic attack is that China would be launching missiles and conducting attacks against allied countries of the United States, possibly giving reason for United States allies to involve themselves. Another reason that China would refrain from preemptively attacking would be United States retaliation for attacking without provocation. The overall consensus in existing literature is that China would prefer to deter US military intervention, rather than engaging US forces in a “full-on military campaign.”<sup>254</sup>

By strategically placing its SRBM units to target military installations in Taiwan, China can focus its MRBM units on keeping the United States out of the theater of operations. While it is most likely true that “China in fact prefers to deter the United States from intervening,” it is also important to remember that it would be up to the US to select to intervene.<sup>255</sup>

## Scenario 1

In this scenario, the United States selects to intervene despite stern warnings by China. If Taiwan declares independence, then China would most likely begin to launch its campaign against Taiwan and vice versa. In order to deter and slow down US forces, China may attempt a non-kinetic C4ISR attack to degrade US capabilities to coordinate, transmit battlefield information, and “transmit early warning information, thus increasing

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<sup>254</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy against U.S. Military intervention,” 10.

<sup>255</sup> Ibid., 10.

the vulnerability of forward-deployed forces to air and missile attacks.”<sup>256</sup> Degradation of missile defense capabilities would allow China to hold hostage forward deployed bases in the region, slowing down the reaction of US troops to respond until defensive systems were restored. Additionally, China may select to exercise its option to conduct an electromagnetic pulse (EMP) attack against Taiwan and forces in the western Pacific, thus destroying and degrading “key sensors, communications systems, or information systems, rendering weapon systems ineffective or command elements unable to command, control, and coordinate forces effectively.”<sup>257</sup> The explosion of an EMP would result in the ionization of the atmosphere, disrupting radars and communications networks in the region for minutes to hours,<sup>258</sup> preventing the US navy from effectively projecting power from the sea and with disrupted missile defenses, the carrier groups would be handicapped and vulnerable. According to the Electromagnetic Pulse Commission the loss of military capability would be catastrophic<sup>259</sup> for Taiwan and any US forces operating in the region.

With a defense incapable of responding, it would be ill advised for the United States to attack until defense capabilities were restored. If China felt that the United States may still pursue its efforts to militarily aid Taiwan, it is possible that China may conduct air raids and launch missiles to destroy runways at US forward deployed bases and threaten to use ASBMs against carrier groups. This is where China’s home field advantage can potentially be problematic. If the superiority of the US military technology is such that

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<sup>256</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 85.

<sup>257</sup> Ibid.

<sup>258</sup> Cliff and others, *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 85.

<sup>259</sup> Ibid.

China's C4ISR attacks are ineffective, the missile defenses aboard US carrier groups may not be able to withstand a barrage of missiles from the mainland, China's navy, and submarine force. While the United States is attempting to hunt for a way to engage China, while keeping as many troops as possible out of harm's way, China would be attempting to destroy Taiwan's defenses in order to begin its amphibious assault.

## Scenario 2

Similar to the first scenario, China has mobilized and prepared to engage Taiwan. After studying the timetables of the United States deployment of carrier groups to the Persian Gulf, which took approximately 14 hours,<sup>260</sup> China understands the amount of time it would take the United States to enter the locus of conflict. As US forward deployed bases and carrier groups prepare for a possible conflict, China again would most likely warn the United States not to intervene unless they want to risk their assets and troops. To ensure that the United States doesn't interfere, China may even issue a warning shot toward the edge of the theater of operations to show the United States the severity of the situation. As previously stated, the United States would have to select whether or not to intervene. In this case, the United States attempts to operate further from the locus of conflict to reduce the risk of a C4ISR attack such as in the first scenario or a missile attack. The farther that an aircraft carrier operates from the locus of a conflict, the less effective it will be in "intercepting enemy air raids, conducting air patrols, and carrying out air strikes," due to transit times.<sup>261</sup> Due to the ineffectiveness of

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<sup>260</sup> Cliff and others, *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*, 45.

<sup>261</sup> *Ibid.*

US carrier groups and having forward deployed bases still at risk to missile attacks, the US ability to aid Taiwan again seems highly impaired.

With US bases held hostage by MRBM missile brigades and US carrier groups operating further from the locus of conflict, China's SRBM brigades are free to coordinate and conduct operations to takeout strategic Taiwan defenses. The destruction of key defense installations would pave the way for China to conduct an amphibious assault operation uninhibited by US naval assets and eventual takeover of the island.

### Scenario 3

Unlike the other two scenarios where the US military was directed to take a specific course of action, scenario three addresses the situation utilizing diplomatic or economic means. Nowhere in the Taiwan Relations Act does it state that the United States is obligated to militarily assist Taiwan except in providing "defense articles and defense services in such quantity as may be necessary to enable Taiwan to maintain a sufficient self-defense capability."<sup>262</sup> However, if the United States decided not to act during a Chinese invasion of Taiwan, the "failure to defend Taiwan... would drastically reduce American credibility and influence in Asia."<sup>263</sup> On the other hand, if the risk of losing troops and assets in a conflict over Taiwan is too high, the United States might not militarily aid Taiwan as during the 1995-1996 cross-strait conflict. This would force the United States to take diplomatic and economic courses of action.

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<sup>262</sup> *Taiwan Relations Act*, Council on Foreign Relations, <http://www.cfr.org/taiwan/taiwan-relations-act/p8454>.

<sup>263</sup> Susan L. Shirk, "China: Fragile Superpower," 265.

First the United States can attempt to sway the President of Taiwan and its officials to retract or refrain from calling for independence. While this doesn't resolve any of the issues, it does delay the outbreak of war or further conflict. Secondly, the United States can continue to militarily bolster Taiwan's defenses through arms-trades. The idea behind this would be to give Taiwan the capability to increase the risk of acquiring Taiwan by decreasing China's benefit of unifying Taiwan. The end being that China would lose interest over time since the cost of acquiring Taiwan would be too great a risk. A third course of action would be to attempt to unify Taiwan with China under a "one country, two systems" strategy that would adhere to strict rules that delineate the two forms of government and authority. While this may not be the most stable course of action, resulting in clashes between governments, the risk of conflict between the two countries could be decreased since China has accomplished its goal of reunifying Taiwan with China.

Last but not least, the United States could place economic sanctions, boycotts, and embargoes on China and attempt to stifle their expanding economy. As noted in the previous chapter, the United States is China's largest overseas market and "second largest source of its foreign investment."<sup>264</sup> As a country that is already facing a multitude of economic issues, the closing of any key markets would be detrimental to the health of China's economy and would raise unemployment to hazardous levels, create increased social unrest, and further expand poverty.

While this option has the potential of being a very effective method to addressing the potential conflict, attached to this option are possible economic repercussions for the

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<sup>264</sup> Susan L. Shirk, *China: Fragile Superpower*, (Oxford: Oxford University Press, 2007), 25.

