



**Sponsor: US Army Futures and  
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**Dept. No.: P622**

**Contract No.: W56KGU-19-F-  
0004**

**Project No.: 0720A150-MD**

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# **The Chinese Way of War: How Has it Changed?**

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**June 2020**

## Executive Summary

The title of this paper is “The Chinese Way of War: How Has it Changed?” The answer is that it has changed dramatically from what it was 20 years ago, but that does not mean that everything is new. There are some components of People’s Liberation Army (PLA) thinking (deception, stratagems, etc.) that remain as important elements of China’s way of war and they are being integrated into technologies. Such issues offer an overall sense of historical continuity in China’s approach to warfare that is based on a thought process going back thousands of years, to include the transcendent impact of Sun Tzu, Marx, and Mao on strategic and tactical issues. The number of articles and discussions in the journal *China Military Science (CMS)* over the past 20 years devoted to these three men fully support this contention. On the other hand, China’s intelligentization of operations and focus on joint and all-domain capabilities (to include domains not currently under consideration in the US) create new challenges. Artificial intelligence (AI) is now being used to help design warfare—repeat, help design warfare—to further provide control over conflicts and to ensure the PLA has a future deterrent force with which to confront other nations.

The report notes that the PLA is examining a host of topics to support its way of war, to include: AI topics regarding future war; a specific Chinese method of defining strategy; the PLA’s continued use of historic concepts; the move from informatized to intelligentized warfare; China’s continued use of cyber spying and reverse engineering; the focus of “strategic directors” on the use of various control mechanisms; and the PLA’s focus on “designing future battlefields” in peacetime. Appendix Four develops the basics of the PLA’s thought process that help further indicate how they will fight. Other important points to keep in mind include the following:

1. There is a continual goal of creating a strategic advantage or *shi* on the battlefield, in diplomatic relations, geostrategic settings (through considerations of numerous factors, such as distance attenuation, etc.), supply chains, and any area in which it China has an interest. A strategic advantage is the goal of any manipulation of the strategic environment, and it is probably the most important Chinese concept to keep in mind.
2. Today there may exist a slight change in focus from system-of-systems to combatting AI algorithms, but the system sabotage issue will continue to play an important role.
3. There is a higher reliance on the offensive aspect of active defense in the cyber age, where the first battles will establish who has attained the strategic initiative in war. Once the armed conflict is inevitable, no effort should be spared to strive for strategic initiative, one author noted. Conflict will proceed quickly once unleashed and involve all domains.
4. Critical infrastructure targets must be uncovered and planned in peacetime, the PLA notes, for special operations.
5. There is a growing focus on the use of swarm operations (wolves, wasps, and fish [or land, air, and sea] robotics) and their potential applicability to all domains of an opponent.

6. Military strategy starts with national interests and the overall interests of war as the goals to pursue. Strategic fulcrums must be established in advance.
7. Strategic psychological warfare will employ numerous means to force an opponent to submit without a fight. Five specific types of information topics were: information deterrence, blockades, deception, disruption, and attacks (computer viruses, hacking, etc.).
8. Regarding asymmetric operations, making use of favorable temporal and spatial factors and the consequent environmental condition are important aspects of designing asymmetric battlefields.
9. There is a focus (32 articles in the journal *CMS* from 2013-2018) on various aspects of ‘civil-military integration,’ with titles addressing power projection, power grid advantages, economic construction, science and technology, and integration strategies.
10. And, as a final warning, pay attention to China’s methods to manipulate others with deceptive stratagems. It is easy to fall into traps the PLA lays for opponents. For example, “appear weak when strong” would certainly apply to the PLA’s current attempts to downplay its AI and quantum prowess. The country’s 2019 Defense *White Paper* titled *China’s National Defense in the New Era* stated that China was only now coming out of its period of mechanization, a total fabrication of its current advanced competencies.

Strategically, the reach of the PLA and other nations into another country’s infrastructure, independent of that nation’s distance from China, with cyber, space, or physical (ports, 5G, etc.) means, has increased. S&T developments can be very influential when integrated with deception or stratagem techniques and will influence campaigns. The intelligentization of warfare appears to be taking center stage, with flames being stoked in the cognitive domain to light up innovation and produce products that enable commanders to see and assess the battlefield condition in front of him before an opponent can do so and then act first.

China will continue to probe and penetrate the infrastructure of any opponent. After all, China sees no difference between war and peace since confrontation and competition are consistent and eternal. Regarding the reigns of the past three presidents, the latest, Xi Jinping, has been the most creative in regard to the use of reforming the military with new S&T and implementing grand strategy. He has reached out across Europe and Central Asia with his Belt and Road Initiative, focused on expanding Chinese ports worldwide, used his close relationship with President Putin of Russia to gain access to the Arctic (and perhaps consequently buy more oil and gas from Russia), and constructed a significant infrastructure of influence (transport, communications, natural resource exploitation, etc.) in both Africa and Latin America. His way of war must be closely watched, for in addition to the development of a grand strategy and Armed Forces reform, Xi appears to have an insatiable appetite for natural resources and a desire to make China the most powerful nation on earth. Recent legislation aimed to quell dissent in Hong Kong is but one example. When combined with China’s historic legacy of deception and stratagem use, he will remain a formidable opponent for many years to come.

## Contents of the Report

China's way of war is a topic that has been a focus of interest for centuries, both for the value of its military inheritance from warriors of ancient dynasties to the continued application of these and other military measures of contemporary Chinese origin. For example, the ancient sage who developed the stratagem of "loot a burning house" would be intrigued to know that the Chinese journal *National Defense* (*Guofang*) used the concept in 2008 to discuss how the Soviet Union took advantage of (looted) a weak situation in Afghanistan (the burning house, a country plagued at the time by political instability), to begin its occupation of that nation.<sup>1</sup> Today, Chinese planners are combining technology with stratagems to continue this tradition. One author noted in 2015 that system-of-system operational methods will be enriched with "fantastic stratagems." China clearly will continue to live by the phrase "you fight in your way and we fight in ours," and it is this rather unique Chinese way of conceptualizing (to include even designing!) war that is the focus of this analysis.

The report examines the People's Liberation Army's (PLA) way of war over the past 20 years. This methodology only looks at military sources and ignores the diplomatic, economic, and other sectors that China has penetrated with similar tactics and techniques. It is divided into three sections that coincide with the reigns of China's last three presidents: Jiang Zemin (1993-2003); Hu Jintao (2003-2013); and Xi Jinping (2013-present). Jiang's reign was an agenda setter. While it did not result in many innovative concepts or developments, discussions set the stage for later and more diverse topics. Strategy, deterrence, psychological warfare, and the use of stratagems were particular topics of coverage, and his reign witnessed the release of the 2001 *Science of Military Strategy*. Hu's reign is where innovation starts rolling, as it introduced several technological concepts and achievements, such as an interest in system of systems and further advanced the development of information technologies. Hu's reign also produced the 2013 book *Science of Military Strategy*. Xi's reign has clearly been the most dynamic, interesting, and progressive. It has focused on restoring the "China dream" of a reformed military. Science and technology (S&T) advancements have been significant and these developments, such as those in artificial intelligence and quantum issues, were integrated into the military realm and resulted in a host of robotic and other capabilities. His reign has witnessed the release of a *White Paper on Strategy*.

The discussion of each reign will include a selection over the past 20 years of appropriate topics (by years of Presidential reign, with only the last four years of Jiang's reign used<sup>2</sup>) from the journal *China Military Science* (*CMS*), which provides PLA officers strategic, historical, and numerous other subjects of military importance. The topics stressed in the journal, which is somewhat like the US's *Joint Force Quarterly* or *Parameters*, help point out new vectors of interest (war control, civil-military integration, etc.) that are relevant to the time periods "way of war." Over 400 titles were perused, and those reflecting change or stability in the Chinese way of

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<sup>1</sup> Liang Shoulei, "Loot a Burning House—Fifth of the Thirty-Six Stratagems," *Guofang*, No. 7, 2008.

<sup>2</sup> *China Military Science* was not available to this author before the year 1999, so for that reason Jiang's articles are limited to four years. The issue number and year follow the title of the article in parenthesis, for example, issue 5 of 2000 would be (5/2000).

war are highlighted below. Further, each time period offers a description of “a” way to war (high-tech local war, local war under information conditions, etc.). Perhaps of value are the “black swans” of importance that sometimes appear.<sup>3</sup>

The report contends that the Chinese way of war has changed dramatically from what it was 20 years ago, but that does not mean that everything is new. On the one hand, there are some components of PLA thinking (deception, stratagems, etc.) that remain as important today as in the past and they are being integrated into modern-day technologies. On the other hand, China’s intelligentization of operations and focus on joint and all-domain capabilities (to include domains not currently under consideration in the US) create new challenges.

In addition, the report offers four Appendixes. The first offers a list of important military articles that appeared in *CMS* during the Presidency of Jiang Zemin. Appendix Two does the same for Hu Jintao, and Appendix Three for Xi Jinping. Appendix Four offers a comparison of Russian and Chinese military thought, which provides a way to consider where similarities lie in the thought processes of the two nations.

## Introduction

True icons of early Chinese military thought include Sun Zi (Sun Tzu), Wu Qi, Sima Rangju, and Sun Bin (among many others). They were associated with various aspects of Chinese military thought, especially the development of stratagems and deceptive techniques, to achieve a strategic advantage or *shi* (this concept is the foundational principle behind almost any PLA action [trade, diplomacy, battlefield positions, etc.]). Much later, the accomplishments of China’s historic icons became the strategic bedrock of thought for important leaders of the past century in China, such as Zhu De, Liu Zhidan, Ren Bishi, Ye Jianying, and Su Yu, all of whom used ancient military thought to achieve success in battle and enhance their leadership capabilities and image. Chinese history, H. R. McMaster noted in regard to his travels to China as President Trump’s national security advisor, is used to convey their messages.<sup>4</sup> In contemporary PLA publications, entire articles repeat historical episodes that relate to current affairs, whether it be strategy, indirect operations, or some other topic of interest. Finally, the thoughts of Karl Marx on war and the achievements of Mao Zedong on the battlefield continue to play prominent roles in contemporary Chinese publications due to the praise and support both receive from President Xi Jinping.

These thinkers and leaders have left an impressive cultural tradition for 21<sup>st</sup> century officers in the PLA to follow and build on. This tradition is being further supplemented with new future war concepts (quantum computing, cognitive warfare, etc.) and weapons (hypersonic weaponry, cognitive neuroscience, terahertz technologies, etc.) that are under study in China. These new concepts and weapons are affecting and perhaps slightly changing the content of traditional topics such as People’s War, active defense, and frontier defense. Another “traditional” focus that appears to be changing is China’s former belief in Engels statement that “technology determines tactics.” The constant focus of PLA theorists on strategy indicates it may now be more correct to assert that

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<sup>3</sup> A black swan is understood for this report as something that comes as a surprise, uses hindsight for rationalization, or influences something.

<sup>4</sup> H. R. McMaster, “How China Sees the World,” *The Atlantic*, May 2020, Internet edition.

“technology determines strategy” due to the current emphasis on ways that information technologies (cyber incursion, for example) can capture the initiative for friendly forces at the start of a conflict and thereby dramatically construct immediate strategic advantages. China’s increased access to advanced weaponry, focus on system sabotage techniques, and reliance on different deterrence options (space, etc.), among other issues, have sharpened the PLA’s focus on strategy and lessened the focus on campaigns and combat according to some, as discussed below. Concepts are adapting and changing. While these adaptations may not yet be locked in stone, they are playing an important role in contemporary thought and are worth following.

## Jiang Zemin Era

Jiang Zemin served as the President of China from 1993-2003. During Jiang’s Presidency the military took some initial steps to improve its capabilities and ensure that the regime did not suffer the same disintegration fate as did the Soviet Union. Traditional concepts, such as the work of Marx, Mao, and Sun Tzu in particular, continued to dominate the pages of journals. Views on strategy and geostrategy were of interest throughout Jiang’s reign.

A 2001 comprehensive discussion of strategy in *CMS* noted that important components were planning and war guidance issues. More ominously the article stated that non-war forms of struggle are now only the extension of warfare actions and that the two are not different, indicating there was no separation between war and peace, only constant competition. Other initial thoughts in the *CMS* article included the following:

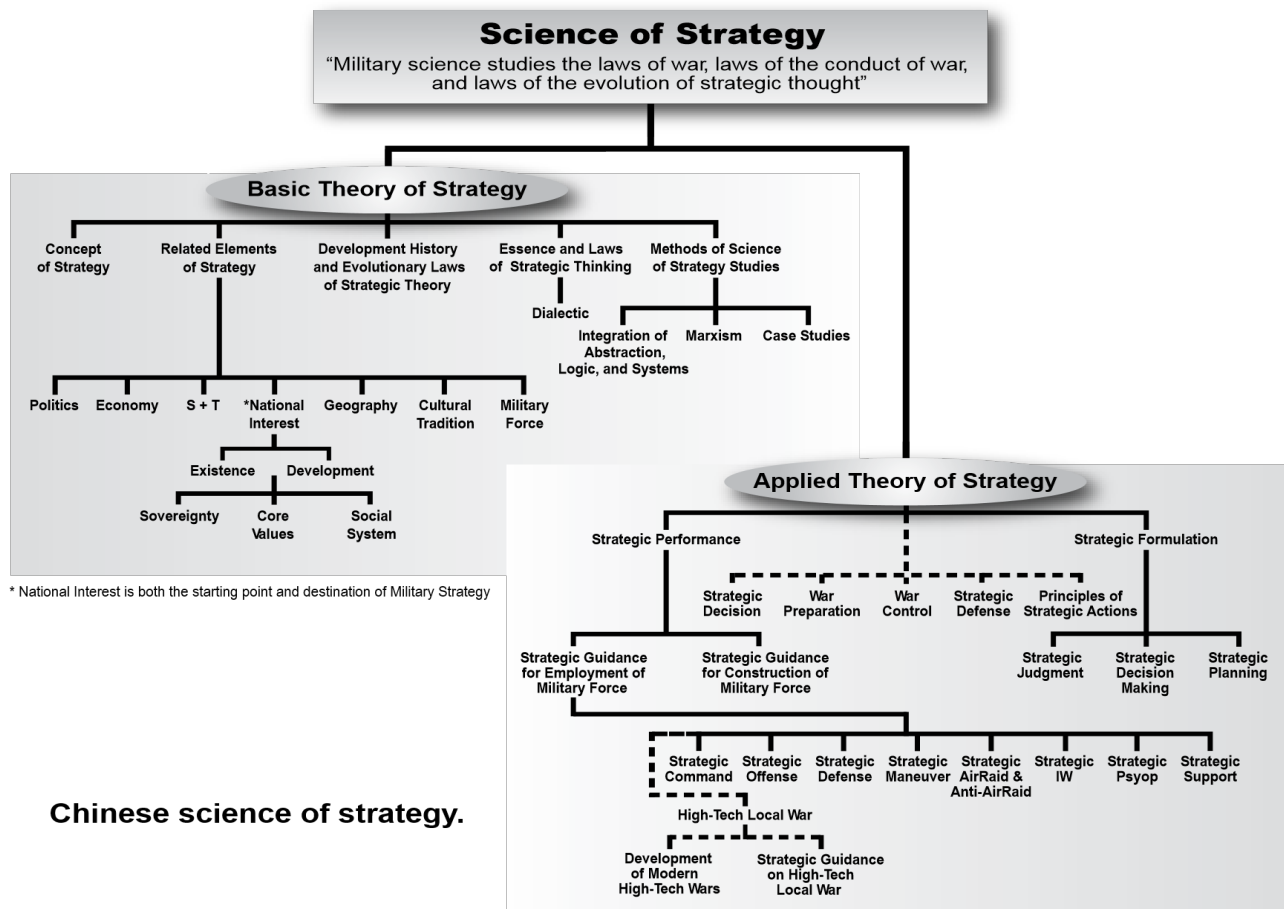
- Mao Zedong was quoted for his adherence to locating a “focal point” or “overall situation” principle.
- It was noted that Jiang’s “winning local wars under high-tech conditions” is the period’s focal point as was keeping war under “control.” Preparing for war and keeping its outbreak under control was a peacetime function, while controlling war’s expansion and restraining its escalation was its wartime function.
- War’s outcome, according to Mao, is the result of the military, economic, political, and natural condition of the two sides and their war-guiding abilities.
- The design of war depends on three issues: safeguarding national interests; paying attention to new forms of war; and building up new concepts (stratagems, asymmetries, etc.) and channels for preparing for war.<sup>5</sup>

In 2001 the book *The Science of Military Strategy* was released. The diagram below describes the contents of the book in outline form.<sup>6</sup> Of special interest are the last two entries, which discuss “**high-tech local war**” in two parts, the development of modern high-tech wars and strategic guidance on high-tech local war. This was, at the time, the type of war for which China was prepared to fight.

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<sup>5</sup> Yao Youzhi and Zhao Dexi, “The Generalization, Conservation, and Development of ‘Strategy’,” *China Military Science*, No. 4 2001, pp. 120-127.

<sup>6</sup> This diagram is this author’s conceptual understanding of strategy, constructed based on the book’s outline.



### Chinese science of strategy.

**High-tech warfare** thus became a very popular topic and was discussed in 21 articles in *CMS* from 1999-2003. Most likely there were many more at the beginning of Jiang's reign. The most significant titles (as they appeared in the English table of contents of *CMS*) of the 21 are listed below (the entire list is at Appendix One):

- Furthering the Study of the Features and Laws of High-Tech Local War and Improving Guidance in Winning High-Tech Local War (1/1999)
- On Features and Laws of Local War under High-Tech Conditions (1/1999)
- Views on Early Warning in High-Tech Local War (1/1999)
- Views on Problems of Preparations of High-Tech Local War (1/1999)
- Prompt Decision-An Important Principle of War Guidance in High-Tech Local War (1/1999)
- On Psychological Warfare in Recent High-Tech Local Wars (6/2000)
- Science and Technology: The First Decisive Factor in High-Tech Local Wars (6/2000)
- Main Issues of Defense of Logistics in Regional Wars under High-Tech Conditions (1/2001)

- Understanding the Fundamentals Affecting the Outcome of High-Tech Local Wars (3/2001)

When the total number of 21 articles are contrasted against the one article on People's War and the three articles on active defense over the same time period, the implication is that the PLA's focus had switched from non-conflict traditional themes to "how" to win a contemporary conflict.

