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Sam Rouleau  
*United States Air Force, sam.rouleau@edu.edu*

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## China's Military Space Strategy: A Dialectical Materialism Perspective

Sam Rouleau

*China's military space strategy accommodates in significant ways the Chinese Communist Party's (CCP's) ideological commitment to dialectical materialism. This Marxian commitment persists and manifests in China's investment in space power despite the Party's widely acknowledged development of state capitalism to guide China's economy.*

### CHINA'S MILITARY SPACE STRATEGY

The trajectory of humankind changed on 4 October 1957 when the Soviet Union launched Sputnik, becoming the first nation to successfully enter the space domain.<sup>1</sup> Since 1957, space technology has developed rapidly, as we have continued to push the boundaries of space exploration. In the 21<sup>st</sup> century, space technology forms the foundation for modern communication, navigation, and warfighting capability. Without space, modern society would be denied GPS technology, and militaries would be unable to establish global communications, perform satellite reconnaissance, or execute precision strikes. In many ways, the space domain will be increasingly vital to the national interest and international politics moving forward.

China's recent economic success provides a strong bulwark on which to build their space capability. Throughout the 1990s, China's GDP grew at an outstanding rate of no less than seven percent annually.<sup>2</sup> Current projections have the Chinese economy

surpassing the U.S. and holding forty percent of global GDP by 2040.<sup>3</sup> The economic success of the People's Republic of China (PRC) will allow for commitment and progress in the pursuit of advanced space technology.

China has identified space as integral to achieving national prosperity and security. More specifically, Liu Yanjun, Wan Shuixian, Li Daguang, and Guo Tong from the National Defense University write in their work, *On Space Dominance*, that space holds the key to political, economic, and military security.<sup>4</sup> Space capability can be a powerful diplomatic tool. For example, during the Berlin Crisis, the United States used the Samos 2 photoreconnaissance satellite to determine that the Soviet Union had no combat ready ballistic missiles, undermining Nikita Khrushchev's stated position that the missile gap between the Soviets and the Americans was insurmountable, forcing Khrushchev to soften his stance and compromise.<sup>5</sup> The Chinese view this early utilization of space technology as a foundational example of how space technology can strengthen China's diplomacy, placing them in a stronger negotiating position. In other words, space

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<sup>1</sup> Sam Rouleau is Second Lieutenant in the United States Air Force and Class of '17 at the U.S. Air Force Academy.

<sup>2</sup> Henry Kissinger, *On China* (New York: Penguin Books, 2011), 479.

<sup>3</sup> Joseph Nye Jr., *The Future of Power* (New York: Public Affairs, 2011), 184.

<sup>4</sup> Liu Yanjun, Wan Shuixian, Li Daguang, Guo Tong, *On Space Dominance* (Beijing: National Defense University, 2003), 1, 3, 8.

<sup>5</sup> *Ibid.*, 3.

enables the national information system, which strengthens diplomatic capacity and propagates political proposals, opinions, and ideology.<sup>6</sup>

In the economic realm, China asserts that space holds promise for economic prosperity. Regarding resources, the People's Republic of China is cognizant of the potential implications of the unique treasures found beyond Earth's atmosphere, such as potential energy sources and the potential for new biotechnologies, believing that new technologies will become economically profitable.<sup>7</sup> Additionally, China intertwines the future of humanity with the future of the space domain: "the population that Earth can sustain has a limit, and sooner or later mankind will set forth the proposition to expand living space into outer space. Therefore, in the 21<sup>st</sup> Century, mankind's reliance on space aviation technology will be similar to mankind's reliance on electricity and petroleum."<sup>8</sup> If the potential of the space domain is harnessed properly, they conclude that consequent economic growth will raise the standard of living throughout China and strengthen China's international position by fortifying their economy.<sup>9</sup> The dynamism that space can bring to labor, capital, production, and markets is another example of why China believes that space power contributes to ensuring national survivability.<sup>10</sup>

Space's past and potential impact on military capability is also of significant interest to China. As China observed the Cold War competition between America and the Soviet Union, they concluded that space was the deciding factor and would be in the future:

"mankind's demands on the realm of space have continually increased, and have led to a further strengthening of the trend toward the militarization of space."<sup>11</sup> In general, the Chinese military and Communist Party believe that space will be the domain that dictates victory in future wars, because "in the 21<sup>st</sup> century, possessing the vantage point of outer space will to a very large degree allow control of the progress and conclusion of war."<sup>12</sup> Space's considerable impact on warfare reinforces the political and economic justification for why a strong space capability is paramount to China's interest and development.

After prevailing in the Cold War against the Soviet Union, the United States now finds itself joined by the People's Republic of China as a preeminent player on the international stage. As outlined above, the governing Communist Party of China (CPC) is committed to developing their space capabilities to ensure China's place on the world stage and survival of the Party. The experience of the United States during the Cold War offers historical insight into how to better understand the foundation of China's military space strategy.

Specifically, Dr. Andrew Marshall's work on understanding Soviet strategy outlines a promising framework of how to enhance America's awareness of China's approach to the space domain. Before Andrew Marshall's arrival at the Pentagon, Department of Defense assessments of Soviet military power were strictly based on quantitative methods.<sup>13</sup> However, Marshall's approach to net assessment held that quantitative comparisons

<sup>6</sup> Ibid., 4.

<sup>7</sup> Ibid., 4, 7.

<sup>8</sup> Ibid., 4.

<sup>9</sup> Ibid., 8.

<sup>10</sup> Ibid., 8.

<sup>11</sup> Yanjun, Shuixian, Daguang, and Tong, *On Space Dominance*, 19.

<sup>12</sup> Ibid., 9.

<sup>13</sup> Andrew F. Krepinevich and Barry Watts, *The Last Warrior Andrew Marshall and the Shaping of Modern American Defense Strategy* (New York, NY: Basic Books, 2015), 171.

must “capture qualitative differences between the opposing men and equipment,” and that it was necessary to “incorporate differences in training, tactics, military doctrine, campaign strategy, and theater objectives.”<sup>14</sup> Marshall’s approach directly contributed to the end of the Cold War and collapse of the Soviet Union. Although the Soviets had put themselves under economic stress, “Marshall’s insights into the true burden enabled him to provide Weinberger, Iklé, and many others with a more accurate and nuanced assessment of how the long-term competition with the Soviets was going and whether deterrence was likely to hold.”<sup>15</sup> Marshall understood that strategy and policy are influenced by more than a few factors. By understanding Soviet approaches to training, tactics, and military doctrine, he was able to better assess Soviet military strength and the Soviet-U.S. competition and conflict. In this same way, understanding Chinese thought and perspective is fundamental to forming sound long-term strategy for the United States.