United States. As one of the United States' main bankers, China could attempt to sell large chunks of its dollar holdings, therefore flooding the market with dollars reducing its value. However, this reaction by China remains unlikely for two reasons: 1) selling off large denominations would "decrease the value of China's remaining dollar-denominated assets"<sup>265</sup> and 2) such a move would diminish the United States' demand for China's imports, "either through a rise in the value of the RMB against the dollar or a reduction in U.S. economic growth."<sup>266</sup> While an economic retaliation on China's behalf seems unlikely, it is important to remember that states do not always act rationally and China in the past has threatened to sell off large denominations of US debt.

## Analysis of Scenarios

All three scenarios show ways in which China's military technology may coerce the United States into pursuing a course of action different from the 1996 cross-strait conflict. The application of military technology, along with China's home field advantage, would allow China's military to conduct operations against the US navy and forward deployed bases without putting military hardware or personnel within range of adversarial projectiles. Throughout the readings and the way that the scenarios were used to exemplify China's use of military technology, one constant has remained throughout the study. While members of the Chinese government have stated their willingness to use nuclear weapons or other weapons of mass destruction against the United States in a conflict over Taiwan, China appears to want to employ a strategy that deters and avoids the loss of American lives. Although missiles are destructive in nature, the use of missiles

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<sup>265</sup> Wayne M. Morrison and Marc Labonte, "China's Holdings of U.S. Securities: Implications for the U.S. Economy," *Congressional Research Service*, <http://www.fas.org/sgp/crs/row/RL34314.pdf>.

<sup>266</sup> Morrison and Labonte, "China's Holdings of U.S. Securities: Implications for the U.S. Economy."

in a deterrence strategy essentially gives the United States a way of avoiding conflict. Any kinetic preemptive attack that China would pursue on the United States would likely be considered an act of war by the United States, resulting in a retaliatory response. According to Pradun, it is understood by Chinese leadership that if they were to bring the United States into a “military conflict to reverse a Taiwanese declaration of independence...it would have no chance of prevailing.”<sup>267</sup> While Taiwan might valiantly defend its territory, the conclusion resulting from the analysis of the first two scenarios is that Taiwan would be left on its own militarily.

However, analysis of the third scenario suggests that non-military response could be a viable option in the event of a cross-strait conflict. While the United States cannot force China to accept a “one country, two systems” strategy, the United States can continue to urge Taiwan not to claim independence which should keep tensions between China and Taiwan from rising. In the meantime, the United States could continue to bolster Taiwan’s defenses, making the country a more formidable opponent against China and increasing the risk of acquiring Taiwan. Finally, if tensions between China and Taiwan began to rise to a point where both countries were on the cusp of going to war, the United States could threaten to use economic sanctions to diffuse the conflict.

## Conclusion

The conclusion of this paper is that the US navy’s bold intervention during the 1996 Taiwan Strait conflict and the confidence that the United States could sail to Taiwan uncontested in a future cross-strait conflict no longer exists due to the military

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<sup>267</sup> Pradun, “From Bottle Rockets to Lightning Bolts: China’s Missile Revolution and PLA Strategy Against U.S. Military Intervention,” 1.

technological advancements that China has invested in. While the United States may have the most powerful and technologically advanced navy in the world, the investments that China has made were tailored to China's military strengths and US military weaknesses. The conundrum that China's military technological advancements place at the floor of the United States is how to apply the strengths of a superior navy and air force to a region that cannot be infiltrated without China unleashing a salvo of missiles upon US assets. Additionally, it would be difficult to assess the effectiveness of China's military technology in a warfare scenario since they have never conducted a campaign against the United States. The entire world marveled at the technological superiority that the United States had obtained during the first Gulf War and China understood that they could not stand toe-to-toe with the United States in a conventional war. However the advancements in military technology, although untested in combat, and the idea that China has gained the capability to attack US C4ISR, has forced the United States to reassess its ability to aid Taiwan in a cross-strait battle and counter China's military technological advancements.

Although a military option may currently no longer be the best suited course of action for either aiding Taiwan or keeping China at bay, the United States' economic option shows great promise. While many in the United States view China's holding of large amounts of US debt as a threat, China itself has recognized that not diversifying its portfolio could be potentially hazardous. As a result, many of China's leaders have expressed concerns over the safety of holding large amounts of US debt and are

advocating either diversifying away from US Treasury securities or placing restrictions to slow the accumulation of federal exchange reserves.<sup>268</sup>

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<sup>268</sup> Morrison and Labonte, "China's Holdings of U.S. Securities: Implications for the U.S. Economy."

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# **How do Chinese Anti-Satellite Advancements Affect U.S. Space-Based Military Advantages?**

## **Introduction**

Leading the way and dominating space and space-denial capabilities, the United States (US) has had an unparalleled military advantage with their intelligence, surveillance, and reconnaissance (ISR) satellites. However, the technological advancements that China has made in the field of direct ascent anti-satellite (ASAT) weaponry now threatens US space assets and has given Washington cause for concern. On January 11, 2007 the Chinese launched a direct-ascent ASAT weapon which successfully struck a defunct Chinese FY-1 weather satellite in low Earth orbit (LEO).<sup>269</sup> The success of China's direct ascent ASAT testing demonstrates their military modernity, sophistication, and increasing advancements in ASAT weaponry. The success of the test begs the question of how capable are China's direct ascent ASAT weapons, what are the vulnerabilities of US ISR satellites, and what can the United States do in response to China's developing ASAT programs.

This paper will assess the success of China's direct ascent ASAT demonstration and seeks to answer how the United States can respond to the emerging threat of a possible deployment of a Chinese direct ascent ASAT arsenal through military, diplomatic, and technological means. Through existing literature, this paper will examine the capabilities and implications of China's direct ascent ASAT program and how the deployment of a future direct ascent ASAT arsenal will threaten US ISR satellite capabilities in LEO. The

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<sup>269</sup> Phillip C. Saunders and Charles D. Lutes, "China's ASAT Test: Motivations and Implications," *Joint Force Quarterly* 46 (2007): 39.

remainder of this paper will focus on diplomatic, military, and technological responses in which the United States would be able to combat this emerging threat.

Unlike other conventional domains or theaters of operation, such as land, sea, and air; the notion of space developing into the fourth domain of warfare remains relatively new and untested as the vast majority of international rules and strategies pertaining to assets in space are still in an infant stage. Based on the current known capabilities of China's direct ascent ASAT weaponry, China has proven their ability to successfully target and destroy assets in space. With no account or case study to use as a basis or illustration of a state actively seeking to destroy space assets of an enemy state during a time of war, this paper will examine the implications of China deploying direct ascent ASAT technology based off the successful testing and the resulting damage caused by its direct ascent ASAT trial.

The conclusion of this paper acknowledges the success of China's direct ascent ASAT weaponry and recognizes this technology as a legitimate threat to US space assets; however, an increasing globalized world, foreign dependency on satellites, and the launching of foreign satellites in space will act as a deterrent and enhance efforts on protecting space assets.