PLA strategy expert Li Bingyan wrote an important article on an important ingredient of winning contemporary conflicts, one that had been ignored in the past. He wrote that the PLA's historical focus on stratagems failed to integrate them into technology. Instead, China's cultural heritage of trickery and lack of emphasis on science and technology stood in the way of progress. Li stated that China must "boldly collect cultural genes from Western military science and its emphasis on technology. We should make traditional strategy merge with modern science and technology and scientific methods, to restore the original intent of 'Sun Tzu strategy.'"<sup>7</sup>

Written in 2002, Li and other PLA strategists were reacting to the perception that China was behind in the revolution in military affairs, which was under serious study in China at the time. Li paraphrased Engels as noting that warfare evolves due to the development of weapons and equipment, which determine changes in the forms of combat, a change that China was not following as closely as the West. Chinese strategists in the past felt war was simply a battle of wits (therefore the focus on trickery through the years) and not a contest of force. Li was out to change that, and his focus on combining stratagems with technology is apparent today in the work of leading theorists. For example, another *China Military Science* article a year later, in support of Li's notion, stated that the PLA needed to change its main operating means from using quantitative superiority to "using stratagems and technical means to win victories."<sup>8</sup> Stratagems must progress along with the times, and if the PLA cannot combine stratagems with high-tech weapons then it will be hard to win victories in military struggles.<sup>9</sup>

Another important article answered many questions about how China views grand strategy and perhaps the logic behind how and why decisions are made today. In 2002 author Wu Chunqiu, in his *CMS* article "**Dialectics and the Study of Grand Strategy: A Chinese View,**" wrote that, officially at the time, China had never used the term "grand strategy." It had been, however, used in Chinese academic circles, according to Wu, since the 1980s. Academicians considered grand strategy as a system of knowledge, a special mode of thought for decision-makers, like national strategic management. Grand strategy included all elements of "comprehensive national strength" and was described as a combination of national security and national development, applicable to wartime or peacetime and a guide to domestic policy and foreign affairs. It was the overall strategy of the state and thus above military strategy. The concept of grand strategy may even influence the

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<sup>7</sup> Li Bingyan, "Emphasis on Strategy: Demonstration of Oriental Military Culture," *China Military Science*, No. 5 2002, pp. 80-85.

<sup>8</sup> Niu Li and Wu Jifeng, "On the New Concepts of Chinese Military Strategy in the 21<sup>st</sup> Century," *China Military Science*, No. 2 2003, pp. 85-90.

<sup>9</sup> Ibid.



decision-making criteria behind why China may have purchased the Panama Canal, why it establishes ports and telecommunication links worldwide, and why it has instituted the Belt and Road Initiative.

Wu then went on to make the important point that strategy is made up of objective reality and subjective initiative at a high level.<sup>10</sup> The essence of strategy was defined in the following way:

By objective reality we mean the objective world [the strategic environment] which exists independently of man's will and has its own law of development. By subjective initiative [a leaders use of stratagems, etc.] we mean man's ability to comprehend the objective world and consciously transform it to achieve certain purposes. The two constitute the unity of opposites. Fundamentally speaking objective reality as material base is first and primary, whereas subjective initiative is secondary but the most active of the two.<sup>11</sup>

If subjective initiative was the lone way to make strategy it would indicate that man's "will" decides everything. If objective reality were the lone way to make strategy, leaders would become fatalists. It is only when the two are considered together that strategy is understandable,<sup>12</sup> when objective reality is the strategic environment before planners and subjective initiative is the ability of leaders to think and manipulate the environment to one's benefit (of interest is that a few years later a PLA text defined military strategy in the same way, as described during Hu's reign).

The subjective initiative of a grand strategic plan, therefore, must agree with the relative stability of objective reality. If the latter experiences a partial or even a fundamental qualitative change, then the initial objective reality under consideration will have to be replaced with a new one so that the correct subjective initiative can be applied against it. The director of grand strategy must understand such information feedback from reality and have a strong sense of strategic opportunity or foresight that can be exploited.<sup>13</sup>

Wu also listed what he described as the basic principles of grand strategy, for which at the time there was no consensus. They were the overall situation (of which the principle of systems was the most critical point in studying grand strategy); the goal of serving politics; the use of comprehensive national strength (CNS, the most important content of grand strategy, an estimation of a country's strength based on the economy, education, science and technology, defense, and so on); strategic focal points (where basic interests of a party lies); use of winning victory without war (creating favorable conditions); the unity of goals and means (the use of CNS and the policies, ways, methods, approaches and other elements for employing and developing CNS); and the use

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<sup>10</sup> Wu Chunqiu, "Dialectics and the Study of Grand Strategy: A Chinese View," *China Military Science*, No. 3 2002, pp. 144-145.

<sup>11</sup> *Ibid.*, p. 146.

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

<sup>13</sup> *Ibid.*, pp. 153-154.

of relative stability. In the latter case, unstable factors usually exist, which subjective initiatives must address.<sup>14</sup>

Wu added that right and wrong directions can be considered when deciding about one's objective reality. Japan (after World War II), Switzerland, Israel, and Singapore successfully understood their strategic environment and adapted accordingly (Japan slowly emerged on the world market while emphasizing trade and education and benefiting from US protection; Switzerland used tourism, technical prowess, and the concept of everyone a soldier to maintain stability, etc.) whereas Gorbachev did not understand his strategic environment and it resulted in the collapse of the Soviet Union.

With strategy in mind, it is instructive to see what was written about **geostrategy** during Jiang's reign, as it was even the focus of one *CMS* issue's "subject discussion" section of the journal. Six articles were listed in that publication:

- Post-Cold War World Geostrategic Changes and China's Geostrategy (4/2000)
- Two Shifts of Focus in 20<sup>th</sup> Century World Geopolitics and a Look into 21<sup>st</sup> Century World Geostrategic Patterns (4/2000)
- The Development and Future Trend in Post-Cold War Geostrategic Relations (4/2000)
- Post-Cold War World Geostrategic Situation and China's Geostrategic Choices (4/2000)
- Views on China's Geostrategic Environment (4/2000)
- US Geostrategic Thinking and Its Effect on US Military Strategic Decisions (4/2000)
- Interpreting Geostrategy by Historical Materialism (6/2000)

Due to the emphasis in Jiang's period on local war under high-tech conditions, it is important to examine at least one article of the period in which a local war was under discussion. In 2002 one such article was titled "**Chinese Modern Local War and US Limited War: A Comparative Study**" (2/2002). It was noted that "local" describes the status of a war, relative to the "whole" war. Modern local war is based on the changing contemporary international political order and the tension between war and peace. Deng Xiaoping decided that the inevitability of a large war between the US and the USSR had lost importance and that forces of peace were stronger than for war. This change shifted the focus of military strategy toward countering possible local wars and military conflicts.<sup>15</sup>

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<sup>14</sup> Ibid., pp. 148-153.

<sup>15</sup> Chen Zhou, "Chinese Modern Local War and US Limited War: A Comparative Study," *China Military Science*, No. 2 2002, pp. 146, 150.

The author added that modern local war is a defensive strategic theory, aimed at defending the national sovereignty and maritime rights and interests of China. He noted:

Of course, defense in Chinese modern local war theory is an active, not a passive defense, one that includes both counterattack and attack. Our strategic principle of ‘striking only after the enemy has struck’ certainly does not exclude sudden ‘first strikes’ in campaign battles or counterattacks in self-defense into enemy territory.<sup>16</sup>

Modern local war is based on People’s War and defeating a superior enemy with inferior equipment, the author added. The concepts flexible forms go along with its adherence to independence and autonomy.<sup>17</sup> Distinctions in the theory of modern limited war include the following: it emphasizes a People’s War using inferior equipment to defeat superior equipment; it stands for independence from political or military groups; and it adheres to the flexible strategy and tactics of Mao in that “you fight your battles, and I’ll fight mine.”<sup>18</sup> The article ended with several things that China needs to do: stick to traditional combat forms of mobile, positional, and guerrilla war; insist on the basic guiding ideology of war annihilation, emphasizing under certain circumstances it may be required to rout an opponent or conduct wars of attrition; strive for quick victory, while being prepared for protracted war; and make active war preparations.<sup>19</sup>

### **Hu Jintao Era**

Hu Jintao was General Secretary of the Communist Party of China from 2002-15 November 2012. He stepped down as President of China on 14 March 2013. As during the reign of Jiang Zemin, numerous traditional concepts, such as the works of Marx, Mao, and Sun Tzu in particular, continued to appear on the pages of *CMS*. The focus of the Jiang era on local war under high-tech conditions changed under Hu (high-tech was used only three times in a title), replaced with the concept of local wars under informationized conditions. That concept was listed as titles of articles, however, only three times. They were “On Air Superiority in Local Wars under Information Conditions” (4/2009), “On Main Operational Forms of Local Warfare under Informationized Conditions” (2/2010), and “Accomplishing Diversified Military Tasks with Winning Local Wars under Informationized Conditions as the Core” (6/2011). But the term “information” was used some 102 times in *CMS* titles during the period 2004-2012.<sup>20</sup>

The 2013 edition of *The Science of Military Strategy* (hereafter *SMS*) was researched and written during Hu’s reign but published only in late 2013 (the writing team signed the preface to this version on 24 September 2013). It contained a separate chapter on “local wars under informationized conditions.” Other sections of this chapter were to control the goals of war; conduct integrated joint operations; persist in asymmetric operations, seize the initiative in war,

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<sup>16</sup> Ibid., p. 152.

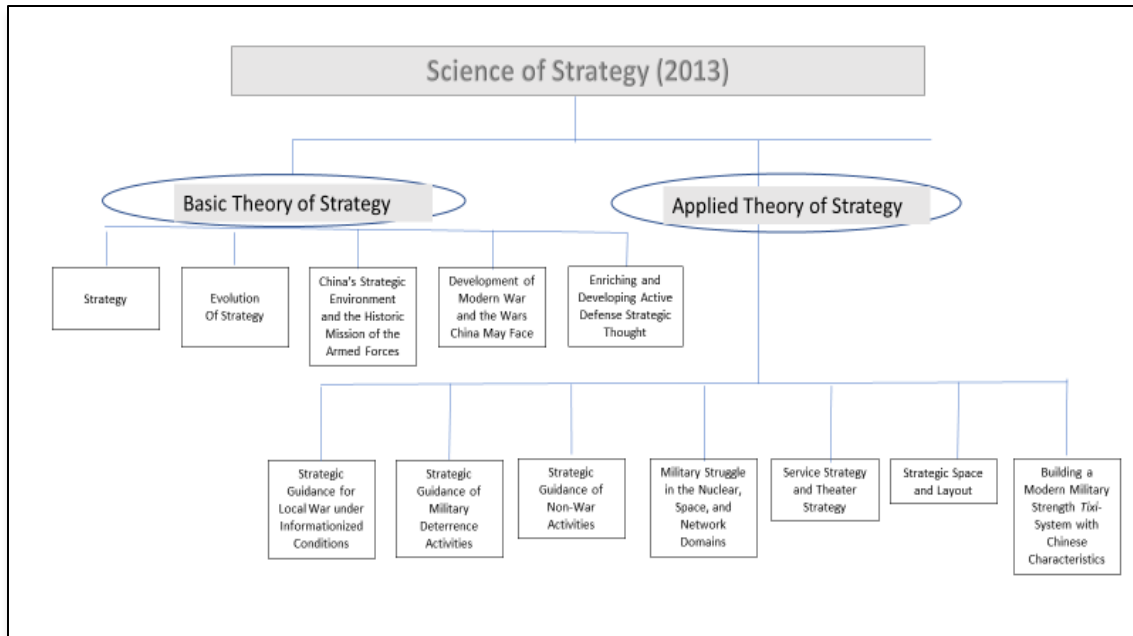
<sup>17</sup> Ibid.

<sup>18</sup> Ibid., p. 154.

<sup>19</sup> Ibid., p. 155.

<sup>20</sup> The information term, or on occasion the terms “soft power” or “network warfare,” was used 12 times on 2004, 18 times in 2005, 7 times in 2006, 8 times in 2007, 11 times in 2008, 9 times in 2009, 11 times in 2010, 14 times in 2011, and 12 time in 2012.

and appropriately conclude war. Several important topics of the 2013 edition were the transition from territorial to the forward edge defense model under informationized conditions and the focus on the system of systems topic with Chinese characteristics. The diagram below [proposed by this author] of the book's chapters is offered here.



The 2013 *Science of Military Strategy* did not utilize the same template as the 2001 publication. The latter broke that publication into basic and applied sections [thus, the 2013 breakdown in the diagram above is this author's interpretation, not that of the book's authors]. The 2013 book's preface indicated that four parts make up the most recent book, those being basic theory, circumstance analysis, strength application, and strength building. The book did not indicate which chapters fell in which parts. Changes in the world's science and technology sphere caused this "new look" at the strategic environment, resulting in the development of new ways to conduct conflict.<sup>21</sup>

The 2013 *SMS* publication noted that strategy is "the planning and guidance of the overall situation of the armed forces building and use, centered on war."<sup>22</sup> Two pages later it was noted that strategic guidance takes the overall situation under consideration when preparing for war, and it "fully brings into play the dynamic role of strategic guidance, so that subjective guidance corresponds to objective reality," which relates to Wu's definition of grand strategy in the Jiang era. It was stated that it is impossible to hope that subjective judgement will always completely correspond to objective reality. This situation implies that only by grasping contradictions and changes in conditions can judgments be made that largely correspond to objective conditions.

The comments about objective reality and subjective guidance in the 2013 *SMS* were discussed earlier during Hu's reign in the National Defense University 2007 book *The Theory of*

<sup>21</sup> Sun Zhaoli, copy editor, *The Science of Military Strategy (Zhanlue Xue, hereafter SMS)*, 2013 edition (2013 *Nianban*), Academy of Military Science, Military Strategy Studies Department, pp. 1-2.

<sup>22</sup> *Ibid.*, p. 4.

*Military Strategy*. There it was noted that “Military strategy consists of planning and guidance for the situation of military struggles as a whole; it means taking an objective approach with subjective matters.”<sup>23</sup> The paragraph in which this definition was located then states that objectivity refers to the strategic environment, that is, “the basic international and domestic situation in the areas of politics, economics, military affairs, science and technology, and geography”<sup>24</sup> as well as the situation shaped by trends and experiences in war and peace. The relationship between the strategic environment and military strategy, the authors note, is a relationship between objective reality and subjective guidance.<sup>25</sup> Thus the definition of grand strategy from Wu closely aligns with both the 2007 definition and with information offered in the 2013 *SMS* document.

Grasping contradictions and changes in conditions was the focus of one of the most important *CMS* articles of the Hu reign, that being “**On the Change in the Relationship between Strategy and Campaign-Combat Operations in Modern War** (4/2008).” The article, the real initial “black swan” of importance, made the following important contributions to the understanding that changes in the strategic environment were directing the PLA’s way of war:

- There is a new change in the relationship among strategy, campaigns, and combat. Strategy now is in the lead, consuming the other two who have lost their independence in organizing and implementing operations. Now, the highest military and political leaders can interfere with operations on the battlefield. Strategy has become the stratagem for directing local war under informatization conditions.
- War goals in the information era have expanded beyond military factors, and now include shaking, isolating, limiting, striking, and paralyzing an opponent’s political core, seeking to force an opponent into giving in politically.
- The intellectual economic era has made mastering science, technology, and knowledge more important than plundering resources as in the past. Information technology makes it more convenient to put wars under control, to scout and detect important strategic targets and destroy them from long distance.
- Strategic guidance needs to be enhanced and the integration of joint operations needs to be reinforced as strategy consumes campaigns and combat. The structure of services and arms needs to be adjusted.
- The ‘assassin’s mace’ of long-distance precision strikes must be focused on hitting vital points, quickly reaching strategic goals, and wrecking an opponent’s will to resist.
- Priority must be given to light weapons and to increasing the mobility and the strategic projection of the capabilities of operational platforms.
- Sensing and detection, navigational positioning, intelligent computing, and data transfers must be integrated to expedite the development of comprehensive

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<sup>23</sup> Fan Zheng Jiang and Ma Bao An, *The Theory of Military Strategy*, National Defense University Publishing House, 2007, p. 59.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

operational platforms incorporating target captures, mobile strikes, and the efficient evaluation of information transfer capabilities.<sup>26</sup>

This article implies without saying in no uncertain terms that Engels's concept that technology determines tactics has been superseded with the concept of **“technology now determines strategy.”**

An aspect of Chinese strategy mentioned in Chinese publications is the use of acupuncture war or hitting vital points of an opponent's force. The article above clarified that the destruction of focal or vital points can affect a situation. These vital points were defined further in the 2013 *SMS* as strategic command, strategic strengths, and strategic support, and where the weak links in systems exist. Important nodes include those in information network space, centers of strategic command and major directions of operations, crucial operational platforms, and areas of strategic support.<sup>27</sup> These, it would seem, are the targets of Hu's informationized warfare.

Understanding new trends and making new forecasts of future struggles ensures that the PLA will not passively adapt to future warfare but will actively design it and provide support for innovating and drafting military strategy.<sup>28</sup> The objective process must study military matters from the angle of “uncovering what things that are inevitable, what have cause and effect, and what have patterns.”<sup>29</sup> This enables friendly forces to create situations instead of allowing an opponent to determine where and when a clash might occur.<sup>30</sup> Finally, it seems that the authors of the 2013 *SMS* believed that informationization would continue into the near future, as they noted:

For a period of time in the future, the state of informationized warfare will become increasingly mature and, as regards military strategy, it will need to organically combine innovations in science and technology, innovations in combat methods, and innovations in the military's organizational system, as it strives to find the path to victory in future wars.<sup>31</sup>

There were other *CMS* articles of importance in the Hu era. Summarized below are five such articles: war control situations in informationized war; informationized warfare fighting styles; and strategic psychological warfare under informationized conditions. Two articles, one on strategic deterrence (which also had a separate chapter in the 2013 *SMS*) and a second article on war control, were special topics of the Academy of Military Science (no specific author listed) and are also summarized here.