The context in which the Chinese understand space has evolved along with the evolution of the space domain itself. However, dialectical materialism, the philosophical grounding of the CPC, influences their thinking, including military space theory and strategy. China has concluded that humankind has begun an inevitable transition to the Age of Information, where victory in conflict and the international realm will be determined by which nation can most adeptly obtain, protect, and exploit knowledge and information. Space will be the method by which information dominance can be gained and “will be the decisive factor for victory in warfare.”<sup>16</sup> Dialectical materialism is not the only lens through which China’s military

space posturing can be understood; however, the dialectical materialist perspective provides essential insight into the foundations of China’s military space doctrine that American policymakers and strategists must consider.

## DIALECTICAL MATERIALISM

Dialectical materialism is the philosophy and world view that was established by Karl Marx and Friedrich Engels and served as the foundation for Marxism. Marx and Engels rejected idealism in favor of materialism. Marx describes his “materialist conception of history” as starting from “the proposition that production of the means to support human life and, next to production, the exchange of things produced, is the basis of all social structure... The final causes of all social changes and political revolutions are to be sought, not in men’s brains, not in men’s better insights into eternal truth and justice, but in changes in the modes of production and exchange.”<sup>17</sup> In Marx and Engels’ view, understanding must be grounded in real, or material, conditions.

The original term dialectics was coined by G.W.F. Hegel in a response to the abstractive view of metaphysics. Hegel specifically opposed metaphysical abstractive thought because it viewed objects as having set identities and characteristics.<sup>18</sup> In Hegel’s mind, dialectical thought defines concepts based on interrelationship and interaction, so ideas are defined based on this constant evolving notion of relationship. Dialectical thought is especially important when two ideas seem to contradict one another, and this contradiction drives understanding of the

<sup>14</sup> Ibid., 184.

<sup>15</sup> Ibid., 190.

<sup>16</sup> Li Daguang, *On Space Warfare* (Beijing: Military Science Publishing House, 2001), 367.

<sup>17</sup> T. Borodulina, *On Historical Materialism: A Collection* (Moscow: Progress Publishers, 1976).

<sup>18</sup> Ibid.

world.<sup>19</sup> In essence, dialectical materialists look to the material world to discover the nature of contradictions that serve as the force of change in the world and seek to determine the laws that govern and describe this change.

Since Mao-Tse Tung, the CPC has relied on dialectical materialism as the foundation of its approach to domestic and international affairs. While each leader of the CPC since Mao has emphasized different policies for China, they all agree on the main contradiction that China is facing. Currently, "the main overall contradiction is the contradiction between the societal needs of the people and the ability of the CPC to provide for them."<sup>20</sup> The focus of the CPC is inherently pointed inward, as the main contradiction has the potential to destroy the Party's rule if it goes unaddressed. Essentially, resolving the main contradiction holds the key to the longevity of the Chinese populace, the CPC maintains that the Party can still save China, making the interests of the Party akin to those of the Chinese state: "Safeguarding the core and its authority is the highest interest of the entire party, and the entire country and nation."<sup>21</sup>

While the foundational contradiction in China's dialectical materialist perspective is grounded in the domestic realm, the CPC also applies this dialectical thinking to the international environment. Although Marx's initial thoughts on class conflict, which were derived from dialectical materialism, were centered on individuals and small collectives, he concluded that class conflict had already

and would continue to evolve into national and global political forces.<sup>22</sup> Just as class conflict informs domestic policy in China, the competition between the CPC and the United States can be viewed as driven by class conflict as well. This is reflected by the asymmetry of technological capability in the space domain between China and America. The CPC has determined that the main contradiction "in the event of war is the contradiction between the high technological level of the U.S. forces and the relatively low technological level of Chinese forces."<sup>23</sup> As a result, China has focused on modernizing their military in an attempt to resolve this contradiction, which has been illustrated by China's strategy of Anti-Access/Area Denial (A2/AD).

The space domain promises to contribute to the resolution of both the main contradiction of the CPC and the contradiction between the United States and China. The promise of space is immense, and Ning Wangrong and Ling Chunhui even go as far as to argue that "one can even predict that the next industrial revolution will be conducted in space."<sup>24</sup> This transition from material means of production to advanced technology and a focus on concentrating knowledge will propel humanity into the Age of Information. Given the perspective of the CPC that the space domain offers an opportunity to revolutionize the economy, properly developing space capability would significantly contribute to the ability of the CPC to provide for the societal needs of the Chinese population.

<sup>19</sup> GWF. Hegel, *Philosophy of Right*, trans. S.W. Dyde (Ontario: Batoche Books, 2001).

<sup>20</sup> John T. Banks, "Questions on China Space Strategy," e-mail message to author, April 15, 2017. (John Banks is a Senior Analyst at Leidos).

<sup>21</sup> Chris Buckley, "China's Communist Party Declares Xi Jinping 'Core' Leader," *The New York Times*, October 27, 2016, accessed May 1, 2017,

[https://www.nytimes.com/2016/10/28/world/asia/xi-jinping-china.html?\\_r=0](https://www.nytimes.com/2016/10/28/world/asia/xi-jinping-china.html?_r=0).

<sup>22</sup> R.J. Rummel, *Understanding Conflict and War: Volume 3 Conflict in Perspective* (Beverly Hills California: Sage Publications, 1977), Chapter 5.

<sup>23</sup> Ibid.

<sup>24</sup> Ning Wangrong and Ling Chunhui, *Space Confrontation*, 2nd ed. (Beijing: Junshi Yiwen Press, 2010), ix.

Viewed from the context of Chinese and American military capability, the space domain will once again play a significant role in resolving this contradiction. The command of space offers the promise of “effectively control[ing] other nations” both militarily and politically.<sup>25</sup> Because space has the potential to alleviate the main contradiction within the People’s Republic of China and elevate China’s international standing, the CPC is committed to its development moving forward.