## Methodology

To assess how the future deployment of China's direct ascent ASAT weaponry threatens US space assets and how the United States can develop a response, this paper will rely on counterfactual arguments. As previously stated, the basis of this paper is existing literature on the topic of the implications resulting from China's successful trial of its direct ascent ASAT weapon in early January of 2007 and how the weapon is a

persisting threat towards US space assets. In order to understand why China's development of a direct ascent ASAT weapon is a critical threat towards US space assets, a brief background on the origination of direct ascent ASAT weaponry will be provided. While the background section does suggest underlying reasons for commencing the development of China's direct ascent ASAT program, the section of this paper titled *The Chinese Threat and Their Intentions* provides additional theories and examines China's counterspace and military doctrine.

Following a brief background on the origin of direct ascent ASAT weaponry, it is necessary to discuss the implications surrounding the successful trial of China's direct ascent ASAT weapon and briefly illustrate why direct ascent ASAT weaponry is more dangerous than other types of weapons that could impede satellite functions. Additionally, this follow-on section will discuss the known capabilities of China's direct ascent ASAT weapon, as well as drawbacks and weaknesses, and potential strategic applications.

The succeeding section will then discuss the varying capabilities that US satellites in LEO provide for both the United States and world, and the United States and global repercussions resulting from the destruction of satellites. Additionally, this section will address satellite vulnerabilities, United States doctrine with regards to protecting US space assets, and a look forward as the United States prepares to improve their defensive posture in space.

Based on limited information regarding the future of China's direct ascent ASAT weapons program and its implications for the United States remaining largely

speculative, since there is a lack of policies and space continues to emerge as a domain of war, this paper attempts to draw out the discussion of the significance of China's direct ascent ASAT program and answer how the United States could respond to this developing threat. This paper will discuss a myriad of responses to include diplomatic actions, technological responses, and military options.

## Definitions of Terminology

Throughout this paper the term ASAT or direct ascent ASAT will be utilized frequently. For the purposes of better understanding the discussion in this paper, this section will briefly define the terminology utilized. The term anti-satellite (or its acronym ASAT) is a military term that refers to any type of weapon that can be used to either maim or destroy a satellite. Direct ascent is one type of ASAT weapon that can be used to bring down satellites in the exo-atmosphere. A direct ascent ASAT weapon consists of a missile armed with a kinetic kill vehicle<sup>270</sup> and a platform in which the missile is launched from (i.e. a fighter jet, naval vessel, or transporter-erector-launcher [TEL]). A missile armed with a kinetic kill vehicle differs from a conventional missile as it does not have a warhead and relies on the release of destructive energy when striking an object at high speeds, resulting in the disintegration of both vehicles.<sup>271</sup>

Other types of ASAT weaponry include lasers that have the ability to blind satellite's optical sensors, radio frequency weapons that "fire an intense burst of radio energy at a satellite... [disabling] its electronic components," and directed energy

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<sup>270</sup> Saunders and Lutes, "China's ASAT Test: Motivations and Implications," 39.

<sup>271</sup> John Pike, Kinetic Energy Hit-To-Kill Warhead,  
<http://www.globalsecurity.org/space/systems/kew-htk.htm>.

weapons that have the ability to jam signals to the satellite.<sup>272</sup> As the focus of this paper is on direct ascent ASAT weaponry, any references to other types of ASAT weaponry will be explicitly noted. All other uses of the term ASAT or direct ascent ASAT will be made in reference to a missile armed with a kinetic kill vehicle.

## Background: A Brief History of Direct Ascent ASAT Testing

The advent of direct ascent ASAT weaponry began two years after the successful launch of Sputnik,<sup>273</sup> the first artificial earth satellite created by the Soviet Union. On September 22, 1959, the United States pioneered the first direct ascent ASAT weapon, launching a missile from a jet at 35,000ft in an attempt to intercept the Explorer V satellite.<sup>274</sup> Roughly three weeks later, the United States attempted another intercept, this time successfully targeting and destroying Explorer VI satellite.<sup>275</sup> The United States continued to make advancements in the area of direct ascent ASAT weaponry and conducted tests up until 1970.<sup>276</sup>

Beginning in 1960, after witnessing the United States ability to successfully destroy a satellite in orbit, the Soviet Union began to develop their ASAT program producing their first tested prototypes in 1967.<sup>277</sup> Progression towards an effective and efficient Soviet ASAT weapon was well on its way as the Soviets recorded close to twenty tests between 1968 and 1982.<sup>278</sup> The continuing strides that the Soviets were making in 1976 renewed

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<sup>272</sup> Jesse Oppenheim, "Danger at 700,000 Feet: Why the United States Needs to Develop a Kinetic Anti-Satellite Missile Technology Test-Ban Treaty," *Brooklyn Journal of International Law* 38, no. 2 (2013): 781-84, <http://search.ebscohost.com>..

<sup>273</sup> *Ibid.*, 775.

<sup>274</sup> *Ibid.*

<sup>275</sup> *Ibid.*

<sup>276</sup> *Ibid.*

<sup>277</sup> *Ibid.*

<sup>278</sup> *Ibid.*

United States interests and led to the United States developing a kinetic-energy ASAT missile launched from an F-15 fighter.

It was at this point in the development process the Carter Administration “declared that ‘verifiable, comprehensive limits on anti-satellite capabilities were in the US national security interest,’” and commenced attempting negotiations to address ASAT warfare.<sup>279</sup> However, negotiations fell through when the United States unveiled the Space Shuttle. The Soviets believed that the arm of the Space Shuttle could be used to capture their satellites and stow them in the cargo bay where they could be held and returned to Earth.<sup>280</sup> Furthermore, negotiations failed when neither country could agree on what constitutes a space weapon.<sup>281</sup>

As negotiations faded, ASAT testing continued until September 1985 when the United States Air Force “crashed an ASAT homing vehicle” into a solar research satellite at an altitude of 525 km.<sup>282</sup> The satellite known as Solwind P78-1 broke into 285 detectable pieces of debris which remained in orbit for almost a decade.<sup>283</sup> Despite “Soviet leader Yuri Andropov announcing a unilateral moratorium on ASAT tests in 1983,”<sup>284</sup> it took the remnants of space debris to halt further testing out of fear that an accumulation of debris in orbit could harm future satellite operations in space.

It would take over twenty years before the shot heard around the world would shatter the silence. This time, however, the ASAT test would not be conducted by the United

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<sup>279</sup> Oppenheim, “Danger at 700,000 Feet: Why the United States Needs to Develop a Kinetic Anti-Satellite Missile Technology Test-Ban Treaty,” 775.

<sup>280</sup> Ibid.

<sup>281</sup> Ibid.

<sup>282</sup> Ibid., 776.

<sup>283</sup> Ibid.

<sup>284</sup> Ibid.

States, or by the former Soviet Union (Russia). China had broken the silence in early January 2007, demonstrating their ability to destroy satellites in Earth's orbit. The interception and destruction of their weather satellite flew at altitudes consistent with US ISR satellites<sup>285</sup> and proved China had taken a great military leap forward.