The authors of **“On the Art of Controlling War Situations in Informatized Warfare”** noted that such control is different from the use of arms control, crisis situations, and other types

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<sup>26</sup> Cui Yafeng, “On the Change in the Relationship between Strategy and Campaign-Combat Operations in Modern War,” *China Military Science*, No. 4 2008, pp. 27-37.

<sup>27</sup> *SMS*, p. 10.

<sup>28</sup> *Ibid.*, pp. 23-27.

<sup>29</sup> *Ibid.*, p. 19.

<sup>30</sup> *Ibid.*, p. 22.

<sup>31</sup> *Ibid.*, p. 17.

of control designed to deter war's outbreak. War control is guided by what the PLA refers to as a "war director," which would be the leader offering subjective guidance to the war effort. The concept is defined in the following manner:

The art of controlling war situations refers to the supple and superior skills as well as creative ways and methods revealed in the war director's use of various kinds of means, primarily military means, to master and control the whole war situation or a series of engagements in a certain war theater in order to form a certain kind of expected state of the battlefield and military situation in a war.<sup>32</sup>

Reconnaissance assets, precision-guided and non-lethal weaponry, and "soft kill" capabilities are conditions that enable effectiveness. Their use is part of the subjective effort of the war directors' flexible use of the art of controlling war situations. At times, the war director's control can be delegated to subordinates in complicated situations. War control helps remove the uncertainty of war to some extent as objective conditions change. This also requires the war director's use of stratagems, described as the method of using weapons and as a trump card in the PLA's arsenal.<sup>33</sup>

In the opening stages of war, the authors note it is important to focus on fighting well but to place equal emphasis on psychological deterrence, as combining the two helps control war situations. This can enable victory with minimal fighting. War directors must ensure military and political consistency both before and during war. Original military objectives may be modified in the event of dramatic changes in the war's political situation. Control can be attained through seizing information dominance, thereby winning the initiative on the battlefield. In fact, to seize the initiative, the art of war control in the opening stages of conflict requires active offense. Otherwise forces will get trapped in a passive position where counter-attack options would be limited.<sup>34</sup>

This capability relies on the support of networked C4ISR systems to create advantageous asymmetric information dominance and is equal in importance with past advantages, such as fire power superiority. **Information dominance**, the authors add, **is the center of gravity** for a war director's plans to control war situations. Informatized warfare requires the use of military operations and non-military means such as political struggles, trade embargoes, diplomatic struggles and the active shaping of international public opinion. Informatized warfare is a system of systems confrontation, where the focus must be on an opponent's critical links and vulnerabilities. The **center of gravity for military strikes** should be targets such as battlefield detection and reconnaissance systems, command control systems, high technology weapon systems, rear support systems, critical transport hubs, industries and energy bases supporting the national economy and war potential, and other critical and vulnerable targets. Ending informatized

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<sup>32</sup> Zhang Yu, Liu Sihai, and Xia Chengxiao, "On the Art of Controlling War Situations in Informatized Warfare," *China Military Science*, No. 2 2010, pp. 24-31.

<sup>33</sup> Ibid. Of interest is that the authors use the objective-subjective process. They note that "to close the quantitative and qualitative gap with the enemy on objective conditions, we must, on subjective guidance, proceed ...and create conditions for turning around the war situation and ultimately defeating the enemy." Creating conditions implies the use of stratagems, asymmetric methods, and so on.

<sup>34</sup> Ibid.

wars requires bringing the war back on a political track, requiring a combination of fighting and negotiations to end war. For war directors, this should be based on whether objectives have been achieved and whether the battlefield situation is favorable.<sup>35</sup>

In the article **“An Analysis of Fighting Styles in Informationized Warfare,”** it was stated that changes to the strategic environment were brought on by network technologies, artificial intelligence, new material technologies, and precision guidance technologies. Still, the fact remains that fighting styles are influenced using initiative, discipline, willpower, and innovation, that is, man is still in the background guiding and controlling things. Man does that with non-linear, non-contact, and asymmetric forms of combat using the features of informationized warfare, such as those that make the battlefield more transparent. When facing an opponent with superior weapons, the use of these assets (asymmetry, etc.) help offset such inferiority. Such a fighting style uses science and resource agility to control the initiative and to find new ways to win in a system on system confrontation.<sup>36</sup>

War is becoming a contest of time and speed, where fighting style is reflected in combat efficiency and thinking. It becomes necessary to step back and view the difference between limited situations and the overall situation. Only in this way can the overall interest of the state be guaranteed. Properly training the force for such confrontations is now not only necessary but required. Creating war-fighting environments in war games is important, as it ties testing to the capabilities needed to win informationized wars.<sup>37</sup>

Regarding asymmetric thought, the concept figures often into PLA considerations. One 2007 article, “Asymmetric Factors in Asymmetric Operations,” divided asymmetry into four factors that are constantly developing and changing. First is the strength factor, which has two aspects, “being stronger or weaker” in terms of quantity and “being stronger or weaker” in terms of quality. The second factor, time, offers ways to overcome unfavorable conditions created by the other factors. Time enables wins by techniques such as “forestalling the enemy,” which stresses a protracted tendency, and “taking preemptive actions,” which favors winning as quickly as possible. Space is the third factor, which this article qualified as a contest between tangible domains (land, sea, air, outer space) and intangible domains (electromagnetic and psychological warfare). Outer space and three-dimensional space were other areas where the quest for asymmetric superiority has now been extended. Finally, there is the battle method factor, which was designated as the most active factor. It utilizes the “adept employment of stratagems” in operational command, where the ultimate objective is to make the best use of one’s favorable conditions and expose unfavorable conditions of an adversary. This is the factor that “brings about full energy release of

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<sup>35</sup> Ibid. Of interest is that in the comments section of the article it was noted that the paper failed to convince readers that the plan was workable, since inadvertent escalation and studies on difficulties in ending war were not mentioned. The focus on an increasingly offensive posture was stated to be a hint at the need for reinterpretation of “post-emptive moves,” or active defense.

<sup>36</sup> Shi Daoxiang, Wang Junxue, Li Qu, et. al, “An Analysis of Fighting Styles in Informationized Warfare,” *China Military Science*, No. 2 2011, pp. 9-12.

<sup>37</sup> Ibid.



the strength factor, the time factor, and the space factor” with battle methods such as decapitation warfare, structure paralyzing warfare, and nodal-point sabotage warfare.<sup>38</sup>

In the article **“Important Issues Covering Strategic Psychological Warfare (SPW) under Informationized Conditions,”** it was noted that the concept is playing a role in a nation’s international, domestic, and military strategy. It will aim to force an enemy to submit without a fight based on the use of preemptive attacks that indicate strength and influence designed to overpower an opponent mentally. Political, economic, military, diplomatic, technical, and cultural channels can be used to demonstrate China’s comprehensive national strength. The combination of destruction and soft influence may be used together. Destruction involves attacks on centers of gravity and vital points of an enemy’s strength, while soft influence relies on collecting, processing, and controlling capabilities to attack or disturb the attitudes and behavior of opponents.<sup>39</sup>

Of special interest were five types of SPW, all of which are based on using information systems or media influence to affect the psyche of citizens and leaders. The first, information deterrence, uses political, military, and economic superiority to deliver accurately, effectively, and sufficiently information about one’s superiority over the enemy side, making an opponent scared and unsure of war’s outcome. The use of war games, weapon exhibitions, and public weapon development plans are, in a certain sense, a form of a psychological deterrence strategy. The second, information blockades, uses information superiority to cut off an adversary’s information sources and place an adversary in the dark and at a loss to take any effective countermeasures, making them feel helpless, nervous, and panic-stricken. The third, information deception, spreads false information and disrupts an adversary’s awareness, causing confusion, hesitation, and misgivings. The fourth, information disruption, causes congestion and confusion through the interruption of information circulation channels via jamming and the disruption of information systems. Finally, the use of computer viruses, logic bombs, and hacking techniques can disrupt, destroy, or attack information networks and cause harm to people’s psychology due to a hacker’s ability to cause financial or other crises.<sup>40</sup>

Psychological warfare armaments have advanced, the article notes, and includes ways that high-tech equipment (for example, unmanned aerial vehicles distributing leaflets, audio leaflets, etc.) can conduct soft warfare today. Computer viruses, stealth technologies, satellite television, and the use of operational platforms with high mobility have the capability to neutralize the other sides use of information through jamming, deception, and other means. Finally, it was noted that the destruction component of psychological operations was advanced with laser, microwave, particle beam, and dynamic energy weapons that can indirectly affect the war process due to the cognitive impact of their killing power. SPW requires the integrated participation of both military and civilian expertise. Informationized warfare has blurred the line between war and peace and

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<sup>38</sup> Xian Hongxing, Xie Pingwen, and Zhao Rongchun, “Asymmetric Factors in Asymmetric Operations,” *National Defense News*, 20 December 2007.

<sup>39</sup> Chang Yan’e and Ou Lishou, “Important Issues Covering Strategic Psychological Warfare under Informationized Conditions,” *China Military Science*, No. 3 2005, pp. 77-83.

<sup>40</sup> Ibid.

encouraged the so-called “civilianization” of war, resulting in the recruitment of society’s information experts to reinforce SPW forces.<sup>41</sup>

As noted above, there were two articles on topics directed by the Academy of Military Science that did not list authors. They were on strategic deterrence and war control, two topics which have already figured in the discussion above. In the article “**Strategic Deterrence**” deterrence was defined in the following manner:

What is termed deterrence is the military conduct of a state or a political group in displaying force or showing the determination to use force to compel the enemy to submit to one’s volition and to refrain from taking hostile actions or escalating the hostility. As part of military strategy, strategic deterrence refers to strategic behavior performed for deterrence on the overall strategic situation.<sup>42</sup>

The objective of strategic deterrence is to contain war’s outbreak or limit its scope and escalation, with a strategic objective of using non-fighting means or fighting only a small war. This requires an adequate strategic force (military strength, economic strength, scientific and technological strength, etc.); the determination and volition to employ a strategic deterrent force, an objective material reality; and transmitting these two points to an opponent and making him believe them.<sup>43</sup>

Strategic deterrence in peacetime revolves around the containment of war using military, political, economic, cultural, and diplomatic means. The goal when war becomes imminent is to strive to gain the initiative, so that an initial favorable military posture is created. In wartime, strategic deterrence focuses on demonstrating to an opponent his perilous position. The article noted that in a local war, for example, a “surgical operation” strike would demonstrate the employment of strategic deterrence. An offensive deterrent strategy compels an opponent to give up, while a defensive deterrent strategy demonstrates to an opponent that his attack may fail or lead to losses outweighing gains. It was noted that the role of China’s strategic deterrence concept is to deter foreign invasion; defend the nation’s rights, interests, and sovereignty; and deter conspiracies of internal or external rivals.<sup>44</sup>

Types of deterrence are nuclear, conventional, space, and information. The focus here is on the latter two. Space forces and weaponry serve as deterrents. They can serve as offensive weapons systems, offer high security communication support for the requirements of command, coordination, intelligence, and communication, and provide real-time navigation. With such capabilities it can bring the effects of shock and awe to an opponent. Its methods are flexible and can utilize interference, disruption, and destruction, restrained only by space law and regulations and international opinion.

Information deterrence includes the disruptive effects and features of permeability, ambiguousness, and diversity. The permeability factor, for example, means that it is transmissible,

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<sup>41</sup> Ibid.

<sup>42</sup> AMS Research Group of Strategic Science, “Strategic Deterrence,” *China Military Science*, No. 5 2004, p. 143.

<sup>43</sup> Ibid., pp. 143-145.

<sup>44</sup> Ibid., pp. 145-147.

shareable, and can thus permeate both military and civilian (to include social) fields. Information can, however, have unreliable results that include deterring oneself as well as an opponent through unexpected consequences.

China intends to use these types of deterrence to develop an integrated strategic deterrence concept with comprehensive national power as its base, conventional forces as the mainstay, nuclear forces as conventional force's backup, and the reserve force as support. The article stated that, in summing up, there are three deterrent postures to utilize: "creating momentum by military preparation," "demonstrating momentum by showing the disposition of strength to the enemy," and "augmenting momentum by military strike."<sup>45</sup> Deterrence decisions must be made cautiously since China and its opponents can use stratagems and tricks that might not be clearly obvious. This requires leaders to possess the talent and ability to use them and to uncover them when opponents employ them. Strategic deterrence operations must be directed against an opponent's defects and give play to one's own strength while concealing one's weakness. Understanding an opponent's mentality is important along with the risks he might take. A nation's objective must be highlighted to force an opponent to give something up, to demand his action be restrained, or to press him to take other activities. Multiple deterrent means (diplomatic, economic, science and technology, etc.) should be integrated and complement each other. Leaders should focus on grasping the initiative throughout a struggle and on changing the opponent's psychology if possible and offering compromise and concession when needed. In the end, due to the difficulty of predicting an opponent's response, "one should examine the worst and the toughest scenarios and be well prepared in advance, so as to steadily and effectively cope with the opponent in case of the failure of deterrence."<sup>46</sup>

The article "**War Control**" defined the term as the war conductor's behavior to limit and consciously restrain the occurrence, development, intensity, and outcome of a war. The article was divided into four parts: arms control, crisis control, armed conflict control, and strategic guidance control.

Regarding arms control, five features were listed, which were its political nature, indirect violence nature (use of military strength with peaceful means), limited effect, balance of interest and strength, and relevance. One important issue was the strategic conductors (a term used to reference those in charge of war control, which may be the same as the before mentioned war director) use of military strength to "influence an opponent's cognition and information system and even to change the will and action of an opponent, and thereby to realize the expected strategic objective."<sup>47</sup> The objectives of arms control were stated to be adjusting strategic relations among nations, adjusting the scale, speed, and level of arms development, and restraining the growth of "war inducing" factors. They can be affected by new weapons technology, an assessment of strategic stability, and the evolving international and political situations. Verification of arms control agreements take three forms: desk control (reconnaissance from common intelligence devices); national technical reconnaissance, such as satellites; and on the spot inspections. Vertical

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<sup>45</sup> Ibid., pp. 148-151.

<sup>46</sup> Ibid., pp. 152-156.

<sup>47</sup> AMS Research Group of Strategic Science, "War Control," *China Military Science*, No. 6 2005, pp. 129-130.

arms control involves reducing the scope of military potential, while horizontal arms control involves limiting their proliferation. Specific aspects of arms control involve prohibiting some weapon systems, limiting quantities or qualities of some weapons, ensuring non-proliferation, limiting some geographical locations (outer space, seabed, etc.), and using confidence building measures (direct communication lines, air and ground observations, exchanging military missions, etc.).<sup>48</sup>

Regarding crisis control, the term refers to dangers which could result in confrontation or conflict among nations. They are usually caused by contradictions among or between nations and by lopsided military balances. Crises can be controlled by confidence-building measures, increased transparency, enhanced personnel exchanges and contacts, joint disarmament or arms control initiatives, and the establishment of “supervision organizations.” If these measures fail, then negotiations are the final chance for preventing the crisis from spilling over into conflict. In the end, China’s fundamental and long-term interests must be followed, communication must be continuous, compromise appropriate for the situation, and specific coercive measures should be implemented for crisis containment (weapon embargos, economic sanctions, military blockades, etc.). In conclusion, it was stated that dialogue is better than confrontation, political settlement is better than settlement by force, and preventive control is better than coercive ones.<sup>49</sup>

Regarding armed conflict control, items a strategic conductor must contend with are the aim, means, targets, methods, duration, and space of the conflict. The aim should be restrained by political aims and by the norms of the United Nations Charter. Means should be focused on minimizing casualties and material damage and targets should be based on the law of war. Damage should be limited to the natural environment and issues to be avoided are the indiscriminate bombing of cities, industrial centers, and so on, and the scope of the battlefield should be limited due to the increased space of modern war. Strategic conductors should constantly be on high alert and prepared for unexpected incidents, which implies the use of strategic intelligence collection assets to look for indications of any potential outbreak of conflict.<sup>50</sup> Of particular interest was the following statement which indicates the more likely offensive use in armed conflict control of “active defense,” a statement made 15 years ago:

Once the armed conflict is inevitable, no effort should be spared to strive for strategic initiative. As armed conflict is a struggle pattern much limited by the time factor, a quick decision is the key to taking the strategic initiative. When conflict occurs, the side that acts quickly often seizes the opportune moment to act swiftly and compels the opponent to submit before he has enough time to react.<sup>51</sup>

Finally, there were thoughts on strategic guidance. It was noted that strategic conductors must “give full play to subjective initiative.” War control will be based on national interests, and these interests will determine the degree of military strength and selection of war means to be used

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<sup>48</sup> Ibid., pp. 130-132.

<sup>49</sup> Ibid., pp. 133-137.

<sup>50</sup> Ibid., pp. 137-138.

<sup>51</sup> Ibid., p. 139.

as appropriate to the needs of the moment. With objectives and means in mind, the strategic conductor can control the tempo and intensity of a war. However, war control is also closely related to a nation's national comprehensive power, that is, the strength of its economy and the other necessary factors (adequate science and technology capability, industrial capacity, etc.) that allow a nation to support conflict in a capable manner. Strategic conductors must comprehensively employ the military and non-military means at their disposal to carry out war control. Naturally, the person used to demonstrate capability in this area was Mao Zedong.<sup>52</sup>

## Xi Jinping Era

Xi Jinping has served as the General Secretary of China from 2012 to the present time and as President since the fall of 2013. Under his reign China has reemerged as a powerful nation in both an economic and military sense. He has worked closely with President Vladimir Putin of Russia and within the Shanghai Cooperation Organization, pushed his Belt and Road Initiative across Central Asia, and increased China's presence in Africa and South America. He supported Italy with doctors and equipment during the Coronavirus outbreak in that nation and was one of the first to respond to disaster-stricken areas of the Caribbean during hurricane season. In a geostrategic sense he has developed a series of Chinese ports that offer presence and influence on many continents, not to mention China's growing list of military facilities on the reefs of the South China Sea.