### HISTORY OF THE SPACE DOMAIN

Although China was not directly involved in the early Space Race, their historical view of the development of the space environment, space technology, and its impact on military confrontation is foundational to their current view of space. Generally, Chinese space history analysts separate the development of the space domain into three periods: the initial period, the middle period, and modern day space operations.<sup>26</sup>

Jia Jun Ming, a colonel in the People’s Liberation Army and professor at the National Defense University in Beijing, focuses on the historical evolution of space’s role in military conflict. He defines the initial period of space operations as the 1960s and 1970s.<sup>27</sup> During this time, space operations generally consisted of “information assistance and support.”<sup>28</sup> In addition to mentioning satellite technology’s role in resolving the Berlin Crisis of 1961 on favorable terms for the United States, Jia Jun Ming also offers the Cuban Missile Crisis and the Fourth Middle East War as additional

examples of space operations in the initial period. The Yom Kippur War is highlighted because it is the first time in which space information assistance was used to directly support combat operations. During this conflict, the United States and Soviet Union employed a total of thirty-four reconnaissance satellites.<sup>29</sup> Satellite capability facilitated the initial success of the Egyptian and Syrian militaries. Specifically, Soviet intelligence gave Egypt and Syria the knowledge of Israel’s weaknesses in the Bar Lev defensive line and how to avoid American reconnaissance satellites.<sup>30</sup> Soon after, the United States Big Bird reconnaissance satellites noticed a ten kilometer gap between Egypt’s second and third army groups, giving Israeli forces the knowledge to launch a counter attack that resulted in Israel regaining the initiative in the conflict.<sup>31</sup> Space operations in the initial period were an extension of other military capabilities, and space characteristics during this time period can be described as: “indirect confrontation, fairly small operational means and scale, rather low operational effectiveness, and single strategic operational goals.”<sup>32</sup>

The middle period, which occurred during the 1980s and early 1990s, witnessed the maturation of “indirect confrontational” space operations.<sup>33</sup> From a technology development standpoint, the United States improved upon military communication capability through the MILSTAR Program, which also had the goals of establishing a strategic communication system that could resist jamming and could survive nuclear warfare.<sup>34</sup> Additionally, America focused on early warning capability and launched the

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

<sup>26</sup> Jia Jun Ming, *On Space Operations* (Beijing: National Defense University Press, 2002), 2.

<sup>27</sup> Ibid., 2.

<sup>28</sup> Jun Ming, *On Space Operations*, 2.

<sup>29</sup> Ibid., 3.

<sup>30</sup> Wangrong and Chunhui, *Space Confrontation*, 25.

<sup>31</sup> Ibid., 25.

<sup>32</sup> Jun Ming, *On Space Operations*, 4.

<sup>33</sup> Ibid., 4.

<sup>34</sup> Ibid., 5.

Defense Support Program (DSP) satellites. Unfortunately, the limitations of the DSP were exposed during the Gulf War, because it was not able to provide adequate warning time for theater tactical missile defense. Nonetheless, the DSP led to refinement of early warning systems.<sup>35</sup> Another trend was the simplification of space equipment with a focus on miniaturization. Lastly, President Reagan's Star Wars Program and America's commitment to both National and Theater Missile Defense Systems revolutionized space warfare, shifting the focus of space military technology from a tactical to strategic level.

The Malvinas Islands War, Kosovo Conflict, and the Gulf War all illustrate the maturation of space's role in warfare. At the outbreak of the Malvinas Islands War, the United States supported the United Kingdom with twenty-four reconnaissance satellites to provide the British with accurate, current military intelligence.<sup>36</sup> The Soviets provided similar support to Argentina by mobilizing thirty-seven satellites of their own. Both sides were effective, as the British were able to sink the Argentine cruiser, *General Belgrano*, and Argentina was able to sink the *Sheffield*, a British destroyer.<sup>37</sup> The Kosovo conflict was characterized by similar types of operations and also saw a large prevalence of precision guided munitions.

The Gulf War is commonly referred to as the "first outer space war."<sup>38</sup> The multinational effort to fight against Saddam Hussein was held together by American space operations which provided "fully systematic reconnaissance, early warning and detection, command and control, communications, navigation and positioning, and

meteorological services."<sup>39</sup> It was such a success that America proclaimed the integral role of space assets. General Thomas S. Moorman Jr., commander of Air Force Space Command during the Gulf War, stated, "Operation Desert Storm was a watershed in the history of the military applications and development of outer space; it was the first time that outer space systems were comprehensively used in a military conflict, and it had a crucial impact on the outcome of the war."<sup>40</sup> China paid close attention to the role of space assets and how they were employed during the Gulf War and agreed with General Moorman's assessment, concluding that "indirectly confrontational space information warfare not only directly served strategic goals but also went deep into the campaign and combat spheres...it had begun to manifest certain characteristics of a campaign."<sup>41</sup>

After the hi-tech local wars of the 1990s, the descriptions tend to become more generalized. For example, the Chinese space analysts agree that the current phase of space development is the "completion of maturation."<sup>42</sup> In addition to the continued development of technology, the early stages of the 21<sup>st</sup> century witnessed a renewed focus on space operational theory and organizational layout.<sup>43</sup> The Schriever Space Exercises in 2001 directly demonstrated this point for the Chinese. What separated this particular space warfare exercise was that the space domain was treated as "an important means of deterrence in an informationized age" and that the hypothetical operations included elements of satellite warfare.<sup>44</sup> The Chinese consider the Schriever Space

<sup>35</sup> Ibid., 5.

<sup>36</sup> Wangrong and Chunhui, *Space Confrontation*, 25.

<sup>37</sup> Ibid., 26.

<sup>38</sup> Wangrong and Chunhui, *Space Confrontation*, 28.

<sup>39</sup> Ibid., 29.

<sup>40</sup> Ibid., 29.

<sup>41</sup> Jun Ming, *On Space Operations*, 7.

<sup>42</sup> Yanjun, Shuixian, Daguang, and Tong, *On Space Dominance*, 263.

<sup>43</sup> Ibid., 264.

<sup>44</sup> Daguang, *On Space Warfare*, 288.

Simulation as a watershed event that provides the evolution of U.S. space doctrine, demonstrating the maturation of space development. PLA space analysts noted characteristics of American space operations that had not been seen before. One novel concept was the utilization of space assets as a deterrent measure.<sup>45</sup> A second novel concept was the implementation of weapons that are “non-lethal and whose effects are reversible.”<sup>46</sup> Since this initial space exercise, the United States has conducted seven more; the most recent was held in 2012 and focused on the organizational system of Air Force Space Command and integration of space operations with ground operations and NATO countries.<sup>47</sup> China is aware of the United States investigation of space operational theory and organization based studies, indicating that the space domain is in the final stages of maturation

### **DIALECTICAL MATERIALISM APPLIED TO THE SPACE DOMAIN**

After reviewing the general concept of dialectical materialism and offering a macro view of space history from the Chinese perspective, the next important step to understanding the foundation of Chinese military space strategy is to synthesize dialectical materialism with the historical evolution of the space domain. Before continuing with this synthesis, the Chinese explicitly state that the goal of studying space is to “understand its innate laws and interrelationships.”<sup>48</sup> Only through this understanding can the initiative in space be obtained.

One of the integral interrelationships is how the Information Age and the space domain relate and influence one another: “Progress in science and technology has forcefully pushed the development of mankind’s history forward...transforming from the post-Industrial Age to the Information Age.”<sup>49</sup> The new Age of Information has and will continue to redefine economic and cultural patterns. Instead of a world that values industrial strength and manufacturing capability, the Information Age will value comprehensive knowledge.