It was during the 1991 Gulf War that the United States had first highlighted its enormous tactical and military advantages facilitated by the use of satellites in warfare. China watched as a large, but antiquated Iraqi army, similar in size and capabilities to China's military fell with relative ease.<sup>286</sup> In 2003 during Operation Iraqi Freedom, the United States again displayed its military prowess and superiority, exhibiting their "reliance on sophisticated command, control, communications (C3) and... (ISR) systems operating in space."<sup>287</sup> On the sidelines and taking notes, China also recognized the US military's increasing reliance on satellite capabilities, leading China to develop an ASAT program to exploit US satellite vulnerabilities. According to China's military strategists, an asymmetric response to US space capabilities could possibly provide China's military with a fighting chance in a future Sino-US conflict.<sup>288</sup>

Although China's direct ascent ASAT trial justified celebration on behalf of the Chinese military, the test conjured an intense international backlash and condemnation.<sup>289</sup> The success of China's ASAT trial created some 35,000 shards of space debris larger

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<sup>285</sup> Oppenheim, "Danger at 700,000 Feet: Why the United States Needs to Develop a Kinetic Anti-Satellite Missile Technology Test-Ban Treaty," 778.

<sup>286</sup> Douglas Waller, Jaime A. FlorCruz, and Mark Thompson, "China's Arms Race," *Time*, February 1, 1999, 32, <http://web.ebscohost.com.proxy1.library.jhu.edu/ehost>.

<sup>287</sup> Erik Seedhouse, *The New Space Race: China vs. The United States*, 1st ed. (New York, 2009): 74.

<sup>288</sup> *Ibid.*

<sup>289</sup> Oppenheim, "Danger at 700,000 Feet: Why the United States Needs to Develop a Kinetic Anti-Satellite Missile Technology Test-Ban Treaty," 778.

than a centimeter and roughly 1,500 shards larger than 10 centimeters according to NASA's Orbital Debris Program.<sup>290</sup> The creation of space debris as a result of China's ASAT test is considered to be the worst single debris event in the history of LEO operations.<sup>291</sup> Although the United States would echo the test one year later during Operation Burnt Frost, the backlash received by the United States would not be nearly as severe despite some in the international community remaining skeptical of the rationale.<sup>292</sup> During the operation, President George W. Bush elected to shoot down intelligence satellite USA-193 to prevent an uncontrolled atmospheric re-entry and halt a 450 kilogram fuel tank from crashing into a populated area and releasing toxic gases.<sup>293</sup> As China cried hypocrisy in response to the US ASAT operation, which they were convinced was a show of force, the debris left by the United States operation was conducted at such a low orbit that the majority of debris burnt up in the atmosphere in less a year.<sup>294</sup>

## The Chinese Threat and Their Intentions

The Chinese ASAT weapon, designated the SC-19, is a "two stage, solid-fuel medium-range ballistic missile"<sup>295</sup> (MRBM) armed with a kinetic kill vehicle, which may be mounted on a mobile transporter-erector-launcher (TEL).<sup>296</sup> In the past China has publicized its ability to temporarily disable US space assets with more traditional

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<sup>290</sup> Seedhouse, *The New Space Race: China vs. The United States*, 72.

<sup>291</sup> *Ibid.*

<sup>292</sup> Oppenheim, "Danger at 700,000 Feet: Why the United States Needs to Develop a Kinetic Anti-Satellite Missile Technology Test-Ban Treaty," 778.

<sup>293</sup> *Ibid.*

<sup>294</sup> Samuel Black and Yousaf Butt. "The Growing Threat of Space Debris," *Bulletin of the Atomic Scientists* 66, no. 2 (March 2010): 1-2.

<sup>295</sup> Shirley Kan, "China's Anti-Satellite Weapon Test," CRS Report for Congress, (April., 2007): 1, accessed March 20, 2011, <http://handle.dtic.mil/100.2/ADA468025>.

<sup>296</sup> Saunders and Lutes, "China's ASAT Test: Motivations and Implications," 39.

counterspace capabilities such as radar jammers and lasers;<sup>297</sup> however the advent of direct ascent weaponry has given China offensive counterspace capabilities to permanently damage or destroy satellites in LEO. The destruction of China's own satellite in LEO was performed under controlled testing conditions and only demonstrated limited capability of direct ascent ASAT.<sup>298</sup> Prior to the successful ASAT test, China had conducted several previous tests using the SC-19 system; however the exact configurations of the previous tests remain unknown and were unsuccessful.<sup>299</sup> While there are a number of plausible reasons for why China selected to test its' ASAT capabilities, the most likely reason is that the test remains consistent with "China's notion of active defense and its deterrence doctrine."<sup>300</sup> Still, others believe that the ASAT test capabilities by China was deliberately intended as an act of deterrence against the United States and to demonstrate that they would not be shut out of space.<sup>301</sup> Others suggested intentions include the flexing of China's military muscles, preparing for a possible future conflict over Taiwan with the upcoming Taiwan elections in 2012,<sup>302</sup> and attempting to "force the US to the negotiating table for a space arms control treaty."<sup>303</sup> Regardless of the reasons for the direct ascent ASAT testing, the success of the test has shown the United States that China is capable of disabling US ISR satellites in similar LEO.

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<sup>297</sup> Bruce W. MacDonald, "China, Space Weapons, and U.S. Security," Council Special Report, no. 38 (September, 2008): 5.

<sup>298</sup> Kan, "China's Anti-Satellite Weapon Test," 3.

<sup>299</sup> Saunders and Lutes, "China's ASAT Test: Motivations and Implications," 39.

<sup>300</sup> Eric Hagt, "China's ASAT Test: Strategic Response," *China Security* (2007): 31.

<sup>301</sup> Gene V. Milowicki and Joan Johnson-Freese, "Strategic Choices: Examining the United States Military Response to the Chinese Anti-Satellite Test," *Astropolitics*, no. 1 (2008): 2.

<sup>302</sup> Hagt, "China's ASAT Test: Strategic Response," 31.

<sup>303</sup> Seedhouse, *The New Space Race: China vs. The United States*, 73.

Given the “increasing economic interdependence and ongoing efforts in both countries to improve relations,”<sup>304</sup> it is becoming increasingly unlikely that the United States and China would go to war. Although the probability of war between China and the United States remains low, the United States is concerned that China may deploy a substantial direct ascent ASAT arsenal,<sup>305</sup> creating a potential threat to US space assets. China has long witnessed the US military’s increasing reliance on ISR capabilities for “communication, reconnaissance, geo-positioning and integration capabilities”<sup>306</sup> and in response has created asymmetric capabilities to exploit potential United States vulnerabilities. Although China’s military space doctrine and intentions remain unclear, the steps that China is taking are similar to how countries in comparable situations react when their national security is threatened: develop military capabilities that target the vulnerabilities of the stronger potential adversary.<sup>307</sup> Although there is much ambiguity, there is some suggestion that China is “moving toward a doctrine of deterrence in offensive counterspace capability”<sup>308</sup> patterned on its strategic weapons doctrine and policy.

Looming in the background is a potential Taiwan contingency with the upcoming presidential election. In this potential conflict China’s first primary objective would be to compromise the United States ability to use ISR satellites at the tactical level.<sup>309</sup> The costs and risks of United States intervention if conflict broke out between Taiwan and

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<sup>304</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 4.