From a strictly military planning focus, while Jiang's focus was local war under high-tech conditions and Hu's was local war under informationized conditions, Xi's team of experts offered a focus somewhat like Hu's, namely "winning informatized local wars." This indicated that the concept of informatized war was playing a prominent role in PLA preparations for conflict under Xi, whereas under Hu it was a "condition." In the analysis that follows, the Xi era's important 2015 *White Paper* on China's military strategy will be examined first. It is followed by an article in *CMS* that, in this author's opinion, outlined the strategic concepts that will influence the PLA's way of war beyond the concepts expressed in the *White Paper*. Finally, there are descriptions of China's development of informatized war and artificial intelligence, quantum surprises on the battlefield, use of drones, and other topics. More importantly the discussion causes one to ask if Xi's "winning informatized wars" slogan has metamorphosized into "preparing for and winning AI- and intelligentized-enhanced battles" based on these new S&T developments.

The 2015 *White Paper* on military strategy is a public document and most likely includes some external propaganda intended to shape the opinion of international observers. The document initially noted that there was a change in the balance of power worldwide, in the Asia-Pacific geostrategic landscape, and in the international economic, scientific, technological, and military fields. When discussing the theory of active defense, the *White Paper* began offering hints that it was more likely to become an offensive theory due to changes in weaponry and the importance of gaining the initiative in order to succeed in future conflicts. Other items of initial interest in the document were in the section titled "National Security Situation." Two statements of importance were that China's national interests had grown (no explanation of how or what these interests

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<sup>52</sup> Ibid., pp. 140-141.

were); and that strategic sea lines of communication were important due to the need to protect the security of overseas interests in energy and resources. A final point of interest was that outer space and cyber space have become commanding heights in strategic competition among all states, with the “form” of war accelerating and evolving toward informationization.<sup>53</sup>

In the *White Paper*’s section on “Missions and Strategic Tasks” it was noted that upholding a holistic view of national security was necessary (this view was expressed two more times later in the paper, which aligns with the necessity of viewing objective reality holistically). A holistic view requires the innovative development of military strategy and the necessity to work harder to create a favorable strategic posture. Armed Forces reform ensures that the path of closer civil-military integration will continue, with the important strategic tasks of safeguarding interests in new domains and maintaining strategic deterrence.<sup>54</sup> During the Hu and Xi eras, the journal *CMS* wrote on the civil-military integration topic nearly 50 times. This integration is, according to H.R. McMaster, the most totalitarian of the three policies China is establishing in its attempts to create a new tributary system (the other two being the Belt and Road Initiative and Made in China 2025).<sup>55</sup>

The section on the “Strategic Guideline of Active Defense” stated that active defense was the essence of the Communist Party of China’s (CPC) military strategic thought. It was stated that the concept helps create a favorable posture, helps manage crises, and helps deter and win wars. The preparation for winning informationized local wars will focus on maritime preparations and the employment of system-vs-system operations that focus on attaining information dominance and the use of precision strikes and joint operations. Important principles that were stressed included taking a holistic view of national security; fostering a favorable strategic posture; maintaining security and stability along China’s periphery (a precursor to forward edge defense?); employing People’s War as an ace weapon; and endeavoring to seize the strategic initiative.<sup>56</sup> The last point implies that the essence of the CPC’s strategic thought is changing out of necessity due to S&T developments from active defense to a more proactive one.

In the section on “Building and Developing” the Armed Forces the aim was stated to be building an informationized military and winning informationized wars. The PLA Army will reorient from theater defense to trans-theater mobility. The PLA Navy will combine offshore water defense with open sea protection, and the traditional mentality of land outweighing the sea must, the paper noted, be abandoned. The PLA Air Force will shift from territorial air defense to both defense and offense and build an adequate air-space defensive force.<sup>57</sup> It was also stated that

As cyberspace weighs more in military security, China will expedite the development of a cyber force and enhance its capabilities of cyberspace situational awareness, cyber defense, support for the country’s endeavors in cyberspace, and

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<sup>53</sup> Information Office of the State Council, “*White Paper on China’s Military Strategy*,” *China Daily Online* (in English), 26 May 2015.

<sup>54</sup> Ibid.

<sup>55</sup> McMaster.

<sup>56</sup> *White Paper on China’s Military Strategy*.

<sup>57</sup> Ibid.

participation in international cyber cooperation, so as to stem major cyber crises, ensure national network and information security, and maintain national security and social stability.<sup>58</sup>

This will require the multi-domain and cost-efficient use of civil-military integration. The approach includes joint training, weaponry development, outsourced logistics, and joint infrastructure building as well as the exploration of the sea, outer space, and air and the shared use of resources.<sup>59</sup>

The section on “Preparations for Military Struggle (PMS)” stated that capabilities for system-vs-system operations based on information systems need to be enhanced. Reconnaissance, early-warning, command and control, precision-strike, and support systems all need to be strengthened. Battlefield dispositions and strategic prepositions must be upgraded, and borders and coastal defenses better organized. Finally, in the section on “Military and Security Cooperation” it was noted that China is working with Russia and the US to foster new models of military relationships. It was also stated that China will continue to participate in UN peacekeeping missions.<sup>60</sup>

A critique of the *White Paper* a month later titled “**Correctly Locate the Basic Point for the Preparation for Military Struggles**” noted that the term “informatized war” indicated that this type of war is playing a dominant role in the Xi era rather than serving as only an important condition, as it did in the Hu era. Informatized war is described as a strategic judgement that has moved beyond initial descriptions of information war featuring “mechanization plus informatization” to an advanced state featuring “smart manipulation plus all-area coverage plus long-range precision operations.” Grasping the initiative is based on information acquisition and fusion, and war’s outcome is determined by the mastery and use of information which, again, harkens to more emphasis on the offensive nature of future war. The author noted that **China can no longer adapt to war but must design it**. This requires “designing war in accordance with the mechanism for winning wars,” causing the PLA to plan even the potential process of war’s development. The PLA must “enrich system-of-system combat operational methods” that defeats the enemy with the application of “fantastic stratagems” (which reminds one of Li Bingyan’s 2002 statement that technology must be combined with stratagems); and the author writes that the integration of striking only after an opponent has struck should be combined with taking a “preemptive action to seize the initiative.” In this manner China will continue to live by the phrase “you fight in your way and we fight in ours.”<sup>61</sup>

In a 2016 *CMS* article titled “**An Analysis of the Impact of Modern Biological Technology on Future Forms of War**,” a new spin was provided to the topic of control. In the article, a medical university doctoral advisor and student wrote on the impact of modern biological technology and its effect on future forms of war. The article noted that Russian President Vladimir Putin had

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<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

<sup>60</sup> Ibid.

<sup>61</sup> Wen Bing, “Correctly Locate the Basic Point for the Preparation for Military Struggles,” *Xuexi Shibao* (website of the weekly CPC Central Party School newspaper) Online, 8 July 2015 at <http://www.studytimes.cn..>

approved a new weapon nicknamed the “zombie Gun,” which is used to attack the central nervous system of the human body. The US DARPA organization was said to have invested money to develop a battlefield illusion weapon to control an adversary’s sensing organs and to develop friendly “super soldiers.”

With such weapons in mind, the authors stated that biological warfare operations were deemed to become the commanding height in future battlefield competitions, with “biological control warfare the main mode of combat operations.”<sup>62</sup> The following points were made:

- Information warfare’s objective is to exert influence on the epistemic domain through information flows in the physical and information domains. Influence on the outer man affects the inner man but cannot go deep inside man.
- When bioscience reveals microorganism mysteries between different races, groups, and individuals and explains mechanisms of memory, emotion, decision, and thinking functions, then it is possible to filter out targets at the biomolecular level with a weapon system attacking biological functions that de-capacitate forces. When genetic roots and cognitive space are understood, commanders will be able to weaken the will of people and control people’s consciousness from the “inside of people.”<sup>63</sup>

Returning to Russian weapons, the authors noted that the Kremlin’s mind-control weapon uses low-frequency electromagnetic waves to affect human brain cells, transmit psychological suggestions, and control target behavior. War will evolve from firepower war, to information war, to “biological control warfare.”<sup>64</sup> The article ended noting that whoever understands biological ramifications first will take the lead in actions and will occupy the commanding height in military transformation and seize the initiative in war.<sup>65</sup>

In 2017 an article appeared in *CMS* titled “**Guidelines for Armed Forces Building and Preparations for Military Struggle—Understanding of the Military Strategic Guidelines in the New Situation.**” It appeared to summarize and expand on Xi’s military 2015 *White Paper* focus, serving as a guiding light for PLA planners to follow. While not as dramatic and design oriented as the earlier summary of author Wen Bing above, the article did expand somewhat on the meaning of the *White Paper*. The article was penned by Luo Derong, a senior colonel and associate professor at the Basics Department of the PLA Nanjing Political Science Academy.

Luo noted that the *White Paper* was designed to serve as a strategic guideline for the new situation in which China finds itself. He stated that the Central Military Commission formulated these guidelines, adjusting preparations for military struggle to be “winning informatized local wars.” The core content of the strategy included “innovating the basic operational doctrine,

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<sup>62</sup> Guo Jiwei and Li Hongjun, “An Analysis of the Impact of Modern Biological Technology on Future Forms of War,” *China Military Science*, No. 3 2016, pp. 31-36.

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

<sup>65</sup> Ibid.



optimizing the military strategic layout, and adhering to the strategic guiding principle.” It developed the content of active defense and stressed long-term preparedness and molding a favorable posture, comprehensively bringing crises under control, and resolutely deterring and winning wars,<sup>66</sup> which are almost the identical words in the *White Paper’s* section on active defense.

Luo proceeded to call Xi’s guidance the “New Guideline,” which has three characteristics. The first is innovation, which shapes military strategic guidance and is synchronized with national security developments. The second is flexibility, which ensures that offense is combined with defense.<sup>67</sup> Strategic defense is combined with offensive actions at the campaign and tactical levels. More importantly, after the outbreak of a war, “the **first battle should grasp the strategic pivot and the center of gravity** in a campaign to launch decisive operations.”<sup>68</sup> Luo added that

The New Guideline requires adherence to the principle of maneuvering flexibly and fighting independently according to the security threats...Combat should be fought in our own way no matter how the opponent may act. Integrated combat forces of multiple services should be used to fight system-of-system operations with information playing a dominating role, with precision strikes being delivered to the opponent’s vital parts, with flexible means used to win victories.<sup>69</sup>

The paragraph resembles a combination of Mao’s thinking and current strategic thought in the cyber age. It was noted that it is also necessary to create new forms of People’s War, again taking a phrase from the *White Paper*.

The third characteristic of the New Guideline is activities that help seize the initiative. Seven themes were listed, to include the following:

1. Move forward strategic guidance’s center of gravity
2. Give prominence to military struggle’s preparations in the maritime domain
3. Effectively control major crises
4. Appropriately cope with chain reactions
5. Resolutely safeguard national territorial sovereignty, unity, and security
6. Actively cope with threats in space, cyberspace, and other new security domains
7. Strengthen international security cooperation in regions related to China’s overseas interests, safeguard these overseas interests, and so on.<sup>70</sup>

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<sup>66</sup> Luo Derong, “Guidelines for Armed Forces Building and Preparations for Military Struggle—Understanding of the Military Strategic Guidelines in the New Situation,” *China Military Science*, No. 1 2017, pp. 88-96.

<sup>67</sup> A December 2019 article noted that the PLA lacks flexibility due to an environment that neither encourages innovation nor tolerates failure. See Yan Xiaofeng, “How to Shape a More Flexible Army,” *Jiefangjun Bao*, 5 December 2019, as summarized by Ms. Cindy Hurst in *OE Watch*, January 2020, p. 31.

<sup>68</sup> Luo Derong.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

Luo added that the contemporary context, marked by S&T developments and geopolitical changes, has resulted in adaptations to China's security environment and changed its comprehensive national power and military power capabilities.

While the basic spirit of active defense remains unchanged, the New Guideline emphasizes “the necessity of actively creating a favorable situation and seizing the strategic initiative.” As has been underscored on many occasions, creating a favorable situation is the basis of *shi*, and seizing the strategic initiative indicates, in the cyber age, the offensive portion of China's active defense. This is accomplished using the appropriate stratagems, Luo noted. Further, he writes that “The military strategic capability is not only based on objective conditions but is also contingent on decision-makers' strategic thinking level.” Seizing information dominance is the way to seize comprehensive battlefield control and integrated joint operations are now a basic form of military operations.<sup>71</sup>

Later in the paper, Luo stated that bringing crises under control, deterring the outbreak of war, and winning wars is the goal of the New Guideline. Control includes control over operational targets, over the beginning of a war, over the process of war, over war's ending, and over chain reactions in other directions. Strategic deterrence was defined as the integration of nuclear and conventional armament and the integration of deterrence with war fighting. The New Guideline is deemed to be the “orientation star” for winning informatized local wars in the new historical period. The pivot for seizing battlefield initiative in informationized local war is reliant on achieving all-dimensional battlefield control, with information control as the core. There was also an emphasis on sea power as an important factor determining the destiny of the state and the nation.<sup>72</sup>

Formal and regular war fighting methods should be avoided, Luo adds, and the creation and development of asymmetric combat forms and methods implemented. The following quote sums up much of the New Guideline:

Implementing information dominance, delivering precision strikes at vital parts, and winning victories through joint operations are taken as the basic combat methods of operational guidance. The New Guideline consistently takes integrated joint operations as a basic form of our military's military operations in an informatized local war, with system-of-systems operations based on information systems being a basic combat method, with systems sabotage warfare being the core combat method for achieving the objective of battle.<sup>73</sup>

Finally, in regard to system sabotage, Luo added that it is both a destructive type of warfare and a type of warfare that paralyzes an opponent; and that the New Guideline offered a prominent pivot of strategic guidance from land to the maritime domain.<sup>74</sup>

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<sup>71</sup> Ibid.

<sup>72</sup> Ibid.

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

Asymmetric combat forms and methods was the focus of attention in another 2018 article, one which did not provide an author. The article stated the following:

The temporal and spatial environment of military operations may augment or lessen combat power...Reevaluating and making use of favorable temporal and spatial factors and the consequent environmental condition is an important aspect of designing asymmetric battlefields. An important task in operational guidance is to choose a form and a method in keeping with the specific battlefield environment to win victories in asymmetric operations.<sup>75</sup>

Of interest is that the article bears much resemblance to the 2007 article on asymmetry noted above in the Hu era, indicating how consistent the PLA has been over the years regarding the concept. For example, the writeup indicated it was necessary to control time and space, seize the battle initiative as well as moments favorable to the PLA and unfavorable to an opponent, attack vital points, and create favorable postures (*shi*), through the use of stratagems that can hinder the enemy from using his asymmetric superiority.

There were several additions to the asymmetric concept that indicated a slight expansion of the concept. It was stated that there now appears to be no division between front and rear, meaning the significance of fronts will decline; that a close examination must be made of enemy methods to restrict PLA advantages; that it is necessary to fight according to the PLA's design; and that it is necessary to shape a non-linear posture through campaign-level outflanking, encirclement, infiltration, and full-depth strike capability against an opponent's vital targets. The careful use of crucial technical and tactical means in unconventional and extraordinary ways was advised to boost the effectiveness of asymmetric operations.<sup>76</sup>

Two years later, in 2019, China's *Defense White Paper* titled *China's National Defense in the New Era* was published. The paper turned out to be a disappointment for many reasons, not the least of which was the absence of the phrase "winning informatized local wars." Unless the PLA's focus has changed (which the rest of the article did not indicate with anything new), such oversights made the paper appear to be a propaganda overview instead of a detailed and serious discussion of contemporary matters in China's military. The impression one received was that the political department oversaw the writing of this document, but it was prepared by The State Council Information Office of the People's Republic of China. Thus, it is even difficult to ascertain just which military officials, if any, participated in the paper's development.

The terms active defense and People's War were used once each in the *Defense White Paper*, whereas the important terms civil-military integration and forward edge defense were never used. In 2015 author Wen Bing had noted that strategic judgement had moved beyond initial descriptions of information war as "mechanization plus informatization" to an advanced state that features "smart manipulation plus all-area coverage plus long-range precision operations," yet the *White Paper* some four years later resorted back to stating that China was seriously behind in

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<sup>75</sup> No author or title provided, *Jiefangjun Bao* Online, 28 August 2018, p. 7.

<sup>76</sup> Ibid.

technology compared to other nations and that the nation was still striving to achieve mechanization. No doubt, this was an attempt to “appear weak when strong.” The rest of the world, the paper asserts, is conducting intelligent warfare, and applying artificial intelligence, quantum information, big data, cloud computing, and the Internet of Things in their military affairs, all topics that *CMS* previously had written about between 2013 and 2018 (see Appendix one for actual titles) on more than one occasion. The *Defense White Paper* attempted instead to make China a beacon in search of peace and prosperity, working in accordance with United Nation regulations. Apparently such cooperation only occurs when decisions are in China’s favor, for the *Defense White Paper* ignored how China rejected UN decisions regarding the South China Sea that did not fit the Middle Kingdom’s aspirations. The paper used the term system of system only once and the concept of “create a strategic advantage” twice. Military operations other than war, a topic in all previous discussions of military operations, was missing entirely.<sup>77</sup>

By comparison, in a 2019 *Jamestown Foundation* writeup of a China book titled *Winning Mechanisms of Electronic Countermeasures*, Chinese authors indicated that the PLA is one of the world’s leading militaries and plans to conduct electromagnetic spectrum (EMS) conflicts in the future. The text notes that the winning mechanism of EMS conflicts is “the inherent basis and path to realizing electromagnetic dominance through electronic offense and defense by way of electromagnetic energy, directed energy, sound energy, and other technical means.”<sup>78</sup> This is accomplished in the following ways:

- Careful Preparation: pre-war preparations; ability to react to ever-changing battlefield conditions; having accurate intelligence of enemy capabilities ahead of battle
- Multi-level integration: supplying friendly forces with timely intelligence data collected from platforms and tied together to guide the reconnaissance-target guidance-strike-assessment loop
- Precise release of energy: strike critical nodes with anti-radiation, directed energy or electromagnetic pulse weapons against the following targets: reconnaissance and early warning, wireless communications, guidance and fire control systems, navigation and positioning systems, and friend-or-foe identification.<sup>79</sup>

The main areas in which the PLA will confront an opponent are through deterrence (jamming or firepower displays), deception (confusion or misleading types), or destruction (use of precision

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<sup>77</sup> No authors provided, *2019 Defense White Paper: China’s National Defense in the New Era*, State Council Information Office of the People’s Republic of China, July 2019.