As with many contradictions, the current contradiction between the remnants of industrialization and future of informationization are a source of disruption. The Information Age has already begun to drastically affect “nations’ economic growth, social development and national strength.”<sup>50</sup> The new competition enabled by the Information Age is responsible for shifting the world towards multipolarity and “smashing the old proportion of strengths.”<sup>51</sup> Therefore, the Chinese are committed to using the trend of informationization to strengthen their cultural, economic, and international standing and to shortcut the process of catching up to the United States.

The revolution from an industrial world to an informationized world touches upon every aspect of society, including warfare. China has concluded that warfare in the Age of Information will be significantly different. The goal of “warfare is no longer primarily to annihilate the enemy’s effective strengths, but rather it is primarily to destroy and paralyze the enemy’s battlefield knowledge and information systems, to effectively control his

<sup>45</sup> Ibid., 291.

<sup>46</sup> Ibid., 292.

<sup>47</sup> Jiang Lianju, ed., *Lectures on the Science of Space Operations* (Beijing: Military Science Press, 2013), 12.

<sup>48</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 2.

<sup>49</sup> Daguang, *On Space Warfare*, 1.

<sup>50</sup> Ibid., 4.

<sup>51</sup> Ibid., 4.

information flow, energy flows, and material flows, thus achieving the goal of controlling the battlefield.”<sup>52</sup> The objective in future warfare will center on information superiority. The driving force behind these new laws of information warfare is the same technological force that brought about the information revolution. While the move towards the Age of Information is relatively new, it is not surprising because technology has been moving civilization forward throughout human history. In this regard, the Age of Information and importance of the space domain are the logical follow-ons of the evolution of the land, sea, and air domains.

One of the main conclusions is that the space domain holds the key to controlling the land, sea, and air domains as well as dominance in informationized warfare. The history of space and how it was employed by the United States and Soviet Union during the Cold War has led the Chinese to reach this conclusion: “In the 21<sup>st</sup> century, possessing the vantage point of outer space will to a very large degree allow control of the progress and conclusion of war, and at the present time, this is rapidly developing in the direction of final guidance to victory in war.”<sup>53</sup> The unique capabilities of the space domain are why space “is the strategic vantage point of informationized warfare” and will provide the information superiority that is necessary to capturing the digitized battlefield.<sup>54</sup> Space military strengths offer the solution to the contradiction between the Chinese and American militaries and will lead to “the overall elevation of a national military system’s confrontational capabilities.”<sup>55</sup>

After describing the law of space’s role in information dominance, Chinese analysts derive another important insight from the history of the space domain, concluding that space warfare is inevitable. Perhaps due to the probabilistic nature of dialectic analysis, the CPC tends to view the history of warfare through a technological deterministic lens.

Although the CPC does not believe that private property will cease to exist and is by no means dedicated to ending private property within China, the Party attributes the accrual of wealth as the origin of war, stating that the emergence of private property led to warfare.<sup>56</sup> Furthermore, warfare is rooted in the economy and “is the product of certain economic relations among the state, classes, and political groups.”<sup>57</sup> Once warfare became a common behavior, science and technology acted as the major impetus for the development of war; as science and technology have progressed, warfare has become increasingly intense.<sup>58</sup> Just as progress in technology on land, sea, and air contributed to military confrontation, technological progress in space will result in space warfare: “By looking back through the history of the development of human warfare, we come to find that studies people have carried out of the theory of operational dominance began with land dominance, went through sea dominance, air dominance, and information dominance, and developed to today’s space dominance. This has all come about as mankind has continually expanded his endeavors in various domains.”<sup>59</sup>

In addition to the technological perspective, Jia Jun Ming introduces Marxist commentary

<sup>52</sup> Ibid., 40.

<sup>53</sup> Yanjun, Shuixian, Daguang, and Tong, *On Space Dominance*, 9.

<sup>54</sup> Ibid., 11.

<sup>55</sup> Yanjun, Shuixian, Daguang, and Tong, *On Space Dominance*, 13.

<sup>56</sup> Cai Fengzhen and Tian Anping, *Air and Space Battlefield and the Chinese Air Force* (Beijing: PLA Press, 2004), 3.

<sup>57</sup> Ibid., 86.

<sup>58</sup> Jun Ming, *On Space Operations*, 1.

<sup>59</sup> Daguang, *On Space Warfare*, 27.

on the human component by stating, “What is regrettable is that mankind is still unable to part company with warfare at this point, and mankind is destined to face the test of warfare and in particular of space operations.”<sup>60</sup>

Historical forces have led to the dawn of space warfare, which will only continue to intensify and define the 21<sup>st</sup> century: “the trend toward the militarization of space cannot be reversed.”<sup>61</sup>

After the dialectical materialist framework led to the belief that space warfare is necessary to securing information dominance and is an inescapable reality, the CPC shifted its focus to the laws of space operations. The individual laws, or conclusions, are numerous and broad in nature. Nevertheless, Li Daguang summarizes “The Basic Laws of Contending for Space Dominance,” set the context upon which more specific laws of space operations can be developed and understood. The author’s first law invokes a Clausewitzian view of war: “contending for space dominance must serve a country’s political and security interests and requirements.”<sup>62</sup> Similarly to other domains of warfare, space is the “continuation of politik by other means.”

Next, Daguang asserts that as “powerful support of a nation’s overall actual strength,” space dominance must be one of the primary national objectives to be realized.<sup>63</sup> In contrast to the second law, Daguang’s third law implores policymakers to adhere to the principles of “Limits and Appropriateness.”<sup>64</sup> The principle of limits calls for space military strengths to be used efficiently and practically in an effort to protect against an economic collapse akin to the Soviet Union’s.<sup>65</sup> The principle of appropriateness clarifies the

principle of limits by seeking to prevent inadequate resource allocation to space military strengths, cautioning against an approach to space policy that is too limited.<sup>66</sup>

The last general law that Daguang recognizes is in regard to the international environment. The author notes that the current space environment is highly regulated by international treaties and laws, which forces the developers of space strategy to operate in a constrained manner at the current time.<sup>67</sup> Nevertheless, the Chinese see these constraints as limiting the United States, giving China the opportunity to close the space technology gap.

More specific laws of space operations are developed within scope of the basic laws that describe the state and future of the cosmic space environment. Operational laws cover subjects ranging from space forces organizational theory, personnel development, and space deterrence to manned offensive operations during a conflict in space. The nature of these laws rests in the application of the elucidated guiding principles, applying these principles in a strategic and tactical manner to achieve space and information dominance.