<sup>305</sup> *Ibid.*, 5.

<sup>306</sup> Hagt, “China’s ASAT Test: Strategic Response,” 32.

<sup>307</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 7.

<sup>308</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 9.

<sup>309</sup> Geoffrey Forden, “How China Loses the Coming Space War (Pt.2),” *The Danger Room: What’s Next in National Security Blog*, January 10, 2008, <http://www.wired.com/dangerroom/2008/01/inside-the-ch-1/>.

China have dramatically increased with the advent of China's direct ascent weaponry. Many experts believe that China would preemptively strike US space assets therefore compromising the ability of the United States to operate in the Pacific region.<sup>310</sup> On China's behalf, this task would be difficult since they would first need to identify and track the correct satellites in LEO and then preposition their SC-19 systems to "remote areas determined by satellite orbits."<sup>311</sup> If China could avoid detection and a United States preventative strike, China would still only be able to strike LEO satellites in line of sight since satellites are consistently orbiting Earth. By this time, China would have elicited a military response from the United States and other orbiting satellites would have re-positioned over China.

Simply stated, China has procured the capability to destroy US ISR and other satellites in LEO. While China's intentions remain somewhat clouded, it should be apparent that the development of China's direct ascent capabilities were most likely intended to be used against US space assets in the event that a conflict broke out between the two countries.

## ISR Satellite Vulnerabilities

In the National Space Policy authorized by President Bush in 2006, there is a passage that identifies space capabilities as a top national priority and affirms the right of the United States to protect its space assets and respond to interference.<sup>312</sup> The unveiling and success of China's direct ascent ASAT weaponry as an asymmetric capability has vastly increased the vulnerability of US ISR and other satellites in LEO. Satellites at immediate

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<sup>310</sup> Forden, "How China Loses the Coming Space War (Pt.2)."

<sup>311</sup> Erik Seedhouse, *The New Space Race: China vs. The United States*, 114.

<sup>312</sup> Seedhouse, *The New Space Race: China vs. The United States*, 24.

risk include “US military satellites used for reconnaissance, remote sensing, surveillance, electronic surveillance, and meteorology, as well as... civilian communications satellites with military applications.”<sup>313</sup> The “destruction...and even the threat of their destruction could have devastating”<sup>314</sup> United States and world economic consequences, in addition to military corollaries.<sup>315</sup> Satellites such as GPS, communications, US early warning, and nuclear command and control communications are located in medium, high, and geostationary orbits, and are not vulnerable to China’s direct ascent weaponry.<sup>316</sup>

Of all the countries in the world, the United States is the most reliant on space assets and consequently the most vulnerable to the disruption of its space capabilities.<sup>317</sup> The current national space policy explicitly states that the United States remains committed to the use of space systems to support national security and enable defense and intelligence operations.<sup>318</sup> As noted before, the United States will ‘preserve its rights, capabilities, and freedom of action in space... [and] dissuade or deter others from either impeding those rights or developing capabilities to do so.’<sup>319</sup> The 2006 National Space Policy states that the United States should continue to pursue the development capabilities and plans to ensure the freedom of the United States to act in space and deny such freedoms to adversaries if called upon.<sup>320</sup>

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<sup>313</sup> Saunders and Lutes, “China’s ASAT Test: Motivations and Implications,” 41.

<sup>314</sup> Seedhouse, *The New Space Race: China vs. The United States*, 49.

<sup>315</sup> Ibid.

<sup>316</sup> Saunders and Lutes, “China’s ASAT Test: Motivations and Implications,” 42.

<sup>317</sup> Seedhouse, *The New Space Race: China vs. The United States*, 49.

<sup>318</sup> “National Space Policy of the United States of America,” 14, 2010; 1-18, accessed April 29, 2011, [http://www.whitehouse.gov/sites/default/files/national\\_space\\_policy\\_6-28-10.pdf](http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf).; 13.

<sup>319</sup> Seedhouse, *The New Space Race: China vs. The United States*, 67.

<sup>320</sup> Seedhouse, *The New Space Race: China vs. The United States*, 12.

Satellites are fragile, sensitive, and expensive pieces of equipment that orbit the earth at speeds of 17,000 miles per hour.<sup>321</sup> The cost of attempting to defend satellites undeniably outweighs the cost of developing ASAT weaponry and procuring the technology to defend space assets will be technologically difficult and expensive to develop. The current National Space Policy remains ambiguous and terse with regards to United States space deterrence policy. Although the United States does not mention a nuclear deterrence, the option to retaliate with nuclear weapons has been left open and is “firmly anchored in a doctrine of deterrence”<sup>322</sup> if United States vital interests are attacked. Since President Bush publically declared that US space assets are an integral and vital interest, it would be logical to suggest that these assets would be protected under a nuclear deterrence.

Naturally, if China was to deploy direct ascent ASATs, they would instantly become high priority targets along with any Chinese space object tracking and jamming facilities. In an address to Congress, General James E. Cartwright stated that the United States is “prepared to strike-land based Chinese ASAT[s]...if China shoots down US satellites.”<sup>323</sup> A statement such as this would assist in deterring China from attacking US satellites in a crisis situation, however if the situation called for the United States to act in such a manner, the United States would inflict casualties on the ground and risk escalation.<sup>324</sup>

Placing significant emphasis on protecting its space assets, the United States has gone through considerable lengths to improve their defensive posture in space. In the current National Space Policy, the United States seeks to “ensure cost effective survivability of

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<sup>321</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 5.

<sup>322</sup> *Ibid.*, 13.

<sup>323</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 14.

<sup>324</sup> *Ibid.*

space capabilities...and supporting information systems and networks.”<sup>325</sup> Currently, there are few economically viable defensive solutions to protect space assets. As stated before, defensive satellite technologies are more difficult to develop and more costly than attacking weaponry.<sup>326</sup> Defensive options and modifications currently available include stealth, maneuverability,<sup>327</sup> and the ability to harden satellites. In a Presidential memo, Bush called for countering strategies and funding to procure technologies especially in the area of space situational awareness (SSA).<sup>328</sup> SSA is the United States ability to track and understand objects in orbit. Improvements in SSA that the United States is pursuing are the ability to attribute all activity in circumterrestrial space in real time, including “birth to death tracking and [an] assessment of all threats” to US space assets.<sup>329</sup> Acquiring such capabilities would allow the United States to attribute an attack to a particular adversary and respond accordingly.

In terms of preemptive actions, the National Space Policy states that the United States is seeking to promote developmental technology, improve industrial capacity, and maintain a robust supplier.<sup>330</sup> Although this description is vague, it insinuates that the United States is pursuing a quick, cheap response for replacement satellites. Known as operationally responsive space (ORS) capabilities, the United States could offset the attacks on their space assets by maintaining the capacity to quickly replace satellites with spares or satellites of lesser quality.<sup>331</sup> OSR satellites could also be applied preemptively,

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<sup>325</sup> “National Space Policy of the United States of America,” 14, 2010; 13.

<sup>326</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 23.

<sup>327</sup> *Ibid.*, 16.

<sup>328</sup> *Ibid.*, 15.