<sup>78</sup> Zi Yang, “PLA Stratagems for Establishing Wartime Electromagnetic Dominance: An Analysis of ‘The Winning Mechanisms of Electronic Countermeasures,’” *OE Watch*, March 2019, pp. 18-19, republished in collaboration with the Jamestown Foundation, *China Brief*, Vol. 19, Issue 3, dated 1 February 2019..

<sup>79</sup> Ibid.

strikes against high valued targets to demonstrate PLA capabilities to stun the enemy into submission).<sup>80</sup> Clearly this report varies dramatically from the *Defense White Paper*.

To further demonstrate the weak character of the previous document, listed next are sections on artificial intelligence and quantum computing that appeared in the Chinese military press, with a short summation of important items in each. They demonstrate that the PLA is thinking well beyond mechanization and are well-positioned in science and technology fields to match US capabilities. These sections primarily rely on information from *Jiefangjun Bao Online*, since there were no table of contents available for *CMS* after Issue 6 of 2018 and there were very few translations of 2018 *CMS* articles available.

*Artificial Intelligence (AI), Intelligentized Warfare, and Wasps, Fish, and Wolves*

The focus of competition between the two warring sides will be shifted to the **cognition domain. The side that can be the first to gain control of this domain will be able to seize the strategic initiative in war...** The AI-enabled decision-making support system is...making sure that commanders may rapidly and accurately judge and predict the development of a war situation to make operational decisions and gain decision-making superiority over the adversary.<sup>81</sup>

The following discussion of AI and intelligentized warfare thinking in China proceeds chronologically from March 2018 to March 2020. The focus shifts back and forth from AI to intelligent warfare and back again, as various authors arrive at their conclusions from different sources and angles. Overall, though, the authors make it clear that while both concepts are very important to the thinking and planning process that goes into future war operations, AI is currently central to the PLA's crafting of future war scenarios. However, there are already clear indications that AI is beginning to play a supporting role to intelligentized or "smart" warfare.

AI, intelligentized warfare concepts, quantum computing, and other issues are supporting concepts to China's way of war. They will influence the design and conduct of future war in conjunction with specific and important concepts imbedded in the PLA's military culture. In the discussion that follows, important components of military thought are placed in **bold**.

A March 2018 article noted that power, whether from fire strikes, information, mobility, or defense, must be discharged at the most appropriate time and place. A combat power generation chain was proposed, consisting of a "posture sharing-synchronized collaboration-focused energy unleashing" chain designed to take shape around a unified operational objective. The author stated that a machine's cognitive element should never go beyond human control. The human-machine integration effort is important, naturally, and could include the following components:

Along with the appearance and implementation of neural network computers, optical computers, biological computers, and other types of new-concept computers, being supported by AI technologies for voice, text, and image

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<sup>80</sup> Ibid.

<sup>81</sup> Niu Yujun, Cao Zhi, "Deeply Transform the Contemporary War System," *Jiefangjun Bao Online*, 8 November 2018, p. 7.

recognition, the human-machine interface of the command information system will become highly intelligent. The art of command and the employment of military stratagems will be deeply merged into the human-machine interactive relationship and will be applied through the expert knowledge repository system and smart weapon-guided systems.<sup>82</sup>

This article was followed a month later with a discussion titled “Intelligence War is Coming: Are You Ready?” It stated that AI is generating new combat modes such that the “intelligent factor” can “radiate from military hardware” and make a breakthrough regarding army building. New combat theories such as “distributive killing,” “multi-field combat,” “wasp colony technology,” and “intelligent safety combat” have been proposed. The goal is to cut off an opponent’s information and decision-making control with friendly advantages gained after intelligent technology and information-led theory are combined. The intelligentization of the command information system is, the article notes, “the key to the enhancement of the means of operational combat and the formation of decision-making advantages.”<sup>83</sup> The intelligent element, infiltrated into the process of war and applied in a clustered and planned way, utilizes innovation in areas such as intelligent perception, intelligent decision-making, intelligent control, and unmanned platforms.

Intelligent perception was described as intelligent sensing and networking technology. Intelligent decision-making was said to be based on a “command brain” possessing machine learning, neural networks, and other technologies. It will assist commanders making rapid decisions based on in-depth calculations and reasoning. Intelligent unmanned combat systems are a “new trend of future wars,” with targeting requirements such as “full coverage” and “quick response.” No further explanation of intelligence control was offered.<sup>84</sup> The intelligent combat power system was described as follows:

The intelligent new combat power system is a comprehensive product of artificial intelligence technology development, the formation of emergent combat effectiveness, and the evolution of war for—a ‘trump card’ used to win the active fight in the future global operational space, the key to constituting an integrated joint combat system, and a new growth point of our combat effectiveness.<sup>85</sup>

The new battlefield and operational space will consist of the following: space, the Internet, all fields of human activities and ideologies, quick response satellites, autonomous network security, brain control weapons, gene weapons, and other emerging combat power integrated into combat systems. The field supporting military intelligence, such as big data, the military Internet of Things, and so on, will be enhanced. Finally, civil-military integration, the collaborative

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<sup>82</sup> Wang Yonghua, “A Study of the Key Points for Winning Intelligentized Warfare,” *Jiefangjun Bao Online*, 29 March 2018, p. 7.

<sup>83</sup> Yin Junsong and Cheng Gang, “Intelligence War is Coming: Are You Ready?” *Jiefangjun Bao Online*, 24 April 2018, p. 7.

<sup>84</sup> Ibid.

<sup>85</sup> Ibid.

industry-university-research innovation system, will open society's innovative power and promote the development of military intelligence.<sup>86</sup> For example, China's State Council has provided the impetus for AI and intelligent warfare growth in Chinese universities. In May 2018, the State Council's plan for AI included the desire to make the nation the world's center and leader for AI innovation by 2030. A survey conducted by the Chinese Institute of New Generation Artificial Intelligence Development Strategies (CINGAIDS) indicated that intelligent technologies are "the endogenous driving force for China's economic development."<sup>87</sup> Further, over 70 domestic universities and colleges now have AI-related majors. More colleges and universities are also planning for AI-focused courses. Tsinghua University is developing cross-disciplinary research and other universities are developing intelligent systems.<sup>88</sup>

Three authors wrote that the use of intelligent systems in the military enhances attempts to seize intelligence superiority. It is equally important to strip away an opponent's use of intelligence in combat operations. New forms and methods of intelligent combat operations must be created. Key research must focus on the use of intelligent perception, intelligent decision-making, intelligent control, intelligent attack, and intelligent support; and the further development of intelligent reconnaissance and perception systems, command and control systems, weapons and equipment systems, combat support systems, and other weapons and equipment. Intelligent war will use people and machines working together to prosecute war, and new ways must be explored to generate combat power.<sup>89</sup>

A September 2018 article stated that the mode of warfare had shifted from informatized to intelligentized (having a smart component) combat operations. Big data, cloud computing, and AI offer the technological support that enable the opportunity to act independently. Such information uses algorithms to generate intelligence that helps analysts differentiate between true and false information and ascertain adversary weaknesses. The move to intelligent operations is also enabled by an artificial neural network with deep learning capability and the ability to attain general independent wisdom. Brains and machines interact to identify vital points and weak links. Intelligence in hardware guides information-firepower attacks and attacks on system-of-systems structures. Battlefield superiority is reliant on a system's intelligence superiority relative to an opponent, since destroying or paralyzing an opponent's system-of-systems structure is what helps ensure success.<sup>90</sup>

A month later an author noted that in intelligentized warfare, AI-powered smart equipment and intelligent command, maintenance, and combat forms are now imaginable. AI-produced "fake news" will be ubiquitous. The chain of observation, judgment, decision-making, and action (probably the OODA [observe, orient, decide, act] loop with other words) will shorten

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<sup>86</sup> Ibid.

<sup>87</sup> *Xinhua*, 18 May 2018, as provided by Ms. Cindy Hurst in the July 2018 Issue of *OE Watch*, p. 27.

<sup>88</sup> No author provided, "Universities Begin Recruiting AI Undergraduate Students for the First Time," *Caijing*, 19 June 2018, as provided by Ms. Cindy Hurst in the July 2018 Issue of *OE Watch*, p. 27.

<sup>89</sup> Li Shijiang, Yang Ziming, and Chen Fenyong, "Use New Concepts to Meet the Challenges of Intelligent War," *Jiefangjun Bao Online*, 26 July 2018, p. 7.

<sup>90</sup> Xuo Dengyun, Gong Jia, and Huang Peirong, "Why Informatized Combat Operations Are Becoming Intelligent Combat Operations," *Jiefangjun Bao Online*, 20 September 2018, p. 7.

substantially due to the increased tempo of fighting. Intelligent power will become the most crucial factor in determining war's outcome. Battlefield control, deterrence theory, and arms negotiations will all need new analysis and consideration. Further

Attrition warfare launched with intelligent swarms, cross-domain mobile warfare, and cognition control warfare will become basic types of combat operations. Offensive and defensive operations characterized by scattered human and equipment deployments, automatic coordination, and energy concentration will become the basic forms of cross-domain, whole-area operations.<sup>91</sup>

Chinese writers believe that bold innovations are needed if one is to learn about the new form of warfighting. AI systems may replace humans in warfare and information dominance appears to be replaced by AI-based smartness and automation. Smart intelligent technologies, as others have also noted, include cloud computing, machine learning, bionic technology, big data, and the mobile Internet. AI will separate humans from their direct physical contact with weapons, and command and control will be more independent. The latter will be able to gather information, judge situations, make decisions, and respond to contingencies. Conflicts will involve clusters of unmanned systems. Battlefield positions will be automatically sensed, automatic exchanges will occur during operational design, automatic planning will determine operational missions, and the automatic execution of actions will occur. This will result in the interaction of the information, cognition, and action domains as operations are coordinated. Destruction effects will be provided by technical reconnaissance means.<sup>92</sup> The four forms of smart operations in AI warfare will be as follows:

- Wasp swarm operations—enhanced effects with massive quantities, turning quantity superiority into qualitative superiority
- Trojan operations—based on stealthy deployment ahead-of-time and the activation of systems only when needed
- Self-determined operations—those without human command whose actions use a quick rhythm moving under cover, which requires automatic sensing, decision-making, and actions
- And incapacitation operations—those that destroy points and neutralize bodies, taking aim at nodes, hubs, and other vital parts of an opponent's operational system.<sup>93</sup>

To effectively respond to various risks and challenges in the change of war patterns, it was noted that China must “free its mind from traditional concepts about military operations, discern and grasp the attributes of AI warfare, play the game well by taking the initiative proactively, so

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<sup>91</sup> You Guangrong, “Artificial Intelligence Will Deeply Change the Outlook of War,” *Jiefangjun Bao* Online, 17 October 2018, p. 4.

<sup>92</sup> Lu Zhisheng, “A Profile of AI Warfare in the Future,” *Jiefangjun Bao* Online, 18 October 2018, p. 7.

<sup>93</sup> Ibid.



as to stay invincible on the future battlefield.”<sup>94</sup> Structural functions and organizational models and forms of the Armed Forces will undergo disruptive changes due to the “symbiotic combination” of humans and machines and smart equipment’s “self-adaptation” capabilities. Civilian forces and means will deliver attacks on vital nodes of an opponent’s operational system and further cripple his capabilities and will. Intelligentization will cause the development of new management models for defense technology and the war industry. These models will be based on the big data that is gathered and processed before being sent to intelligentized operations.<sup>95</sup>

AI superiority is believed to have surpassed information superiority in importance. The man-machine combination means that intelligence superiority is now most important in terms of thinking speed and planning as follows:

- Regarding thinking speed, Chinese military theorists are considering the importance of direct control of the other sides automatic operational systems through controlling the other side’s personnel or incapacitating them through brain control technology or sentiment control technology.
- Regarding planning, there are four types of operations under consideration. First, smart ambush (Trojan type) operations will use offensive or cyber weapons with bionic or stealth features to sneak into an opposing side’s core facilities, sea routes, equipment, vital parts, or systems, where they lie dormant and are only activated when war or conflict breaks out. Second, smart clustered operations are ‘wolf pack or wasp swarm’ saturated attacks that break through enemy defenses and destroy major targets. Third, precision second-killing operations are supersonic and ultrasonic weapons that enable high-speed instant strikes against important facilities. Finally, cognition control operations disrupt an enemy’s smart operational systems and undermine an opponent’s thinking and cognition.<sup>96</sup>

Battle domains will gradually expand into the two extreme limits of macroscopic and microscopic fields, where domains are transformed by the technical domain. The latter will combine with various conventional physical domains to form a cross-domain battlefield. Advances in brain and cognitive technologies will give rise to the cognition domain of war which, together with other domains, will forge a **mega-domain operational system**. This could make warfare more “humane” and mitigate responsibility and political pressure for launching war. Even war’s definition may change, as it could be redefined as the violation of another side’s sovereignty in one or all domains.<sup>97</sup>

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<sup>94</sup> Wu Baiyi, “The Age of Artificial Intelligence Calls for ‘Newer and Braver Human Brains,’” *Jiefangjun Bao* Online, 6 November 2018, p 9.

<sup>95</sup> Ibid., Niu, Cao.

<sup>96</sup> Chou Hao and Liang Kui, “The Winning Mechanism of Conventional Warfighting Will Be Disrupted,” *Jiefangjun Bao* Online, 8 November 2018, p. 7.

<sup>97</sup> Ibid.

The level of military intelligentization of a nation (or terrorist group!) may be the new measure of a great power, and not a population's size or its economic underpinning. Integrated and parallel operations will be a new combat model in future war. Cyber wars will be encouraged in the age of intelligentization.<sup>98</sup> Command decision-making will be based on battlefield posture sensing, produced with data mining, deep learning, and smart networking technologies (maps, posture elements, operational process deductions, etc.). Simulated rehearsals of operational programs based on real-time battlefield posture data (simulating MDO, for example!) enhance the capabilities for predicting operations and matching them with tactical actions. Unmanned combat clusters such as wasp swarms in the air, fish schools underwater, and wolf packs on land, coordinated with manned equipment, will become important forms of warfare (some Chinese analysts have proposed that robots resembling butterflies, dragonflies, flies, locust and other insects will appear in large batches).<sup>99</sup> During training for the conduct of campaigns, holographic projections, virtual realities, and smart algorithms will enable commanders to observe and analyze force deployments and battlefield situations to more reliably formulate procedures and shape decision-making superiority.<sup>100</sup>

A January 2019 AI article noted that the form of military engagements will change from system confrontations to algorithm competition, due to the use of AI. It was noted that “**algorithms are stratagem mechanisms** for resolving various issues.”<sup>101</sup> They determine cognition superiority and help to do three things: disperse battlefield fog, enable speed superiority, and determine decision-making superiority. They enable the PLA to “come up with flexible and diverse operational programs and response options according to changes on the enemy side.”<sup>102</sup> In this way they disrupt an opponent's intentions and deployments. Decision-making in war will eventually change from purely human decision-making to include the following: man-machine combined decision-making; cloud brain AI decision-making [as written]; and neural network decision-making.<sup>103</sup>

AI-based planning computations are transforming war from its informatized state to AI warfare. Those with “more calculations” prevail over those with “less calculations,” and “intelligent calculations” defeat “quantitative calculations.” Smart guidance systems can defeat a system-of-systems. Even world naval powers are attaching importance to devices such as cognitive computers, biological computers, and quantum computers. Superior AI, especially that unknown to an opponent and using asymmetric AI strategic supremacy, allows the weak to defeat a strong system-of-system based opponent. To gain such supremacy, efforts must begin in peacetime to

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<sup>98</sup> Xu Lin and Wang Xingwang, “Military Security Sees New Dynamics and New Challenges,” *Jiefangjun Bao* Online, 8 November 2018, p. 7.

<sup>99</sup> See, for example, Li Minghai, “Deducing the Look of AI-Based Warfare,” *Jiefangjun Bao* Online, 2 April 2019.

<sup>100</sup> Zhang Lu, Tang Yao, Wang Jianfei, “Firmly Take Hold of the Strategic Initiative in Crucial Domains,” *Jiefangjun Bao* Online, 8 November 2018, p. 7.

<sup>101</sup> Li Minghai, “Where Exists the War-Winning Mechanisms of AI Warfare,” *Jiefangjun Bao*, 15 January 2019.

<sup>102</sup> Ibid.

<sup>103</sup> Ibid.

find weaknesses in an opponent, with “algorithm experiments and confrontation exercises unfolding against the vulnerabilities of an opponent’s operational system.”<sup>104</sup>

A focus on maritime operational design in peacetime noted that:

Deep, precise, meticulous calculation should be performed ahead of time over the objective of war, the goal of the campaign, the probabilities of success and risks, personnel casualties, material, and ammunition consumption. A war-fighting pattern should be designed independently. The concepts of AI-driven maritime operations should be tested and validated so that battles can be fought according to the programs, and victories can be won based on the algorithms.<sup>105</sup>

Presently, AI cannot replace human intelligence in the military domain, but it can be integrated with it. On occasion, theorists must be reminded that the art of military command is often based on inspiration or intuition, and we have no way currently to train robots to produce such concepts. AI cannot resolve uncertainty during military operations caused by war stratagems, deception, and disinformation. Errors and mistakes may occur in judgments and decisions if made by systems alone.<sup>106</sup>

In April 2019 it was noted that artificial intelligence, information networks, unmanned systems, big data, cloud computing, human-machine interface, and additive manufacturing are all 21<sup>st</sup> century cutting-edge technologies, but that AI is the strategic area developing the fastest. A system of “smart warfare systems” is being built where AI is the brain, operational networks the nerves, and operational big data the blood of this system. Counters to an adversary’s use of smart wars must also be considered, and topics such as algorithmic and anti-algorithmic warfare must be researched in depth.<sup>107</sup>

However, AI’s use of automatic decision-making in areas such as reconnaissance, strikes, and damage evaluation contain several risks, and each should be dealt with discreetly. Once an opponent figures out a certain algorithmic logic behind an AI system, the latter could be led into making erroneous judgements. Counters must be considered. AI systems also have no human emotion at present and can “hardly be restricted by morals and ethics” and this entails another element of risk in their use. Decisions must still be reached with discretion.<sup>108</sup>

Humans possess a unique subjective initiative, intellect, and creativity, while machines have precision, rapidity, and repetition on their side. Humans implement stratagems with an artistic capability and are war designers and decision-makers. AI-weapons search, identify, and attack but

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<sup>104</sup> Zuo Dengyun, “Where Lies the Course of AI-Driven Transformation in Maritime Operations,” *Jiefangjun Bao Online*, 12 February 2019.