## IMPLICATIONS FOR CHINA’S SPACE STRATEGY

Chinese space analysts consider a comprehensive range of potential space strategies and tactics. According to Jiang Lianju, space operations are “military confrontational activities that two hostile sides engage in primarily in space. Their essence is that they are a series of operational actions where two hostile sides use their space

<sup>60</sup> Ibid., 7.

<sup>61</sup> Ibid., 12.

<sup>62</sup> Ibid., 85.

<sup>63</sup> Ibid., 86.

<sup>64</sup> Ibid., 87.

<sup>65</sup> Daguang, *On Space Warfare*, 87.

<sup>66</sup> Ibid., 88.

<sup>67</sup> Ibid., 89.

strengths as their main operational strengths and space as their main battlefield in order to seize, hold, and use command of space... They play an irreplaceable and unique role in gaining victory in warfare.”<sup>68</sup> Due to its broad scope, space operations include space deterrence theory, space defensive and offensive strategies, organizational evolution, and guidance on how to operate within the international environment.

While each of these areas has their own separate characteristics and strategies, they are all united by the universal characteristics of the space domain. All operations in space will occur in the vast expanse of space, where confrontation will be intense. However, space warfare will also manifest itself on ground based targets.<sup>69</sup> The main reason for the proliferation of conflict from the space domain to the other domains lies in the nature of informationized conflict, and “the two hostile sides will inevitably mobilize all means to cut off information links between the opponent’s space and other battlefield space.”<sup>70</sup> Operational actions will be rapid, precise, and highly effective. It is necessary to achieve rapidity, precision, and efficacy because space operations and deployment will be highly dispersed, while weapons and space technology will be highly concentrated.<sup>71</sup> Additionally, space operations are less likely to occur over a longer time period because space support missions “are arduous.”<sup>72</sup>

The general framework and guidance for space operations loosely adhere to establishing awareness, carrying out defensive operations, and engaging in offensive

operations if necessary.<sup>73</sup> The primary focus is to gain awareness in order to secure China’s own space assets: “Space operations overall are defensive, but in specifics, space operations actions are not confined to defense; instead, active space offensive actions are adopted during the process of defense.”<sup>74</sup> The Chinese develop their space strategy based on the concepts of active defense, full spectrum integration, and focusing on controlling space. More specifically, active defense can be thought of “as a shield of clever attacks...it is defense whose goals are passive but whose means are active.”<sup>75</sup> Active defense is the foundational concept for space operations, and full-spectrum integration describes the mechanism and organizational form of space operations. If achieved, active defense and full spectrum integration will lead to the control of space.<sup>76</sup>

Operationally, the PLA states that space deterrence and actual warfare will be the two main forms of space conflict in the 21<sup>st</sup> century.<sup>77</sup> For the CPC, space deterrence theory centers on influencing the opponent’s psyche and operational tempo, preventing them from launching an attack. The objective of space deterrence is to both deter operations in space as well as an overall war. Space deterrence extends beyond the military sphere and is a strategic political contest over the international order.<sup>78</sup>

Chinese analysts consider many different levels of space deterrence. The lowest intensity option is to simply develop space strengths in a manner that results in your opponent concluding that victory is

<sup>68</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 6.

<sup>69</sup> *Ibid.*, 20.

<sup>70</sup> *Ibid.*, 40.

<sup>71</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 40-42.

<sup>72</sup> *Ibid.*, 46.

<sup>73</sup> *Ibid.*, 42.

<sup>74</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 50.

<sup>75</sup> *Ibid.*, 51.

<sup>76</sup> *Ibid.*, 51.

<sup>77</sup> *Ibid.*, 56.

<sup>78</sup> Jun Ming, *On Space Operations* (Beijing: National Defense University Press, 2002), 93.

impossible, preventing conflict before it begins. The next level includes demonstrations of space strength, such as the anti-satellite (ASAT) missile test in 2007, and space military exercises, which are combat like space deterrent activities.<sup>79</sup> Space military exercises signify a shift from low intensity deterrence operations to more confrontational deterrence operations. The last nonviolent deterrence phase is preparing space forces for deployment.<sup>80</sup> If none of the nonviolent deterrence theories are effective, then overawing, punitive space strikes will be used.<sup>81</sup>

The Chinese are clear that punitive strikes should only be used as a last resort and when “other means of space deterrence are ineffective.”<sup>82</sup> The specifics of the punitive strike can vary in nature from soft kill information attack, such as space blockades, to hard kill kinetic attacks. Regardless of which specific deterrence level is used, deterrence actions must be unified and integrated, and cautious decision making is necessary to prevent deterioration into warfare.<sup>83</sup> Space deterrence seeks to intimidate the enemy and prevent warfare, but it is imperative that space forces are prepared to rapidly shift from deterrent to warfare operations.

The main objective of space defensive operations is to protect China’s space assets and capabilities. Their defensive posture calls for passive defense techniques with the ability to rapidly attack and counter attack if necessary to protect themselves. One of the foundational defensive tactics is the camouflaging of satellites and space assets.

The PLA seeks to use camouflage in order to deceive the hostile aggressor. For example, a satellite with military capability can be designed to appear and function as if it were a commercial spacecraft. Other deception strategies include blending space satellites with the outer space environment and using virtual reality to create fake targets for the enemy.<sup>84</sup> Stealth technology can be used to deceive the enemy by applying absorptive materials, eliminating reflective surfaces, and including surfaces that refract energy.<sup>85</sup>

Satellites and other spacecraft should also be dispersed into a constellation pattern. The miniaturization of space technology will make this principle more feasible in the future. By dispersing “hundreds” of micro-satellites, the Chinese endeavor to eliminate any single nodes of failure, allowing for functionality to be unimpaired if one part of the constellation is eliminated.<sup>86</sup> Spacecraft should also be able to execute orbital maneuvers, avoiding a direct threat.<sup>87</sup>

However, if the above strategies fail, then the Chinese plan on developing counter attack capability to preserve their space operational strengths. In a counter-attack, offensive space weapons would be used to eliminate hostile targets that are posing a direct threat.<sup>88</sup> Importantly, counter attacks must be on the same operational scale as the threat.<sup>89</sup>

While all of the above defensive strategies addressed assets in the space environment, joint ground protection is also necessary to ensure the survival of space assets. Ground control stations, launch sites, and support facilities are just as vital to the space

<sup>79</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 157.

<sup>80</sup> *Ibid.*, 157.

<sup>81</sup> *Ibid.*, 160.

<sup>82</sup> *Ibid.*, 160.

<sup>83</sup> *Ibid.*, 161.

<sup>84</sup> Jun Ming, *On Space Operations*, 88.

<sup>85</sup> Jun Ming, *On Space Operations*, 88.

<sup>86</sup> *Ibid.*, 89.

<sup>87</sup> *Ibid.*, 90.