<sup>329</sup> *Ibid.*

<sup>330</sup> “National Space Policy of the United States of America,” 14, 2010; 13.

<sup>331</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 16.

adding increased capability, demonstrating political intent,<sup>332</sup> and creating more confusion for the adversary.

From a preventative perspective, the National Space Policy stresses cooperation between relevant departments, agencies, and commercial and foreign entities in order to rapidly “detect, warn, characterize, and attribute natural and man-made disturbances to space systems of US interest.”<sup>333</sup> Based on SSA, early detections of non-friendly objects can assist in alerting national ballistic missile defense interceptors or allow the air force to attempt to maneuver satellites out of harms way. However, the main preventative measure that the United States might exact is varying degrees of diplomacy. While dialogue on weaponizing space has been limited, the United States has voluntarily agreed to debris limitations and safe space operational practices.<sup>334</sup> The space debris caused by China’s ASAT test increased orbital debris by 10 percent and its fallout will take at least one-hundred years before it re-enters Earth’s atmosphere.<sup>335</sup> The destruction of the defunct FY-1 satellite disbursed at least 35,000 shards of debris at speeds of 4,000 km/h into various orbits.<sup>336</sup> While China has joined the United Nations Conference on Disarmament (UNCD) “to promote a treaty to ban all weapons in space,”<sup>337</sup> the United States openly opposed this ban. The only way that the United States would agree on a treaty to ban weapons in space is if arms controls measures “are equitable and effectively verifiable and enhance the security of the”<sup>338</sup> United States and its allies. Additionally,

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<sup>332</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 17.

<sup>333</sup> “National Space Policy of the United States of America,” 14, 2010; 14.

<sup>334</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 27.

<sup>335</sup> *Ibid.*, 6.

<sup>336</sup> Seedhouse, *The New Space Race: China vs. The United States*, 72.

<sup>337</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 27.

<sup>338</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 30.

the ASAT test performed by China does little to comfort and bring the United States to the negotiating table.

## How the United States Should Respond: Diplomatically, Militarily, and Technologically

### Military Options

The National Space policy provides general guidelines, but is ambiguous and has shortfalls. In a military strategy forum at the Center for Strategic and International Studies (CSIS), Deputy Secretary of Defense William J. Lynn III acknowledges that the current space policy (from the Obama Administration) is the first strategic document towards the United States space strategy and further acknowledges that more work and clarification is needed.<sup>339</sup>

A military response suggested by Gen. Cartwright at the CSIS forum was to emphasize cross-domain capabilities to withhold a single point of failure.<sup>340</sup> Giving satellites multiple capabilities will ensure redundancy and increase the complexity of the space network, requiring the adversary to shoot down more satellites. With regards to hard power, the United States could increase defensive spending and pursue the weaponization of space assets in order to gain offensive and defensive counterspace capabilities if China continued to pursue direct ascent ASAT weaponry.

A military and economic hard power that the United States can employ is to enhance restrictions on the arms embargo that has been in place against China since the

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<sup>339</sup> U.S. Department of Defense, "CSIS Forum on the National Security Space Strategy," accessed May 2, 2011, <http://www.defense.gov/speeches/speech.aspx?speechid=1550>.

<sup>340</sup> Ibid.

Tiananmen Square protests in 1989.<sup>341</sup> During this period, the European Union had imposed a similar arms embargo on China.<sup>342</sup> An increase in restrictions could extend beyond military assets to include various goods. In recent years the European Union had considered lifting the ban on arms trades with China and in early October of 2010, President Barack Obama “issued a waiver loosening Tiananmen arms sanctions for C-130 military transports.”<sup>343</sup> While China currently views the waiver as a long awaited step toward completely lifting the ban, the imposition of a stricter ban could be used to coerce China into signing a treaty banning the use and production of direct ascent ASAT weapons. If China were to agree to a ban on the production and usage of ASAT weapons in exchange for lifting the sanctions, China would have to become more transparent in their operations and offer a way to verify that they are not covertly producing direct ascent ASAT weapons. Additionally, the United States could attempt to strengthen the embargo by gaining the support of their European allies and making a stronger push for China to make concessions.

## Diplomatic Response

A political and economic suggestion by Secretary Lynn and Gen. Cartwright was the idea of creating partnerships with other countries. Not only would the costs of developing new assets be split between countries, but deterrence would be enhanced because an attack by an adversary on a space constellation would be an attack on multiple

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<sup>341</sup> Leo Cendrowicz, “Should Europe Lift Its Arms Embargo on China?,” *Time*, (February, 2010), accessed March 4, 2011, <http://www.time.com/time/world/article/0,8599,1961947,00.html>.

<sup>342</sup> Cendrowicz, “Should Europe Lift Its Arms Embargo on China?”

<sup>343</sup> Bill Gertz, “Obama loosens sanctions on C-130s to China,” *Washington Times*, October 11, 2010, accessed May 3, 2011, <http://www.washingtontimes.com/news/2010/oct/11/obama-loosens-sanctions-on-c-130s-to-china/>.

countries.<sup>344</sup> The United States currently owns two-thirds of the world's satellites and as mentioned earlier, the destruction of satellites could have adverse effects on the world economy. Since the United States economy is so vested in satellite systems (e.g. so much information and business is conducted through space)<sup>345</sup> and the Chinese have been buying up US debt, destruction of satellites and the creation of debris would only perpetuate the mutual destruction of United States, Chinese, and world economies. According to Gen. Cartwright, the calculus for being "a bad actor in space" would inevitably be the denial of space services.<sup>346</sup> Not only would the denial of space assets economically hurt a country such as China, but it would force the "bad actor" to supply their own satellites.<sup>309</sup>

In terms of pursuing a soft power in the political realm, the United States could work towards persuading China that they are willing to consider a treaty to prevent an arms race in outer space (PAROS) under the condition that China would be willing to become more transparent and halt the development and production of direct ascent ASAT weaponry.<sup>347</sup> In this compromise each country gets what they desire, however this would require the United States and China to create an effectively verifiable system and require a third party institution such as the United Nations to conduct inspections. Since there is no foolproof plan, each country should start with dialogue and confidence-building measures to improve relations.<sup>348</sup>

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<sup>344</sup> U.S. Department of Defense, "CSIS Forum on the National Security Space Strategy."

<sup>345</sup> U.S. Department of Defense, "CSIS Forum on the National Security Space Strategy."

<sup>346</sup> Ibid.

<sup>346</sup> Ibid.

<sup>347</sup> MacDonald, "China, Space Weapons, and U.S. Security," 27.

<sup>348</sup> Ibid., 28.