<sup>105</sup> Ibid.

<sup>106</sup> Wang Chunfu, “Bring Military AI Implementation onto the Track of Scientific Development,” *Jiefangjun Bao Online*, 26 March 2019, p. 7.

<sup>107</sup> Li Dapeng, “How We Should Handle the Challenge of Smart Wars,” *Zhongguo Qingnian Bao Online*, 4 April 2019, p. 11.

<sup>108</sup> Gu Jingchao and Liu Kui, “Be Discreet about ‘Autonomous Decision-Making’ in AI-Based Military Command,” *Jiefangjun Bao Online*, 26 March 2019, p. 7.

have limited capacity of “initiative.” Achieving superiority in algorithm confrontation is a key to seizing control, and the employment of stratagem mechanisms using algorithms is a method for resolving issues. AI warfare aims to seize intelligent superiority through “controlling the adversary’s brain and paralyzing its body.”<sup>109</sup> At the level of military art, or tactics, campaigns and strategy, it was noted that “most aspects of tactical command authority are being transferred to AI” at a fast rate; “some campaign command authority will be transferred to AI”; and as regards strategic command authority, it “must remain firmly in human hands.”<sup>110</sup>

Algorithms were the specific focus of a June 2019 article, which stated that intelligentized warfare and operational control will be won by means of computation and computer commands. Military powers worldwide, the author noted, are trying to change military operations with brand-new algorithms and programming codes. For this reason, data and computing capacity, the integration of platforms into a system capable of crashing an opponent’s operational systems, and the integration of transmissions and decision-making speed to outperform opponents have increased in importance. A human’s creativity, flexibility, and initiative can, in a reasonable and logical manner, conceal real data, concoct fake data, or increase the amount of useless data in an opponent’s system; and can develop hard or soft strikes to retard an opponent’s computing efficiency or reduce the operational effectiveness of adversary algorithms. Humans, in other words, remain more important than machines in their ability to counter an opponent’s AI.<sup>111</sup>

In October 2019 it was noted that as AI infiltrates into the military domain, it will change how combat power manifests itself. The cognitive domain will become a battle domain, human fighters will fade away, and intelligent equipment will be brought onto the battlefield. Cross-domain unconventional and asymmetrical fighting will be the new normal, and **intelligence control** will replace territorial control as the **center of gravity** in war. Intelligentized warfare is expected to reshape the rules of engagement and restructure combat forces such that machine-on-human or machine-on-machine warfare will be the new “traditional.”<sup>112</sup>

Finally, in March 2020, the term intelligentized warfare appeared to represent a combination of AI’s capabilities combined with mankind’s intuition and creativity for planning and operations. In an article on UAVs, drone swarm operations (the term wasp swarm was not used) were stated to be an important form of intelligentized warfare. They could even become the advance guard of battle between two armies. Advantages over conventional operations include the following:

- Drone swarms can flexibly organize into different units
- A swarm formation can have multiple functions, from reconnaissance to hard strikes

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<sup>109</sup> Wang Ronghui, “A Look at the Features of AI Warfare in the Future,” *Jiefangjun Bao* Online, 30 April 2019.

<sup>110</sup> Yuan Yi, Gao Dongming, and Zhang Yujun, “Also Discuss ‘Autonomous Decision-Making’ in Intelligent Command,” *Jiefangjun Bao* Online, 18 April 2019.

<sup>111</sup> Chai Shan, “Grasp the Key Links of Winning Intelligentized Warfare,” *Jiefangjun Bao* Online, 4 June 2019.

<sup>112</sup> Yang Wenzhe, “How to Win Intelligentized Warfare by Analyzing What Has Changed and What Has Not Changed,” *Jiefangjun Bao*, 22 October 2019.

- Swarm operations can transmit battlefield information so that a commander's intentions can be accurately implemented
- Individual drones are small targets and can hide near the battlefield
- Swarm operations eliminate human-operations machine limitations
- And swarm operations logistic support is low.<sup>113</sup>

Most important for China is that drone swarms fight across all domains:

The basic method of multi-domain attacks is to use a drone swarm platform to carry many individual drones. During battle, drones are launched or deployed through the platform as battle groups to achieve data sharing, flight control, situational awareness and intelligentized decision-making, so that the drone can flexibly respond to battlefield contingencies and conduct various combat missions, such as swarm reconnaissance, fighting, and attacks.<sup>114</sup>

Not only can drone swarms be configured with various modules, but they can form a large assault formation that can penetrate deep into enemy territory and strike high-risk targets.<sup>115</sup>

Thus, to summarize this 2018-2020 discussion, the following are some key takeaways from the PLA's understanding of how AI and smart weaponry are affecting operational planning:

- The technical domain will combine with various conventional physical domains to form a cross-domain battlefield. Advances in brain and cognitive technologies will give rise to the cognition domain of war which, together with other domains, will forge a mega-domain operational system
- Drone swarm operations will attempt to overload an opponent's defensive systems and responses. Swarms will be used in the air, sea, and land domains. One huge drone swarm could involve reconnaissance, jamming, attack, and other capabilities that fulfill multiple missions.
- A group of 'smart warfare systems' is being built where AI is the brain, operational networks the nerves, and operational big data the blood. Counters to an adversary's use of smart wars must also be considered, and topics such as algorithmic and anti-algorithmic warfare must be researched in depth.
- The focus of military engagements will change from system confrontations to algorithm competition, due to the use of AI. It was noted that algorithms are stratagem mechanisms for resolving various issues.
- Intelligent power will become the most crucial factor in determining war's outcome. It will utilize innovation in areas such as intelligent perception,

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<sup>113</sup> Xu Weiwei and Li Huan, "The Main Types of Drone Swarm Warfare," *Jiefangjun Bao*, 23 January 2020, as provided by Ms. Cindy Hurst in the March 2020 Issue of *OE Watch*, p. 28.

<sup>114</sup> Ibid.

<sup>115</sup> Ibid.

intelligent decision-making, intelligent control, and unmanned platforms. The intelligence factor radiates from military hardware.

- Cross-domain unconventional and asymmetrical fighting will be the new normal, and intelligence control will replace territorial control as the center of gravity in war—and perhaps this will cause the definition of war to be redefined.
- Attrition warfare launched with intelligent swarms, cross-domain mobile warfare, and cognition control warfare will become basic types of combat operations.
- Civil-military integration, which involves the collaborative industry-university-research innovation system, will open society's innovative power, and promote the development of military intelligence. The development of CINGAIDS is but one civilian development that will be integrated with the military response.

### *Quantum Operations*

On 13 April 2020, the *Wall Street Journal* published a special section titled “5G: What’s Next.” The journal offered an estimate of “who leads who” in crucial areas in the US-China competition: 5G (China leads), AI (US leads, but barely), semi-conductors (US), and autonomous vehicles (US). Surprisingly, the US was said to lead China in quantum computing, but China leads the US in quantum communications. China’s Pan Jian-Wei, the nation’s “father of quantum,” has led the charge to develop quantum communications, sensors, and radars, which all have potential military applications. In 2016 the nation launched the Micius satellite, which uses quantum state photon beams to make transmissions that are impervious to interception. Further, China has “exponentially increased the number of quantum information technology (QIT) patents,” largely in the realm of software.<sup>116</sup> US concerns, of course, are that 5G and quantum capabilities could let the Chinese government intercept communications, sabotage military networks, infrastructure, or economies, or even turn Internet connected items into weapons.

China’s military entered the game long ago. State Councilor and CPC Central Committee Political Bureau member Liu Yandong noted in 2011 that quantum communications have made “fresh contributions to scientific development.”<sup>117</sup> One 2011 report stated that the University of National Defense Science and Technology had conducted quantum information technology research since the 1990s; and that the PLA’s University of Science and Technology (PLAUST) had been studying quantum communication technologies since at least 2011.<sup>118</sup> Other Chinese

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<sup>116</sup> Asa Fitch and Stu Woo, “The US vs China: Who’s Winning the Key High-Tech Battles?” *The Wall Street Journal*, 13 April 2020, pp. A2-A3.

<sup>117</sup> Liu Yandong, “Striving to Break New Ground in Fundamental Research,” *Qiushi* Online, 1 August 2011, No. 15.

<sup>118</sup> See, for example, He Shuyuan, Chen Ming, Li Zhi, and Qiao Tianfu, “Join Forces and Pool Wisdom to Forge National-Defense Equipment and Facilities—An Outline of Endeavors Made by the University of National Defense Science and Technology’s Autonomous Innovation Teams to Bravely Scale New Heights in Science and Technology,” *Jiefangjun Bao* Online, 26 July 2011, p. 8; and Yang Zhijun, Yang Daichun, and Ma Shengwei, “PLAUST Promotes Integrated Development of Interdisciplinary Research,” *Jiefangjun Bao* Online, 11 October 2011.

reports on the expanded use of quantum information discussed topics such as quantum science projects and quantum mechanics experiments in space.<sup>119</sup>

In 2012 PLAUST opened up new areas of study, to include military information grid networking, quantum communications, cloud computing, and military logistics networking.<sup>120</sup> China's Academy of Space Technology (CAST) has started preparatory work to establish China's first quantum remote-sensing laboratory. The aerospace community believes that remote sensing is an important area for the application of quantum information technology, and it has been designated as one of the four key areas of scientific research in the next fifteen years.<sup>121</sup>

Also, in 2012 it was stated that quantum communication technology has important strategic significance in ensuring the safety of state information. These remarks were made at a ceremony to launch the financial information quantum communication verification network.<sup>122</sup> With such high-level cover, it is not surprising that China's rapid science and technology developments have been tied to quantum information, as well as neutrino oscillation, nanotechnology, and stem cell studies, among others.<sup>123</sup> Another report the same year discussed breakthroughs in information technology, to include intelligent optic networks, high-speed satellite communications, space optical communications, and quantum communications.<sup>124</sup>

The PLA has capitalized on quantum achievements and used them to train the force. In 2013, for example, during an exercise the following was reported:

In less than 10 minutes, the detachment completed the setting up of a quantum communications network and opened a command organ quantum video communication system, and the battlefield situation was clearly indicated on the screen of the command vehicle.<sup>125</sup>

Chinese scientists also state that they have made the first experimental observation of the quantum anomalous hall (QAH) effect. The discovery, still a long way from practical application, is thought to enhance the information technology revolution through the development of low-power-consumption electronics. The QAH effect "describes how a voltage appears at both semiconductor edges when the electrons on a current-carrying semiconductor experience a force while being kept in a magnetic field."<sup>126</sup>

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<sup>119</sup> See, for example, "China's Space Activities in 2011," *Xinhua* (in English), 29 December 2011.

<sup>120</sup> Yang Zhijun and Ma Shengwei, "PLA University of Science and Technology Promotes Cross-Disciplinary Fusion, Intensifies Military-Civilian Joint Endeavors—More than 740 Innovative Achievements Help Enhance Combat Capabilities of the Armed Forces," *Jiefangjun Bao* Online, 18 March 2012, p. 1.

<sup>121</sup> *Zhongguo Hangtian Bao* Online, 25 July 2012.

<sup>122</sup> *Xinhua Domestic Service*, 21 February 2012.

<sup>123</sup> Cheng Yingqi, "Tianjin Meeting a Hotbed of Scientific Exchange," *China Daily* Online (in English), 18 September 2012.

<sup>124</sup> Zeng Weihua and Lin Bo, "Information Support: The Fresh Force Leaps into the Foreground of Informatized Battlefields," *Jiefangjun Bao* Online, 9 February 2012.

<sup>125</sup> Gao Feng, Li Yuanxin, and Hu Guangfei, "Militiamen's 'Double Responses' Bid Farewell to 'Human Wave Tactics'—Record of What One Hears and Thinks about an Actual-Combat-Oriented Exercise of the Hefei Garrison Command of Anhui Province," *Jiefangjun Bao* Online, 18 November 2013, p. 9.

<sup>126</sup> "Chinese Scientists Observe IT-Advancing Phenomenon," *Xinhua* (in English), 10 April 2013.

An important 2016 report out of Singapore examined China's quantum satellite experiments for both strategic and military implications. The report noted that on 16 August 2016 the Chinese launched the Micius satellite, named after an ancient Chinese philosopher, and tasked it to establish a hack-proof communication line. By 2030 China hopes to have a network of quantum satellites to augment its ground-based quantum computer network. The network would establish a strategic asset to enable the PLA's capacity for power projection through a "constellation of space-based intelligence, surveillance, and reconnaissance platforms; tactical warning and attack assessments; command, control, and communications; navigation and positioning; and environmental monitoring."<sup>127</sup> Information dominance is not possible, in the PLA's opinion, without space dominance. Quantum communication satellites could be used as "data relay satellites to securely transmit targeting data to and from command centers, while evading cyber interceptions."

In 2017, it was reported that China is building the world's biggest quantum research facility, useful in the military for code-breaking or employment on stealth submarines. The National Laboratory for Quantum Information Science will be built next to a lake in Hefei, Anhui Province.<sup>128</sup> Pan Jian-Wei noted that China is now a world leader in encrypted quantum communications. He cited three achievements in 2017, with two attributed to Micius: satellite-to-ground quantum key distribution and ground-to-satellite quantum teleportation. China also achieved the construction of the first 1000-km-level Beijing-Shanghai quantum fiber link and first private intercontinental quantum communication, supported by a satellite-ground chain, between Beijing and Vienna.<sup>129</sup> A 2018 report stated that China can monitor data transmissions along the quantum communications network connecting Beijing and Shanghai. Pan Jian-Wei was identified as the chief researcher of China's quantum satellite and Peng Chengzhi was said to be the chief designer of China's quantum satellite application system.<sup>130</sup>

### *Other Thoughts*

In late 2018, PLA hawk Luo Yuan, in a speech at the 2018 Military Industry Awards Ceremony and Innovation Summit, described asymmetric attacks that China could use to defeat the US. First, he discussed attacks that an enemy fear, an example of which would be to sink US aircraft carriers. Second, he suggested internationalizing the RMB to cause the dollar to stumble. Third, develop China's high-tech industry with independent intellectual property rights. Fourth, strike at the US's agricultural sector (especially soybeans) with import penalties since this is where President Trump's strength is located. Finally, make more friends which will make more enemies for the US.<sup>131</sup>

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<sup>127</sup> Michael Raska, "China's Quantum Satellite Experiments: Strategic and Military Implications," *S. Rajaratnam School of International Studies* (in English) 4 September 2016.

<sup>128</sup> Stephen Chen, "China Building World's Biggest Quantum Research Facility," *South China Morning Post*, 11 September 2017, as provided by Ms. Cindy Hurst in the May 2018 issue of *OE Watch*, p. 42.

<sup>129</sup> No broadcaster identified, "The Future is Coming—the Advent of the Era of Quantum Communications," *CCTV News*, 26 December 2017, as provided by Ms. Cindy Hurst in the May 2018 issue of *OE Watch*, p. 42.

<sup>130</sup> No broadcaster or title noted, *CCTV News* (in English), 4 January 2018.

<sup>131</sup> Luo Yuan, "Speech at the 2018 Military Industry Awards Ceremony and Innovation Summit," *Sina.com*, 23 December 2018, as provided by Ms. Cindy Hurst in the February 2019 issue of *OE Watch*, pp. 23-24.



In 2019, several new types of drones were explained in the press or shown at parades. The Type 001A aircraft carrier was said to deploy the Sharp Sword Stealth Drone, which would help close the technology gap with the US Navy. At an October 2019 parade the DR-8 drone was shown and described as a high-altitude, high-speed reconnaissance UAV that could fly at supersonic speed. The GJ-11 stealth drone was also shown. Both may be able to fight in the invisible electromagnetic domain. The HSU-001 Underwater Unmanned Vehicle is reportedly able to sail long distances and collect data and spy on enemy vessels.<sup>132</sup> A few days after the National Day parade ended, China launched a Gaofen 10 high-resolution Earth Observation System, which joins 12 other Gaofen satellites in orbit. It can provide data support for major national strategies and national defense modernization, to include Belt and Road countries that are part of China's trans-Eurasian Silk Road Economic Belt and the 21<sup>st</sup> Century Maritime Silk Road.<sup>133</sup> In addition to Gaofen satellites, the Beidou satellite navigation system is nearing completion. The newer Beidou-3 satellite's precision has implications for defense and civilian applications. Of the 39 Beidou satellites in orbit, 21 are Beidou-3 satellites. The system deeply integrates the Internet, the Internet of Things, 5G, big data, and so on and currently covers 30 Belt and Road countries.<sup>134</sup>

Regarding future war, it was noted in February 2020 that cyber-electronic warfare will continue to evolve in the information age and that it is of crucial importance for seizing the initiative in future war. It was noted that "Practice shows that whoever takes the lead in gaining dominance in a new battle domain will seize the initiative and win victory in rivalry and confrontation."<sup>135</sup> Cyber-electronic operations as a battle domain will potentially surpass fire strikes in capabilities and will perform the following:

The means of cyber-electronic operations will not only effectively combat the enemy's electronic targets such as those for reconnaissance, early warning, command and control, weapon guidance, navigation and identification, but also mount strikes on the enemy's information infrastructure facilities and such potential war targets as energy, power, and transportation information networks.<sup>136</sup>

The author added that cyber-electronic attacks will be "the core means of destroying the enemy's combat system."<sup>137</sup> A cyber-electronic force can find an enemy's vital nodes or weak links easier

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<sup>132</sup> Minnie Chan, "China to Deploy Sharp Sword Stealth Drone for New Type 001A Aircraft Carrier," *South China Morning Post*, 17 September 2019; Ouyang Hao, "The Third Unmanned Warfare Formation," *21East.com*, 1 October 2019; and Liu Zhen, "China Stakes Claim on Unmanned Warfare with National Day Show of Drone Force," *South China Morning Post*, 3 October 2019, as provided by Ms. Cindy Hurst in the November 2019 issue of *OE Watch*, p. 28.