<sup>88</sup> *Ibid.*, 91.

<sup>89</sup> *Ibid.*, 91.

operation. Similar to constellations of satellites, the PLA reasons that ground bases should be deployed over a broad area.<sup>90</sup> If possible, ground assets should be concealed and mobile, preventing the enemy from obtaining the requisite information to carry out a strike.<sup>91</sup>

The air force, navy, and army will form a joint defensive system. ICBMs pose one of the most significant threats to space assets, which is why the Chinese are committed to developing a National Missile Defense system and Theater Missile Defense system similar to America's.<sup>92</sup> The Chinese vision of defensive space operations and strengths is integrated in nature, combining strategy and technology at multiple levels to ensure the survival of their space capability and, therefore, their national security.

Space offensive strengths are second to space defensive strengths in Chinese space strategy. This corresponds to their overall operational framework of active defense. Another reason is that Chinese analysts predict that during the early 21<sup>st</sup> century the focus will be on "developing space information weapons and equipment...comprehensively raising China's military space information assistance and support capabilities...offensive operations in space will appear, [but] their scale and intensity will be quite limited."<sup>93</sup>

Nevertheless, China considers a broad range of space offensive strategies. The objectives of space offensive strengths are to "annihilate enemy space satellites in an effective manner and suppress enemy satellite launches while ensuring that their own satellites avoid [attack] or minimally suffer attack."<sup>94</sup> Most of

these offensive tactics focus on disrupting satellites through hard kill or soft kill weapons. Hard kill weapons use kinetic energy based weapons and direct energy weapons (high powered electromagnetic weapons) to permanently destroy or impair an enemy spacecraft.<sup>95</sup> On the other hand, soft kill weapons, such as low powered lasers and electromagnetic pulses, are designed to incapacitate an enemy spacecraft.<sup>96</sup>

Also, the Chinese consider many more potential offensive weapons: orbital bombing from space to Earth, manned spaceflight missions for military purposes, the use of space stations as military bases, earth to space weapons (ASATs/lasers), and high altitude weapons that can target ground and space assets simultaneously. However, these are considered potential avenues for development, and the authors remain noncommittal when discussing them.

Lastly, the Chinese acknowledge that unmanned operations will play a significant role in all space operations, including offensive operations. Because a human may not be able to process the "integrated and highly coordinated operational actions in multidimensional surface, aerial and space environments...occasions will occur where there will be unmanned combat or where robots will face one another."<sup>97</sup>

Just as technology, theory, and tactics are evolving, the organizational layout of the PLA must evolve as well. If organization remains stagnant, then China will be unable to seize space dominance. Currently, the PLA system sees itself as a "tree structure," but the

<sup>90</sup> Ibid., 91.

<sup>91</sup> Ibid., 92.

<sup>92</sup> Ibid., 92.

<sup>93</sup> Ibid., 112.

<sup>94</sup> Wangrong and Chunhui, *Space Confrontation*, 105.

<sup>95</sup> Ibid., 82.

<sup>96</sup> Ibid., 82.

<sup>97</sup> Fengzhen and Anping, *Air and Space Battlefield and the Chinese Air Force*, 239.

future organization of China's military must be a "network type of scale."<sup>98</sup>

This metaphor accurately summarizes the CPC's beliefs about organizational change. The command and organizational structure have been built in a traditional and linear style and will be inadequate to meet the demands of information warfare. Instead, a network style of command must be set up. This style would allow for faster communication between the Central Military Commission and operational forces. While centralization is important to maintain cohesion, decentralization must also be embraced, allowing individual units to respond rapidly and with precision. China hopes to resolve the contradiction between centralization and decentralization by establishing this network style of command structure.

The development of space deterrence, defensive operational strengths, and offensive operational strengths must occur within the current international context. China understands that the international community is a restraining factor to the complete maturation of space warfare: "There are an ever-greater number of international factors restraining military actions in outer space, and these have a comprehensive effect on space operations."<sup>99</sup>

However, China realizes that they have benefited from international laws limiting space operations. For example, when China has weaker space technology relative to their competitor, the guidance is to oppose space weaponization, adhere to the law, and apply "selective measures in peacetime that complicate or restrict the powerful enemy's ability to weaponize space."<sup>100</sup> In the future,

of course, international law could hinder China's ability to fully informationize their forces. This contradiction would lead China to adopt different strategies based on "China's newfound position of parity or even superiority over the enemy."<sup>101</sup> As China's space power grows, they will have the opportunity to directly affect international law and try to craft an international law system that is more conducive to their goals: "The contradiction between international law and the militarization of space is not immutable; at some point it may be resolved, and some other contradiction [may] take its place."<sup>102</sup>

### THE REALIST CRITIQUE

Although the source material is inundated with dialectical materialism, in terms of philosophy and diction, the possibility remains that China's space strategy and perspective could be driven by balance of power politics. On the surface level, this is a logical argument. Many of the People's Republic of China's recent moves to strengthen their international standing fit nicely with the realist lens. The overlap between balance of power and dialectical materialism is a result of their mutual reliance on contradictions. The nature of power politics is founded in the contradictions that arise from unequal power in the international realm.

In fact, relatively recent changes in the PRC's military structure were driven by power politics and contradictions. In 2015, President Xi Jinping detailed a set of military reforms that significantly altered the organization of the PLA.<sup>103</sup> Essentially, three "new services" were incorporated into the PLA: Ground

<sup>98</sup> Ibid., 323.

<sup>99</sup> Lianju, ed., *Lectures on the Science of Space Operations*, 88.

<sup>100</sup> Banks, "Questions on China Space Strategy."

<sup>101</sup> Ibid.

<sup>102</sup> Ibid.

<sup>103</sup> Dean Cheng, "Look Out, America: China's New Military Forces are Awakening,"

<http://nationalinterest.org/blog/the-buzz/look->

Forces Command, PLA Rocket Force, and Strategic Support Force. The Strategic Support Force has been tasked with focusing on cyber and space warfare, a clear attempt for China to modernize these capabilities and increase its standing on the international stage. The PLA Rocket Force, historically known as the Second Artillery, will be responsible for "China's conventional and nuclear ballistic missiles."<sup>104</sup> China's elevation of the Second Artillery to its own service has its foundation in the Taiwan Strait Crisis of 1996. During the Crisis, China realized that although they had around 200 short range ballistic missiles (SRBMs) deployed across from Taiwan, their accuracy prevented any meaningful targeting of military, transportation, or command and control targets.<sup>105</sup> Since then, Beijing has invested in the modernization of their ballistic missile arsenal, attempting to rebalance power in the region and attain the advantage.