An informational and psychological hard power that the United States can employ is to cast shame and “doubt on China’s reliability as a global partner.”<sup>349</sup> The Chinese ASAT test conducted was done at the expense and safety of Chinese, United States, and other foreign satellites in LEO and the debris will continue to endanger these systems for decades.<sup>350</sup> Furthermore, evidence indicates that the People’s Liberation Army (PLA) acted without the consent and knowledge of China’s security and foreign policy bureaucracy.<sup>351</sup> This undoubtedly brings up the question, does Chinese President Hu Jintao, who heads the PLA as the chair of the Central Military Commission and is the Chinese Communist Party general secretary, have control of the country?<sup>352</sup> And if so, what are China’s real intentions? Although China has declared the pursuit of peaceful space interests and a multilateral treaty to ban space weapons within the UNCD, the United States can now declare to the international community that China’s real impetus is toward military space utility.<sup>353</sup> China’s ASAT test showed a lack of concern for other country’s space assets and the United States can embellish this information, making known China’s lack of transparency and their mistrust.<sup>354</sup> From a psychological perspective, the spread of this information can be destructive to the international community’s views on China as a peaceful rising power. International concern coupled with increased scrutiny over China’s actions could lead to political and economic sanctions against China.

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<sup>349</sup> Gill Bates and Martin Kleiber, “China’s Space Odyssey: What the Antisatellite Test Reveals About Decision-Making in Beijing,” *In Foreign Affairs*, 6: Council on Foreign Relations, 2007: 4.

<sup>350</sup> *Ibid.*

<sup>351</sup> Bates and Kleiber, “China’s Space Odyssey: What the Antisatellite Test Reveals About Decision-Making in Beijing,” 3.

<sup>352</sup> *Ibid.*

<sup>353</sup> *Ibid.*

<sup>354</sup> *Ibid.*, 4-5.

## Technological Alternatives

Improvements in satellite technology or other protective defensive measures are deeply rooted in a military response due to the primary function and capabilities of ISR satellites. As noted in the previous section titled *ISR Satellite Vulnerabilities*, many of the technological options are not financially viable, are difficult to develop, and have greater associated escalatory risk.<sup>355</sup> Technological advancements that would exacerbate escalation includes the weaponization of space assets. Weaponizing space assets, even if the weapons are purely defensive in nature, is problematic simply due to the fact that satellites orbit earth. While weaponized satellites orbiting earth could potentially provide lethal or non-lethal offensive or defensive US quick strike capabilities as satellites flew over intended targets, ally and neutral states would have weapons pointed at them as the satellites continued on its orbital path. Consequences for deploying such a system would be intense backlash from the international community and an escalation in the development of ASAT weaponry and weaponized space assets. While getting allies and neutral countries onboard with weaponizing space via a treaty or joint agreement may alleviate some of the backlash from the international community, countries not on the list would escalate their efforts of developing ASAT weaponry.

As of 2008 the United States has made no mention of “any offensive space programs it may develop,” and has continued to focus on improved SSA and protection.<sup>356</sup> In order to ensure survivability of its satellites in LEO, the United States needs to search for cost effective technologies to augment its satellite constellations. Improving SSA would provide real time data of objects in space and early warning detection of non-friendly

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<sup>355</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 4.

<sup>356</sup> MacDonald, “China, Space Weapons, and U.S. Security,” 16.

objects, allowing the air force to attempt to maneuver satellites out of harm's way and increasing survivability. Hardening satellites, equipping satellites with stealth technology, increasing their maneuverability, giving satellites multiple capabilities are also all viable options for increasing survivability. As previously stated, OSR satellites are another alternative for bolstering capabilities during times of crisis or for offsetting satellites that were damaged or destroyed. Lastly, non-space backup systems that are actively being utilized today by the military include unmanned aerial vehicles (UAVs) and ground-based signal and communications transmitters which can be used to augment satellite capabilities.<sup>357</sup> While these non-space systems may not offer the same functionality or durability of a satellite, they cost less than a replacement satellite.<sup>358</sup> In the end, distributing space capabilities across a large and diverse set of space and non-space platforms reduces the vulnerability of space assets and aids in preventing adversaries from holding those assets at risk.<sup>359</sup>

## Conclusion

In order for the United States to respond to China's development of direct ascent ASAT weaponry, the United States needs to take a multifaceted approach. An amalgamation of military, technological, and diplomatic actions is needed to increase ISR satellite survivability to its maximum potential. If the United States were to only make technological advancements to satellites, there would be nothing to deter the China from launching a direct ascent ASAT missile at a US satellite during a crisis or war. Vice versa, if the United States were to only pursue a diplomatic response, the United States

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<sup>357</sup> MacDonald, "China, Space Weapons, and U.S. Security," 17.

<sup>358</sup> Ibid.

<sup>359</sup> Ibid.

might be able to provide some disincentives, but satellite capabilities would still be at risk. States are not always rational actors and even if the United States were to develop joint satellite ventures, there would be nothing to protect satellites in LEO against an irrational actor. While taking a multifaceted approach to responding to the Chinese ASAT threat does not eliminate the threat, it drastically reduces China's ability to hit US satellites in orbit and provides varying levels of deterrence.

Although China has only proven its direct ascent ASAT capabilities under limited and controlled conditions, the issue of China potentially developing a direct ascent ASAT arsenal warrants continued discussion and concern. While China's development of a direct ascent ASAT program suggests military preparedness for a potential Sino-US conflict, possibly over a Taiwan invasion scenario, the intent of exhibiting their capabilities remains somewhat blurred since the dangers of conducting such a test are well documented. The debris created by the destruction of satellites by direct ascent ASAT weapons is detrimental to future space operations and the remains from the destruction of intended targets could inadvertently destroy other existing satellites in orbit.

As the United States is a country that is the most heavily invested in satellite constellations, both for military and civilian applications, China has zeroed in on an invaluable asset. Satellites remain one of the key sources of military superiority, command, and control for the US military and are essential for the functioning of the United States, as well as the global economy. As a result, the destruction of satellites could have adverse repercussions for both the United States and global economy, to include China since they are so heavily intertwined with the United States.

While US doctrine on protecting assets in space remains ambiguous, it is clear that the protections of satellites is a high priority national security interest and that an attack on such assets will elicit a military response that could potentially comprise of a nuclear strike. While actions are being taken to mitigate satellite debris and the destruction of satellites in orbit, satellite defense systems remain a costly and complex endeavor, and may escalate an arms race if satellite defense systems are placed in space.

Rather than pursue such a costly protective action, the United States could respond to the emerging threat by creating satellites with redundancy features, creating partnerships with other countries in order to make an attack on satellites more costly and draw in other countries for support, and to work towards a treaty banning direct ascent ASAT weaponry. All of the responses mentioned in this paper could be pursued either alone or could encompass a multitude of avenues.

As evidenced by this paper it is clear that China's direct ascent ASAT program is a legitimate emerging threat to US ISR and other satellites in LEO. China's successful ASAT trial ascertained their ability to touch US assets in space; however, the degree to which China's ASAT program is a threat to US satellites is not quantifiable. As a piece of military equipment that is still undergoing developmental testing, and thus not deployed to the field, it is difficult to gauge the threat level of this equipment. Moving forward, if China decides to deploy an ASAT arsenal, the threat level and China's willingness to use ASAT weaponry in a possible future conflict increases.