<sup>133</sup> No author provided, "China Successfully Launches Gaofen-10 Satellite," *Xinhua*, 5 October 2019, as provided by Peter Wood in the November issue of *OE Watch*, p. 32.

<sup>134</sup> No author provided, "China's Beidou System Now Has 39 Satellites in Orbit, System Will Be Completed Next Year," *Guangming Daily*, 12 September 2019, as provided by Peter Wood in the November 2019 issue of *OE Watch*, p. 31.

<sup>135</sup> Wang Feiqiu, "How Will Cyber-Electronic Warfare Evolve in the Information Age," *Jiefangjun Bao*, 19 December 2019, as provided by Ms. Cindy Hurst in the February 2020 issue of *OE Watch*, p. 22.

<sup>136</sup> Ibid.

<sup>137</sup> Ibid.

in the cyber realm than in physical geographic space. Cyber-electronic defense, on the other hand, is a key to ensuring the stability of joint operations systems.<sup>138</sup>

In March 2020 it was noted that the ground battlefield will no longer be restricted to its former geographical sense due to informatized conditions that exist. It will be necessary to learn how to conduct close combat on such a battlefield. A strong enemy can now detect and acquire targets at long range, execute precise attacks from beyond the line of sight, and conceal his intent. Using firepower as cover and seeking ways to evade and use flexible deception are important. It was noted that for a weaker side to be victorious you must get close to the enemy and fight at close quarters. This threatens his use of long-range firepower and other weapon platforms for fear of friendly casualties. It will be necessary to take aim at weak points of a strong enemy's informatized platforms and conduct close combat against him.<sup>139</sup>

Thus, the unfolding reality of the PLA's battlefield construction goes well-beyond Xi's "winning informatized local wars." Many other issues are in vogue, such as the cognitive domain, the issue of intelligentized warfare, quantum issues, and so on. "Preparing for and winning AI- and intelligentized-enhanced battles" sounds more appropriate as a description of how China sizes up the contemporary battlefield.

## Conclusions

In strategy, when we do not know the true intent of our opponent, we can also make some actions locally where there will be no decisive impact on the overall strategic interests; or we can create some false information that does not involve our own strategic intent. Then we can make the correct judgment or decision by observing the corresponding reaction of our opponent so that the true intention of our opponent can be found out.<sup>140</sup>

The title of this paper is "The Chinese Way of War: How Has it Changed?" The answer is that it has changed dramatically from what it was 20 years ago, but that does not mean that everything is new. There are some components of PLA thinking (deception, stratagems, etc., as in the quote above) that remain as important elements of China's way of war and they are being integrated into technologies. Such issues offer an overall sense of historical continuity in China's approach to warfare that is based on a thought process going back thousands of years, to include the transcendent impact of Sun Tzu, Marx, and Mao on strategic and tactical issues. The number of articles and discussions in *China Military Science* over the past 20 years devoted to these three men fully support this contention. On the other hand, China's intelligentization of operations and focus on joint and all-domain capabilities (to include domains not currently under consideration in the US) create new challenges. AI, as mentioned above in several locations, is now being used to

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<sup>138</sup> Ibid.

<sup>139</sup> Ye Huabin and Ai Zhengson, "How to Conduct 'Close Combat' in the Information Age," *Jiefangjun Bao (PLA Daily)*, 16 January 2020, as provided by Ms. Cindy Hurst in the March 2020 issue of *OE Watch*, p. 26.

<sup>140</sup> Zhou Xiaoyu, "Strategic Thinking in the Game of Go," *China Military Science*, No. 6 2015, pp. 54-60..

help design warfare—repeat, help design warfare—to further provide control over conflicts and to ensure the PLA has a future deterrent force with which to confront other nations.

More recently, one can even see this cultural influence on the actions surrounding the Covid-19 outbreak. The primary goal of the PLA and diplomats is to gain a strategic advantage or *shi* that could be exploited in case of conflict. Several authors (only one is footnoted here) have stated that there are speculations that Xi Jinping, aware of the serious potential economic situation in which the virus had placed his nation, decided to make sure that other countries weren't spared the problem, thereby keeping China from being at a disadvantage. Secrecy is reflexive for a regime whose survival is threatened with explosive situations, so other nations were not warned about it in time to begin mitigation or collecting medical supplies (on which Xi cornered the market). Xi allowed international air travel from Wuhan to other nations to ensure the spread.<sup>141</sup> We should wonder how his good friend in the Kremlin is taking this news now that his nation too is under covid-19 siege.

Peter Navarro, an advisor to President Trump and Director of the Office of Trade and Manufacturing Policy and National Coordinator for the National Defense production Act Policy, stated on 22 April that China kept the virus secret and first hoarded all protective gear months before the virus hit other nations and then resold it at a significant profit. Such deception indicates it is past time for the US to bring its supply chains home<sup>142</sup> (pharmaceuticals, medical equipment, etc.) and stop placing them in the hands of others, who use them to gain an advantage. On *Fox News* on 25 April, Navarro added that a Chinese delegation met with President Trump on 14 January, which was seven days after Xi Jinping allegedly took control of the situation and weeks after the virus had begun to circulate in China.<sup>143</sup> Of interest to Americans, of course, is whether the delegation's members actually knew if they were at that time infected or not.

Thus, it may be a good time to reexamine China's way of war internationally as well as militarily. Science and technology (S&T) are affecting not only the balance of power among nations but also the strategy, campaigns, and tactics of not only trade and diplomacy but militaries in ways never expected.

There are some general conclusions to draw from this short report that should provide a few ways of assessing the Chinese military way of war. What follows is a final look at important concepts to keep in mind. They include an examination of AI topics regarding future war; a specific Chinese method of defining strategy; the PLA's continued use of historic concepts; the move from informatized to intelligentized warfare; China's continued use of cyber spying, reverse engineering, and other issues; the focus of "strategic directors" on the use of various control mechanisms; the basics of the PLA's thought process that help indicate how they will fight; and the PLA's focus on "designing future battlefields" in peacetime.

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<sup>141</sup> Holman W. Jenkins, Jr. "China's Coronavirus Culpability," *The Wall Street Journal*, 22 April 2020, p. A19.

<sup>142</sup> No author provided, "President's Advisor Peter Navarro Accuses China of 'Four Kills' against the US in the Pandemic," *EIRNS*, 22 April 2020. Downloaded from [https://larouchepub.com/pr/2020/20200422\\_navarro.html](https://larouchepub.com/pr/2020/20200422_navarro.html)

<sup>143</sup> "Neil Cavuto Interview with Peter Navarro," *Fox News*, 25 April 2020.

First, and perhaps most important, is the way that AI and other S&T developments are changing PLA concepts and their potential wartime focus. Priority concepts included the following main areas:

1. Intelligent power will become the **most crucial factor** (all **bolding** is to stress emphasis of actual Chinese wording) in determining war's outcome. Battlefield control, deterrence theory, and arms negotiations will all need new analysis and consideration. Attrition warfare launched with intelligent swarms, cross-domain mobile warfare, and cognition control warfare will become **basic types of combat operations**. Cross-domain unconventional and asymmetrical fighting will be the new normal, and **intelligence control will replace territorial control as the center of gravity in war**.
2. The **four forms of smart operations** in AI warfare will be as follows: wasp swarm operations; Trojan operations; self-determined operations; and incapacitation operations. A system of "**smart warfare systems**" is being built where AI is the brain, operational networks the nerves, and operational big data the blood of this system. Counters to an adversary's use of smart wars must also be considered, to include topics such as algorithmic and anti-algorithmic warfare. The **form of military engagements will change from system confrontations to algorithm competition**, due to the use of AI. It was noted that "algorithms are stratagem mechanisms."
3. The **goal** in future war is to cut off an opponent's information and decision-making control with friendly advantages gained after intelligent technology and information-led theory are combined. The intelligentization of the command information system is "the key to the enhancement of the means of operational combat and the formation of decision-making advantages" and includes intelligent perception, intelligent decision-making, intelligent control, and unmanned platforms. The level of military intelligentization of a nation (or terrorist group!) may be the new measure of a great power.
4. **New battlefield and operational space** will consist of the following: space, the Internet, all fields of human activities and ideologies, quick response satellites, autonomous network security, brain control weapons, gene weapons, and other emerging combat powers that will be integrated into combat systems.
5. **Brains and machines will interact** to identify vital points and weak links. Intelligence in hardware will guide information-firepower attacks and attacks on system-of-systems structures. Battlefield superiority will be reliant on a system's intelligence superiority relative to an opponent, since destroying or paralyzing an opponent's system-of-systems structure is what helps ensure success.

Second, it is important to consider the **definition of strategy** that several strategists have proposed. Perhaps most important is that it offers US strategists another way to consider the concept instead of just through the lens of ends, ways, and means. The objective-subjective method

helps us understand better how the PLA may be planning operations and why, based on a leader's observation of the situational environment (objective reality) before him and how he applies subjectivity to manipulate these conditions to his advantage. The situational environment presented to leaders/commanders at all levels (the economy, diplomacy, geography, level of science and technology, troop dispositions and capabilities of an opponent, etc.) **forms objective reality**. Leaders/commanders then manipulate these realities or strategic situations to their advantage through specific **subjective guidance** which, naturally, may include the use of stratagems or other devices. This enables the PLA to fight "its way" and the definition and methods can apply to both grand and military strategy. This definition of strategy was cited in four places above (Wu's grand strategy article in *CMS* in 2000, the 2007 *Military Strategy* book, the 2013 book *The Science of Military Strategy*, and Luo Derong's explanation of Xi's *New Guideline*). Mao was an adherent of the concept as well. He noted that strategy in war is a contest of subjective capabilities between two military commanders vying for dominance and initiative when military strength, financial resources, and other material conditions (objective reality) serves as the basis for their decisions.<sup>144</sup>

Third, it is important to consider the PLA's focus on **utilizing ancient thought** today, because it continues to appear on the pages of *CMS* (as the Appendixes for each period under examination clearly show) and in the numerous books and conferences that support its theories. This includes ancient theories from the use of stratagems and acupuncture war to vital point warfare and the use of *shi*, among many others. It is important to fully take into consideration the works of Sun Tzu, Marx, and Mao, as their works continue to be developed on the pages of *CMS*. Li Bingyan, for example, showed how Sun Tzu's writings in Chapter Four (dispositions) of the *Art of War* can apply to assessments of the situation even today. That chapter states that wars elements include measuring space, estimating quantities, calculations, comparisons, and chances of victory. Li added the following about contemporary conditions:

The mathematical line of thought used by a commander in executing tactics is: based on how dangerous or favorable, broad or narrow the terrain is make judgments on its use [space]; determine the holding capacity for the battlefield [quantity estimation]; based on holding capacity, estimate the number of troops the two sides could commit [calculations, comparison, and thus chances of victory].<sup>145</sup>

The question for today might be **what will be the impact of a technological Sun Tzu or a technological Mao Zedong?** How has the mathematical line of thought changed in accordance with the use of AI and quantum? Will we be able to recognize when the PLA wants to "appear weak when strong" as they "hide in plain sight" on our cyber networks? China will focus on developing a strategic advantage with deception and other asymmetric applications of stratagems to demonstrate ways to manipulate the strategic environment. It is important to remember Mao's concept that "you fight your way and I'll fight mine" has remained as a key aspect of China's way

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<sup>144</sup> Yao Youzhi and Ma Debao, "Sun Zi's Art of War and Mainstream Contemporary Chinese Theories of War," *China Military Science*, No. 6 2004, pp. 9-13.

<sup>145</sup> Ibid.

of war (the concept was even expressed in the New Guideline). The important point is that the PLA has its own way of warfare that does not include hybrid, gray zone, or other US concepts. We must come at the China problem from the angle of confronting the PLA's actual thought mode and not trying to integrate what is going on in the PLA into our concepts.

Fourth, it is important to consider the “focal points” of interest to each leader of China. The focus of Jiang was on high-tech warfare while Hu and Xi focused on informationized local warfare, demonstrating their keen interest in information systems and ways to conduct system sabotage warfare through targeting vital points of strength in systems. It is here where the concept of acupuncture warfare finds its utility, where taking out key nodes can upset or control an entire system's infrastructure. However, Xi's era has witnessed a greater concern for AI and quantum issues than past leaders. This indicates that it might be more likely to **characterize Xi's era as “preparing for and winning AI-and intelligentized-enhanced battles.”** Xi's concerns, Luo Derong stated in the New Guideline, underscored the importance of the principles of innovation, flexibility, and the activeness of offense and defense. Innovative thought is encouraging work on Li Bingyan's concept of combining technology with stratagems. Further, cyber spying and reverse engineering are being used to put the PLA beyond the possibility of defeat by knowing what their opponent plans to do. Collecting operational data provides real-time support for combat operations, serving as the foundation for operational calculations and control.<sup>146</sup>

Fifth, the CPC's focus on domestic **control** has clearly extended to the military leadership's focus on various types of battlefield control mechanisms. Not only does the term refer to command and control issues but also **war, biological, battlefield, cognitive, intelligent, decision-making, brain, crisis, arms, conflict, strategic guidance**, and other types of control. Many indicate an interest in non-warfare types of control. However, the person in charge of war control, known as the strategic conductor, was a specific focus.

- The strategic conductor uses military strength to ‘influence an opponent's cognition and information systems and even to change the will and action of an opponent, and thereby to realize the expected strategic objective.’
- The strategic conductor must comprehensively employ both military and non-military means to carry out war control.
- War control is the war conductor's behavior to limit and restrain consciously the occurrence, development, intensity, and outcome of a war. Armed conflict control must, however, spare no effort to strive for the strategic initiative if armed conflict becomes inevitable.

Control, naturally, extends to China's domestic environment in numerous ways. For example, in a recent *Economist* article, it was noted that domestically social control is the most important method the communist party has in its efforts to ensure compliance with its internal laws and regulations.

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<sup>146</sup> Sun Cuijuan and Yin Chengyou, “The Curtain of the ‘Era of Machine Warfare’ is Being Pulled Open,” *Jiefangjun Bao* Online, 4 May 2017.

This is not social control on the Internet but the concept of *hukou* or household registration that makes it difficult to move one's home from place to place without party permission.<sup>147</sup>

Sixth, many of the **concepts** mentioned in the discussion above must be considered in any assessment of how the military might be planning actions. They included forms and methods of warfare, the use of asymmetric concepts, preemption and pre-practice concepts, and many others. Familiarity with these terms is important for anyone studying China's way of war.

It is equally important, in accordance with the PLA's focus on strategy, to reconsider Engels concept that "technology determines tactics," since it has been overcome with the planetary reach of the cyber, AI, and quantum age (and in *CMS* articles) to foster the expectation that "technology now determines strategy." While not explicitly stated by the PLA, theorists imply that the first nation to grasp this concept may be the best prepared both offensively and defensively for the future, as the thoughts of one officer above so indicated:

- There is **a new change in the relationship among strategy, campaigns, and combat. Strategy now is in the lead**, consuming the other two who have lost their independence in organizing and implementing operations. Now, the highest military and political leaders can interfere with operations on the battlefield. Strategy has become the stratagem for directing local war under informatization conditions. **Priority** must be given to light weapons and to increasing the mobility and the strategic projection of the capabilities of operational platforms.
- The intellectual economic era has made mastering science, technology, and knowledge more important than plundering resources as in the past. Information technology makes it more convenient to put wars under control, to scout and detect important strategic targets, and to destroy them from long distance. Sensing and detection, navigational positioning, intelligent computing, and data transfers must be integrated to expedite the development of comprehensive operational platforms incorporating target captures, mobile strikes, and the efficient evaluation of information transfer capabilities.<sup>148</sup>

Other concepts (some were only mentioned briefly in the discussion above but not defined) were covered in the paper "Concepts Influencing the Thought of a Chinese Officer," which is attached as Appendix Four. The discussion first lists concepts that coincide with Russian concepts of the same type, sometimes using the same words. Then specific Chinese concepts are listed, such as war engineering; turning points in war; capabilities index; and combat power development, among others.

Seventh, it is important to consider how the US's MDO concept and the concepts of other regional nations affect China's **design of conflict** and way of war. PLA theorists study US concepts

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<sup>147</sup> No author provided, "Caught in the Middle," *The Economist*, 14 December 2019.

<sup>148</sup> Cui Yafeng, "On the Change in the Relationship between Strategy and Campaign-Combat Operations in Modern War," *China Military Science*, No. 4 2008, pp. 27-37.

and their conclusions are reflected in the PLA's Blue Force, the training element that uses US operations and conducts conflict against friendly Red Forces at training areas. Fights against the Blue Force indicate ways the PLA can potentially seek advantages against the West and are included in the future design of their battlefield planning and preparations. The PLA is continuing to update its design scenarios based on new developments in S&T, new adjustments they perceive in the US's MDO theory, and new ways of considering how to reorganize or manipulate the situational environment to the PLA's advantage and an opponent's disadvantage. Among them would be attempts to paralyze enemy systems, based on the discussion above.