The security dilemma, an application of realism and a core contradiction, could also be having an impact on Chinese space doctrine. The PRC believes that the United States is committed to seizing the space domain and exerting dominance over it. President Kennedy's quotation from the 1960s summarizes how the Chinese understand American intentions in the space domain. President Kennedy stated, "seizing space supremacy is the main content of the next 10 years. Whoever controls space will control the Earth."<sup>106</sup> China is not planning for a general war against the United States, but they are developing their theory and capability of active defense to defend their

security interests against U.S. encroachment.<sup>107</sup>

The security dilemma can be viewed as another manifestation of the balance of power. Because China is concerned that the United States may encroach on their national interests in the space domain, they aggressively develop their active defense capability. In turn, the United States responds to China by further developing space capability.

The realist lens seems promising on its surface, but it can only provide an incomplete answer. Realist analysis applies the rational actor model to international players, which is not a safe assumption in geopolitics and international relations. Dialectical materialism offers a deeper "why" than the realist perspective can provide. The nature of the dialectic results in laws that are "deterministic and probabilistic" in some form, which are supplemental to realist philosophy.<sup>108</sup>

Although the PRC certainly includes objective and subjective factors when discussing operational success, there has been a recent shift toward technological determinism under President Xi Jinping's national innovation initiative.<sup>109</sup> As a result, elucidation of laws of the space domain and space operational theory has a tendency to be deterministic. These laws then offer conclusions that overlap but do not replicate the realist perspective. The answers do not lie wholly on one side. Both realism and dialectical materialism affect Chinese space doctrine.

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[out-america-chinas-new-military-forces-are-awakening-14872](#), Accessed 21 April 2017.

<sup>104</sup> Michael S. Chase, "China's Second Artillery Corps: New Trends in Force Modernization, Doctrine and Training," *China Brief*, Volume 6 (December 2006), [http://www.jamestown.org/single/?no\\_cache=1&tx\\_tt](http://www.jamestown.org/single/?no_cache=1&tx_tt)

[ews%5btt\\_news%5d=32342#.Vvni8NiIOUm](#), accessed 21 April 2017.

<sup>105</sup> Ibid.

<sup>106</sup> Wangrong and Chunhui, *Space Confrontation*, viii.

<sup>107</sup> Banks, "Questions on China Space Strategy."

<sup>108</sup> Banks, "Questions on China Space Strategy."

<sup>109</sup> Ibid.

Determining the degree to which the dialectic actually impacts China's space strategy can be tricky. On a general level, dialectical materialist thought shapes how China sees the history and future of space strategy; this is illustrated by their belief that space will play a significant role in the chaotic revolution leading to the Age of Information. The potential of space capability to aid in resolving contradictions within China and in the international domain is also an expression of dialectical thinking. The methodology that Chinese military analysts use is dialectical materialist in nature, as they consistently attempt to identify the laws that govern space capability and space operations theory.

On the other hand, some experts outside of China posit that the CPC references dialectical materialist thought to silence its critics. In 2013 and 2015, President Xi held a "Politburo study session to underscore his commitment to Marxism and socialism."<sup>110</sup> President Xi has been more consistent in valuing dialectical materialism than his predecessor and claims that the goal of these study sessions is to "help leaders understand Marxist philosophy in even more depth."<sup>111</sup> Nevertheless, Zhang Ming, a political scientist at Renmin University, summarizes the skeptical view, "It's a political declaration that party leaders have to do from time to time."<sup>112</sup> Dialectical materialism certainly provides context in which to view macro global patterns, but the next question is, does it have an effect on specific policy?

The concept of asymmetry and asymmetric warfare further complicates finding an

answer. Based on the contradiction between Chinese and American military capabilities, PLA and CPC thinkers understand that in order to be competitive in a potential conflict with the United States, they will have to target specific American vulnerabilities in order to level the playing field. Space military technology is an enabling force in balancing military technology.

A 2015 RAND report studied the "trajectory of Chinese capability from 1996" and sought to predict what their capability will be in 2017.<sup>113</sup> The study focused on counterspace technology, and two important takeaways were that China has rapidly modernized its space force, and although China's space capabilities are not equal to America's, they have the capability to pose "significant challenges to U.S. operations."<sup>114</sup> RAND measured Chinese counterspace ability in two contexts: a Taiwan scenario and a Spratly Islands scenario. In both scenarios, RAND projected that Chinese counterspace capability would have "equal parity" when compared to U.S. space capability.<sup>115</sup> China's focus on counterspace technology could be interpreted as a manifestation of asymmetric warfare, driven by the contradiction between Sino and American military capability.

One area where dialectical materialism provides insight is on which space and counterspace technologies China pursues. Although "it is not yet clear whether the PLA has promulgated a formal doctrine for military space operations," they have aggressively focused on developing certain

<sup>110</sup> Zhuang Pinghui, "China President Stresses Marxist Materialism in Effort to Silence Critics," *South China Morning Post*, January 27, 2015, <http://www.scmp.com/news/china/article/1692861/silencing-his-critics-president-cites-his-marx>, accessed May 3, 2017.

<sup>111</sup> Ibid.

<sup>112</sup> Ibid.

<sup>113</sup> Eric Heginbotham, "The U.S.-China Military Scorecard," [http://www.rand.org/pubs/research\\_reports/RR392.html](http://www.rand.org/pubs/research_reports/RR392.html), accessed 21 April 2017.

<sup>114</sup> Heginbotham, "The U.S.-China Military Scorecard."

<sup>115</sup> Ibid.

capabilities.<sup>116</sup> According to Dean Cheng's analysis, China has focused on developing the following space capabilities: ability to enter space, ability to exploit space, ability to control space, anti-satellite weapons, cyber weapons, directed energy weapons, rapid space launch capability, and better space situational awareness.<sup>117</sup>

In addition, the CCP is committed to developing a manned space flight program.<sup>118</sup> The motivations of China's manned space program extend beyond the realist and asymmetric warfare rationale. From the realist point of view and asymmetric warfare perspectives, manned space programs contribute to national prestige and do provide limited military usefulness. However, the overarching goals of the programs are "to utilize outer space for peaceful purposes, promote mankind's civilization and social progress, and benefit the whole of mankind; and to meet the growing demands of economic construction, national security, science and technology development and social progress, protect China's national interests and build up the comprehensive national strength."<sup>119</sup>

These goals of the manned space program readily fit into the dialectical materialist perspective. In comparison to other military space technology, manned flight is significantly more expensive and time consuming to develop, so an asymmetrical or realist rationale does not adequately explain why China is so committed to their manned spaceflight program. Referring back to Li Daguang's *Principles of Limits and Appropriateness* provides insight into why China is pursuing this capability. Because

manned space flight satisfies dialectical materialist thinking about the future role and potential of space, it is appropriate that China develops this capability alongside its other military space capability.