While this threat continues to emerge, this paper concludes that the United States will continue to rely on space assets for the foreseeable future. The result for successfully

having destroyed a satellite in orbit continues to be met with condemnation and backlash from the international community, and places the user state of a direct ascent ASAT weapon in an ever growing precarious position. As more states strive to either develop their own space constellations or harness the services and capabilities that existing satellites provide, increasing real-estate in space by reducing the amount of debris orbiting earth escalates the unpopularity and disapproval of using direct ascent ASAT weaponry by the international community. The world is quickly becoming more dependent and interconnected to satellite capabilities, and as globalization expands, the role of satellites will continue to increase.

Even though the international community is continuing to increase its reliance on satellite capabilities, this paper acknowledges that states can act irrationally. In China's case, it remains somewhat unclear who controls the PLA as they acted without the consent and knowledge of China's security and foreign policy bureaucracy when conducting the ASAT trial. Acknowledging the ASAT weapon as a legitimate threat, as well as recognizing that there may be some ambiguity pertaining to who leads the PLA, provides justification that relying on the international community's condemnation of using direct ascent ASAT weaponry may not be enough. Therefore, it is vital that the United States continues to pursue plans to protect US space assets. Such endeavors to protect US satellite constellations include, but are not limited to, increasing foreign dependency on satellites, pursuing a treaty banning direct ascent ASAT weaponry, and buttressing current satellite capabilities with replaceable or hardening military options.

As other states continue to take up real-estate in orbit, the United States is slowly losing grasp of its monopoly in space. Although the United States may soon not enjoy the

military advantages satellites solely provided to them, the addition of foreign dependency on satellites and the launching of their own systems will transfix efforts on protecting space assets and creating a safe environment in space. A crucial element of deterrence for the United States will be to exploit the international community's disapproval of direct ascent ASAT weaponry. While China may have increased its operational ASAT capabilities by incorporating direct ascent weaponry, it seems as though the window for acceptable usage of this type of ASAT weaponry is shrinking. As states continue to increase their reliance on satellite capabilities and the global economy continues to function on satellite based systems, the risk of creating additional debris in space could have dire consequences for the country that intentionally creates unwelcome debris in orbit. Therefore, China's direct ascent ASAT weaponry may one day become obsolete, unless they manage to create a system that can accurately target and destroy satellites without creating clouds of debris.

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## Thesis Conclusion

China's rise and how it affects the United States is an issue that will continue to persist as long as China remains on its current path of growth, development, and evolution. While the chapters in this portfolio describe varying issues that the United States will have to contend with now and in the future, there are still other elements of China's rise that need to be explored in order to gain a more holistic view of what China's rise means for the United States. The varying issues in this portfolio largely illustrate but a few specific aspects of how China is evolving and becoming a bigger player on the world stage.

The first chapter of the paper argues that China's economy, in terms of global GDP output, will surpass the United States; however, the United States will continue to direct and lead the international community and world economy due to lack of trust in China's government and concerns about China's political stability and social unrest. Despite having an economy that is projected to grow for the next two to three decades, China's economy remains frail and China's leaders have to begin to address a multitude of issues that could slow down its economic growth. A few of these issues include growing poverty and wage disparity, social unrest, job placement, unethical practices, and growing environmental issues. While the Sino-US economic relationship has eroded some US economic instruments of power that might have been used as leverage against China to make changes, China may have forced its own hand by letting some of these issues run unchecked for far too long. For the United States, the power of their economic instruments has waned with regards to China, but the tradeoff to expand its economy has worked out favorably in some respects. For many Americans and US policymakers,

China purchasing large amounts of US debt remains a concern; however, this paper suggests a mutual destruction of both major economies as well as the global economy if China were to dump large amounts of US debt. While the scenarios provided imply that China has only a few incentives to dump large amounts of US debt, a bigger concern for many Americans should be whether or not continued reliance on foreign borrowing is sustainable. Exploring ways to rely less on foreign investment, reduce borrowing, and cut spending are issues that the United States needs to address. For even if China does not deliberately dump its foreign investments, the possibility remains that China's economy could fail. It will be interesting to see how China elects to tackle the prevailing issues that surround their economy without slowing down economic growth. Any slowdown in economic growth is likely to exacerbate any issues tied to China's economy.

Findings in the second chapter suggests that the United State will no longer be able to send its navy into the Taiwan Strait uncontested if a conflict were to ensue between China and Taiwan. Military advancements that China has made since the mid-1990s to create an anti-access theater of operation for the United States includes developing their own C4ISR capabilities, as well as the ability to attack US C4ISR, naval, and air combatants in the region. Although many of China's capabilities have yet to be tested during a period of war, the military technological advancements that China is striving for still give cause for extreme caution. Tensions between China and Taiwan have remained low since the 1996 Taiwan Strait conflict due to Taiwan not declaring its independence at the United States urging.

The final chapter of this paper argues that the United States will be able to continue to rely on its space-based assets despite China's development of direct ascent

ASAT weaponry. As orbiting space real estate becomes increasingly sparse, due to other countries investing in space-based assets and existing orbiting debris, the creation of more debris in space will only lead to condemnation by the international community. As globalization expands, satellites will continue to play an increasingly integral part as new countries begin to rely on these assets, therefore shrinking China's opportunity to use its direct ascent ASAT weaponry against its enemies. However, this chapter acknowledges that states are not always rational actors, as exhibited by China's sudden ASAT launch, and that the United States needs to invest in securing its space-based assets and must consider a multifaceted approach.

While this paper is able to depict China's rise through focusing on specific subjects and relaying how those particular advancements affect the United States, this paper does lack elements that would provide a broader sense of China's rise. One subject that was not dealt with in great detail, but surfaced as a result of the research conducted for this paper is the question of who controls China's military? As research in this portfolio has shown, the PLA conducted a direct ascent ASAT launch without the consent and knowledge of China's security and foreign policy bureaucracy. In conjunction with the latter question, what are China's real intentions? While this paper does not delve into China's military command structure and to whom the military reports, unilateral actions by the military suggests disagreements between the military commanders and civilian authorities on how the country should act with regards to interactions with foreign countries and show of force. As a country that has continuously attempted to market its rise as one of peace, this show of force undoubtedly echoes concerns that the military may have an agenda that differs from China's civilian leadership. Without knowing

whether or not China's military is truly subordinate to China's civilian branch of the government, it is difficult to assess China's true intentions. Other aspects of this paper that need to be explored in greater detail in order to gain a broader understanding of China's rise and how it affects the United States include research on China's political framework, demographics, and environmental issues.

In the end this paper successfully explores how the relationship between the United States and China is evolving and how those changes are affecting the United States. With many more areas in the relationship to explore, it is difficult to assess where this relationship is headed. Although China is slowly building and modernizing its military, it seems unlikely that a conflict between either country will ensue in the near future. While the Sino-US economic relationship does not guarantee that a conflict between the two countries or a possible Taiwan Strait conflict won't occur, the economic relationship does provide some stability, or at least an incentive, not to engage in a conflict with one another. Although China actively tries to market its rise as a peaceful one, China's military and political actions may suggest otherwise. As the research in this paper has suggested, the United States needs to explore methods for reducing debt and reliance on foreign loans, and remain vigilant when it comes to watching China's military.

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### **Employment**

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### **Education**

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