The precise degree to which military analysts and the CPC use dialectical materialism to make strategic and tactical decisions is, even among China watchers, probably unknowable. In essence, the contradictions among dialectical materialism, realism, and asymmetrical warfare are manifested in this essay. One of the great obstacles to resolving these contradictions analytically is the lack of formalized military space doctrine, which is still under development by the PLA. Perhaps the only clear answer is that Chinese space strategy is significantly affected by realist tendencies, asymmetric warfare, and dialectical materialism.

## U.S. POLICY RECOMMENDATIONS

Moving forward, the United States must strengthen its understanding of dialectical materialism and how it factors into the CPC's decision making. After the end of the Cold War, the Pivot to the Pacific occurred at a lethargic pace due to exigent events such as the Invasion of Iraq and Afghanistan. As a result, widespread expertise in Asia is lacking among policymakers, Congress, and the Department of Defense.

Source material for this work demonstrates that Chinese analysts follow a general pattern of deduction when approaching a topic. Once basic laws have been uncovered, assuming that they do exist, then evolution in theory follows. Because the dialectic is tied

<sup>116</sup> *PLA's Interest in Space Dominance* (2015) (testimony of Dean Cheng).

<sup>117</sup> *Ibid.*

<sup>118</sup> Mark A. Stokes and Dean Cheng, "China's Evolving Space Capabilities: Implications for U.S. Interest,"

April 26, 2012, <https://www.hsdl.org/?view&did=708400>, accessed May 3, 2017.

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

intimately with their decision making processes, an improved understanding of it in the context of the CPC would enable the United States to better predict how the CPC will react to American presence or operations in the region and gain insight into the formulations of the PRC's strategy across all domains.

From a military perspective, the United States must focus on developing resilience in military space capability. While PLA analysts are vague on implications of the principle of active defense, China could well decide to attack U.S. space assets during a conflict. It is possible that as China's military space capability grows, the probability of space military operations becomes more likely.

In Phillip Saunders' testimony before the U.S.-China Economic and Security Review Commission, he provided recommendations that the U.S. military should adopt to make American space assets less suitable targets for attack. One key area is developing logistical support to rapidly replace damaged or destroyed satellites. However, this becomes increasingly difficult as China's ASAT capabilities increase.<sup>120</sup> Miniaturization and constellation dispersion of satellites would reduce vulnerability and decrease the consequences of the loss of one satellite.<sup>121</sup> The U.S. should also explore intermingling space assets with other foreign governments, which would increase the political risk of an attack.<sup>122</sup>

From a more tactical perspective, the United States must be able to effectively attack and destroy Chinese ASAT systems, potentially

using space based weapons.<sup>123</sup> Lastly, the United States military could also transfer some of its intelligence and reconnaissance systems to non-space tactical reconnaissance systems, reducing the degree to which the military relies on space.<sup>124</sup> The United States military also has the obligation to modernize informed battle management and command and control (BMC2). In the Age of Information, with "the growth in the volume of information available and an anticipated increase in duration and intensity of potential future combat operations, the potential for saturation of centralized decisionmakers using this ISR requires a relook at tactical command and control."<sup>125</sup> Moving to a nodal approach promises to establish more resilient BMC2 systems, reducing the burden on space military assets.<sup>126</sup>

## CONCLUSION

The Communist Party of China is committed to rapidly improving their space operational strengths. Their reasoning and motivation for focusing on space capabilities is driven by their dialectical materialist perspective on the development of warfare and of the space domain.

From the Chinese perspective, the evolution of warfare in other domains suggests that space warfare is inevitable: "From the history of military development perspective, when humankind marched from the land to the sea, command of the sea was created. When humans were able to ride in an aircraft to leave the ground, command of the air was created. Thus, when humans began to gain mastery of the technology to enter space, this

<sup>120</sup> *China's Space and Counter-Space Programs* (2015) (testimony of Phillip C. Saunders).

<sup>121</sup> *China's Space and Counter-Space Programs* (2015) (testimony of Phillip C. Saunders).

<sup>122</sup> *Ibid.*

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

<sup>124</sup> *Ibid.*

<sup>125</sup> Tom Nicholson and Nelson Rouleau, "Order in Chaos: The Future of Informed Battle Management and Command and Control," *The Mitchell Forum* 10 (March 2017),

[http://media.wix.com/ugd/a2dd91\\_d636e1c1d2474bad\\_bd8979d3bb700b50.pdf](http://media.wix.com/ugd/a2dd91_d636e1c1d2474bad_bd8979d3bb700b50.pdf), accessed May 3, 2017.

<sup>126</sup> *Ibid.*

also created command of space.”<sup>127</sup> The struggle in space will be more intense than any previous conflict due to vast benefits of controlling the space domain. The promise of space dictates that “whoever controls space controls the entire world. Space will become a new domain in the future for the fierce struggle between nations because space affects the fundamental interests of nations.”<sup>128</sup>

The People's Republic of China is focused on the space domain because it seeks to alleviate two main contradictions that the CPC must address. The Age of Information and new information revolution will rely on space as a propulsive force. By enhancing their space capability, the CPC believes they can improve their economic standing, strengthen their culture, and secure the survival of the Party. In addition to this fundamental domestic contradiction, space capabilities will help ameliorate the contradiction between the United States military technological capability and China's. The space domain is the focus, because it can be developed rapidly, leading to a quick shift in space operational strengths.

The PLA considers a variety of tactics to incorporate into their space strategy. Their overall framework for space operational theory includes active defense and full spectrum integration. China's first objective in space is to defend their space capability, protecting their national security interests. However, active defense includes offensive operations that are deemed necessary to protect space assets. China's space theorists identify space deterrence, space defense, and space offense as the three main types of space operational theories. Within each category,

PLA analysts again explore a range of options.

Although a specific, tactical space strategy has not been adopted, one necessary step to successfully implement new space operational theory is to evolve organizational layout to achieve a balance between centralization and decentralization for effectively engaging in informationized conflict. As a result, the United States should reduce vulnerability on space assets while redefining our command and control system to stay competitive moving forward in the 21<sup>st</sup> century.

Although other lenses such as balance of power politics and asymmetric warfare can offer some justification for China's space strategy, dialectical materialism is integral to understanding the logic and rationale behind it. As Sun Tzu wrote, “If you know your enemies and know yourself, you will not be defeated in a hundred battles.” Understanding the dialectical materialist perspective enables us to know our competitor, adequately preparing the United States for future challenges in the space domain.

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<sup>127</sup> Ning Wangrong and Ling Chunhui, *Space Confrontation*, 2nd ed. (Beijing: Junshi Yiwen Press, 2010), viii.

<sup>128</sup> *Ibid.*, vii.

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