Finally, there are a few other important points to keep in mind in a consideration of China's way of war. They include the following (some refer to points covered above):

1. There is a continual goal of creating a strategic advantage or *shi* on the battlefield, in diplomatic relations, geostrategic settings (through considerations of numerous factors, such as distance attenuation, etc.), supply chains, and any area in which it China has an interest. A strategic advantage is the goal of any manipulation of the strategic environment, and it is probably the most important Chinese concept to keep in mind.
2. Today there may exist a slight change in focus from system-of-systems to combatting AI algorithms, but the system sabotage issue will continue to play an important role.
3. There is a higher reliance on the offensive aspect of active defense in the cyber age, where the first battles will establish who has attained the strategic initiative in war. Once the armed conflict is inevitable, no effort should be spared to strive for strategic initiative, one author noted. Conflict will proceed quickly once unleashed and involve all domains.
4. Critical infrastructure targets must be uncovered and planned in peacetime, the PLA notes, for special operations.
5. There is a growing focus on the use of swarm operations (wolves, wasps, and fish) and their potential applicability to all domains of an opponent.
6. The overall situation in terms of military strategy is to start with national interests and the overall interests of the war as the goals to pursue. Strategic fulcrums must be established in advance.
7. Strategic psychological warfare will employ numerous means to force an opponent to submit without a fight. Five specific types of information topics were: information deterrence, blockades, deception, disruption, and attacks (computer viruses, hacking, etc.).
8. Regarding asymmetric operations, making use of favorable temporal and spatial factors and the consequent environmental condition are important aspects of designing asymmetric battlefields.
9. There is a focus (32 articles from 2013-2018) on various aspects of 'civil-military integration,' with titles addressing power projection, power grid advantages, economic construction, science and technology, and integration strategies.



10. And, as a final warning, pay attention to China's methods to manipulate others with deceptive stratagems. It is easy to fall into traps the PLA lays for opponents. For example, "appear weak when strong" would certainly apply to the PLA's current attempts to downplay its AI and quantum prowess. The country's 2019 Defense *White Paper* titled *China's National Defense in the New Era* stated that China was only now coming out of its period of mechanization, a total fabrication of its current advanced competencies.

Just as the ancient sage at the start of this article would marvel today at how his stratagems are used in conjunction with diplomatic issues, another sage may marvel in ten years at how his or some other philosophers stratagems are utilized to manipulate advances in artificial intelligence or quantum computing. There will be new applications of ways to deter opponents, new methods to conduct war control or psychological operations (with biological means?), and new types of fighting styles. China's strategic and campaign templates will be altered to fit the circumstances and technologies at hand, just as active defense is leaning toward an offensive posture to ensure that China can gain the initiative in a future conflict (while offering a peaceful outer appearance). The ever-growing integration of civilian agencies with military ones offer new attack means against the vital nodes of an opponent's infrastructure. Chinese leaders will adjust to contradictions and changing conditions when assessing objective reality, to include the causes and effects of conditions such as these above and will plan comprehensively/holistically for many eventualities.

Strategically, the reach of the PLA and other nations into another country's infrastructure, independent of that nation's distance from China, with cyber, space, or physical (ports, 5G, etc.) means, has increased. S&T developments can be very influential when integrated with deception or stratagem techniques and will influence campaigns. With regard to tactics, robotic developments have changed how wars will be fought from a distance through their detailed ability to conduct reconnaissance ahead of time (use of miniature unmanned aerial or under water vehicles for land or maritime warfare) and to prepare precision fires. Traditional methods of warfare are available but will be used less often. Rather, the intelligentization of warfare appears to be taking center stage, with flames being stoked in the cognitive domain to light up innovation and produce products that enable commanders to see and assess the battlefield condition in front of him before an opponent can do so and then act first.

Thus, China's way of war is continually being updated in accordance with the manner in which nation state relations change and evolve; the discoveries of weak links in an opponent's way of war and strengths in the PLA's new concepts; and the way stratagems can be used in conjunction with technology to deceive opponents and lure them into disadvantageous positions. It is clear, then, that there are specific factors to consider when looking at China's way of war: attaining a strategic advantage; establishing control of all types; use of stratagems and deception; the design of war; psychological actions (blockage, disruptions, deterrence, etc.); asymmetries (time, space, environments, etc.); system sabotage aimed at vital points; swarm operations; taking the strategic initiative instead of active defense; a focus on AI and quantum communications; and a specific way to define strategy are among the most important of them.

China will continue to probe and penetrate the infrastructure of any opponent. After all, China sees no difference between war and peace since confrontation and competition are consistent and eternal. With regard to the reigns of the past three presidents, Xi has been the most creative in regard to the use of reforming the military with new S&T and implementing grand strategy. He has reached out across Europe and Central Asia with his Belt and Road Initiative, focused on expanding Chinese ports worldwide, used his close relationship with President Putin of Russia to gain access to the Arctic (and perhaps consequently buy more oil and gas from Russia), and constructed a significant infrastructure of influence (transport, communications, natural resource exploitation, etc.) in both Africa and Latin America. His way of war must be closely watched, for in addition to the development of a grand strategy and Armed Forces reform, Xi appears to have an insatiable appetite for natural resources and a desire to make China the most powerful nation on earth. Recent legislation aimed to quell dissent in Hong Kong is but one example. When combined with China's historic legacy of deception and stratagem use, he will remain a formidable opponent for many years to come.

## **APPENDIX ONE: ARTICLES IN *CHINA MILITARY SCIENCE (CMS)* DURING JIANG’S REIGN (1999-2003 were covered; no earlier issues were available for analysis)**

### **Articles on General and Special Topics, Active Defense, People’s War, Frontier Defense, Sun Tzu, Mao Zedong, Chinese Military Culture, and Special Topics of Interest**

There were many general topics along with those on information and strategy in *CMS* in the Jiang era: The Current Revolution in Military Affairs and its Impact on Asia-Pacific Security (4/2000); On Psychological Warfare against the Background of Grand Strategy (5/2000); A Comparison of Psychological Warfare between China and the West (6/2000); On Defense in Modern Psychological Warfare (6/2000); On Psychological Warfare in Recent High-Tech Local Wars (6/2000); A Comparative Study between the *Art of War* and *On War* (1/2001); Psychological Operations in the Context of Grand Strategy (4/2001); The Generalization, Conservation, and Development of ‘Strategy’—Acquiring a Scientific Conception of Strategy (4/2001); China and the Revolution in Military Affairs (4/2001); The Doctrine of Psychological Operations in Ancient China (5/2001); ‘Victory without War’ and Modern Deterrence Strategy (5/2001); Mao Zedong’s Theory and Practice of Guerrilla Warfare (1/2002); On the Strategy of Psychological Warfare (2/2002); Emphasis on Strategy: Demonstration of Oriental Military Culture (5/2002); Battles of Changping-Handan: Ancient Chinese Grand Strategy in Action (5/2002); On the New Concepts of Chinese Military Strategy in the 21<sup>st</sup> Century (2/2003); The Theoretical Value and Practical Significance of the System (Compiling) of the Chinese Military Encyclopedia (Second Edition) (6/2003). **Special topics** of interest do not have titles, just the number of times they appeared, which included the following: numerous ancient/dynasty examples; Deng Xiaoping (17); Marx (25); reunification with Taiwan (15); information war/information operations (13); RMA (13); campaign (10); political officers (12); deterrence (4); Korea (11); Kosovo (13); psywar/psyops (9); space (9); Iraq (5); science and technology increase combat power (3); and (1) each for asymmetry, nanotechnology, stand-off war, war control, foresight, and non-war issues. There were also 34 articles (6/2000 x 6; 3/2002 x 6; 4/2002 x 9; 5/2002 x 5; and 6/2002 x 7) on Chinese Military Culture. Many of these were summarized in Chapter Three (pp. 56-89) of the 2009 book titled *The Dragon’s Quantum Leap*.

In addition, the following articles were available on the topics of active defense, local war under high-tech conditions, People’s War, frontier or border defense, Sun Tzu, and Mao Zedong.

**Active defense** was only discussed briefly in the time period in the following manner: Mao Zedong’s Strategic Thought of Active Defense and Chinese Classical Culture (3/2001); The Evolution and Development of the Content of Active Defense Strategy (6/2001); and The Development and Revision of China’s ‘Active Defense’ Strategy (1/2002).

**Local war under high-tech conditions** included the following 21 articles: Furthering the Study of Features and Laws of High-Tech Local War and Improving Guidance in Winning High-Tech Local War (1/1999); On Features and Laws of Local War under High-Tech Conditions (1/1999); Views on Early Warning in High-Tech Local War (1/1999); Views on Problems of Preparations of High-Tech Local War (1/1999); Prompt Decision—An Important Principle of War

Guidance in High-Tech Local War (1/1999); Views on Countering High-Tech Weaponry with Conventional Weaponry (1/1999); Analysis of Opposition in Operational Command in High-Tech Conditions (3/1999); The Development of High Technology and Changes in War Form (3/2000); Planning and Application of Strategies of Information Operations in High-Tech Local War (4/2000); New Changes in War Economic Mobilization in High-Tech Conditions (5/2000); On Psychological Warfare in Recent High-Tech Local Wars (6/2000); Science and Technology: The First Decisive Factor in High-Tech Local Wars (6/2000); Main Issues of Defense of Logistics in Regional Wars under High-Tech Conditions (1/2001); Understanding the Fundamentals Affecting the Outcome of High-Tech Local Wars (3/2001); The Emergence of High-Tech War and its Position in History (6/2001); Developing the Spiritual Motivations of the Members of the Armed Forces under the Conditions of High-Tech War (6/2001); Views on the Construction of Transportation Battlefields in High-Tech Wars (3/2002); Rationally Understand the Human Factor in High-Tech Wars (4/2002); On Modern High-Tech Wars and the Law of War (6/2002); High-Tech Warfare and the Transformation of Military Thinking Methods (1/2003); Developments in Military High-Tech and an Update on Military Strategic Thinking (4/2003).

**People's War** was barely mentioned, with the only published article being "Studies in the Dominant Theory of People's War" (2/2003).

**Frontier Defense** (forward edge defense was not mentioned) was discussed in 2003. The articles were: 50 Years of Theory and Practice in Border Defense Construction in New China (4/1999); Analysis of the Border Defense Crises in the Late Qing Dynasty (2/2000); China's Frontier Defense Facing the New Century (3/2003); Deliberation of the Issues of Establishing the Science of Frontier Defense (3/2003); New China's Theory of Frontier Defense and Strategy of Frontier Management (3/2003); Develop China's Superior Frontier Defense Culture and Enhance the Construction of Advanced Frontier Defense Culture (3/2003); Major Strategies of Western Frontier Defense Construction by China's Feudal Dynasties of Past Ages and their Inspirations (3/2003); Information Frontier Defense: Prospects for Future Frontier Defense (3/2003); Mao Zedong Thought of Governing Frontiers and the Modernization of Border Defense (6/2003).

**Sun Tzu** was mentioned often, with the following 19 titles devoted to him: Sun Tzu Thinking of 'Disrupting His Alliances Through Diplomatic Means' and Settlement of International Disputes by Peaceful Means (2/1999); Views on the Cultural Heritage of *The Art of War* and International Security at the Turn of the Century (2/1999); On the Concept of National Strategy in *The Art of War* and China's State Security Strategy (2/1999); *The Art of War* and the Study of the Strategy of Nuclear Deterrence (2/1999); On the 'Relations between War and the Economy' by Sun Tzu (2/1999); 'Subduing the Enemy without Fighting' and 'Information Warfare' (2/1999); Exchanging Views on *The Art of War* and Discussing Prospects for International Security (2/1999); China's Ancient Military Science and *The Art of War* (6/2000); Carry Forward the Quintessence of Sun Zi's *Art of War* and Promote Peace and Security in the New Century (1/2000); Open a New Chapter in the Study of Sun Zi's *Art of War* in the 21<sup>st</sup> Century (1/2001); Sun Zi's Conception of Prudence in Fighting and the National Security Strategy of China (1/2001); On Issues of War at the Beginning of the New Millennium (1/2001); An Analysis of Sun Zi's

Conception that ‘A Triumphant Army Will Not Fight with the Enemy until the Victory is Assured’ and the Strategic Decision in the War to Resist US Aggression and Aid Korea (1/2001); A Comparative Study between *The Art of War* and *On War* (1/2001); Face New Challenges and Open Up a New Prospect—Study of Sun Zi in the New Century 1/2001); The Military and Cultural Characteristics of the *Seven Military Classics* and the Confucianization of Military Art in Ancient China (4/2001); Cultural Features and Spirit of the Times of the *Art of War* in the Qi and Lu of the Zhou Dynasty (2/2003); ‘Knowledge’—The Essence and Implication of Sun Tzu’s *Art of War* (4/2003); Characteristics of Sun Tzu’s Simple Information Thinking (4/2003).

Naturally, **Mao Zedong** was another focus of attention, with 30 articles devoted to him. Articles focused on his teachings and included the following: Strategies of Mao Zedong and Zhou Enlai in their Military Struggles against the Guomindang in Taiwan (1/2000); Mao Zedong, Deng Xiaoping, and Jiang Zemin and their Strategies of Military Talent Development (1/2000); Mao Zedong’s Strategic Plan of Liberating Taiwan and Other Offshore Islands (3/2000); Two Epoch-Making Theoretical Achievements in Marxist Military Dialectics—Comparison of Essentials in Lenin and Mao Zedong Military Dialectics (5/2000); Mao Zedong and Chinese Military Culture (6/2000); Mao Zedong’s Strategic Thought of Active Defense and Chinese Classical Culture (3/2001); The Dynamic Theoretical Character of Mao Zedong’s Military Thought (6/2001); A Comparative Study of the Main Ideas of Mao Zedong’s and Clausewitz’s Military Strategic Thought (6/2001); Mao Zedong’s Theory and Practice of Guerrilla Warfare (1/2002); *Mao Zedong Military Strategies*, a book on Mao Zedong Military Art (3/2002); Theoretic Essence of Keeping Up with the Times in Mao Zedong Military Thought (5/2002); Mao Zedong’s Creative Contribution to Proletarian Military Science (1/2003); The Red Sun Rises in the East—On the Historic Position of Mao Zedong (5/2003); On Mao Zedong Thought of the Military Legal System (5/2003); Speech at the opening Ceremony of the PLA Forum of Mao Zedong Military Thought Marking the 110<sup>th</sup> Anniversary of the Birth of Comrade Mao Zedong (6/2003); Brilliant Thinking and Scientific Guidance—Speech at the PLA Forum of Mao Zedong Military Thought Marking the 110<sup>th</sup> Anniversary of the Birth of Comrade Mao Zedong (6/2003); Carrying Forward and Advancing Mao Zedong Military Thought and Promoting the RMA with Chinese Characteristics (6/2003); Mao Zedong Thought of Political Struggle in Warfare and National Security in the 21<sup>st</sup> Century (6/2003); On the Characteristics of Mao Zedong Strategic Thinking (6/2003); On the Characteristics of the Scientific System of Mao Zedong National Defense Thought (6/2003); Mao Zedong Thought of the People’s Air Force Construction and Its Creative Development (6/2003); Scientific Guidance for the Modernization of the PLA Navy in the New Century (6/2003); Mao Zedong, Deng Xiaoping, and Jiang Zemin on PLA Logistic Construction with Chinese Characteristics (6/2003); The Development of Missiles, Atomic Weapons, and Man-Made Satellites in China and their Inspiration to Weaponry Development in the New Period (6/2003); Mao Zedong Strategic Thought of State Reunification and Its Practical and Immediate Significance (6/2003); Mao Zedong Thought of Governing Frontiers and the Modernization of Border Defense (6/2003); Mao Zedong Thought of the Construction of the Armed Police Forces and Its Creative Development (6/2003); The Outline of Mao Zedong Thought of the Strategic Offense (6/2003); A New Analysis of Mao Zedong Thought of the “Two Musts” (6/2003).

## **APPENDIX TWO: CMS DURING HU'S REIGN (2004-2012)**

### **Articles on General and Special Topics, Active Defense, People's War, Frontier Defense, Sun Tzu, Mao Zedong, Chinese Military Culture, and Special Topics of Interest**

There were many topics along with those on information and strategy in *CMS* in the Hu era: On Strategic Thinking (3/2004); Developing the Theory of Strategic Deterrence with Chinese Characteristics (3/2004); A Study of the Theory of Marxist Strategic Psychological Warfare (4/2004); On the Basic Features of Strategic Psychological Warfare (4/2004); Developing Trends of Psychological Warfare in Grand Strategy (4/2004); Direct Manifestation of the Operational Role of Political Work—On Media Warfare, Psychological Warfare, and Law Warfare (4/2004); Characteristics of Information Mobilization (4/2004); Prevalence of Clausewitz's 'On War' in China (5/2004); Sun Zi's *Art of War* and Mainstream Contemporary Chinese Theories of War (6/2004); Sun Zi's *Art of War*: Gem of Chinese Strategic Culture (6/2004); Summary of the Symposium on the Study and Application of Sun Tzu's *Art of War* in the Information Age (1/2005); Strategic Political Work and Strategic Psychological Warfare (3/2005); Important Issues Concerning Strategic Psychological Warfare in Informationalized Conditions (3/2005); Contrast and Analyze Sun Zi's *Art of War* and the Thirty-Six Stratagems (3/2005); A Study of the Operational Mechanism of Psychological Warfare (4/2005); Concepts and Characteristics of Strategic Psychological Warfare (4/2005); National Interests and Military Security (6/2005); Military Strategic Thinking and Scientific Decision-Making (1/2006); The Development of CPLA Psychological Warfare Thinking in War Times (1/2006); Ensure Historical Orientation and Promote All-Round Innovation of Army Informationalization (1/2007); A Study of Urban Terrain Operations (2/2007); On the Unity of an Army of the Party, of the People, and of the Nation (2/2007); Views on Guiding the Creation of Military Strategic Theory with the Scientific Development Concept (2/2007); Marx and Engels and Clausewitz's 'On War' (5/2007); Connotations, Nature, and Characteristics of Strategy (6/2007); Promote a Better and Faster Scientific Development of Informationalization in Political Work (1/2008); China's Strategic Cultural Evolution Ideas and the Orientation of its Values (2/2008); A Study of Non-War Military Operations (3/2008); On the Fundamental Issues of Complex Electromagnetic Environments (4/2008); Creative Development of the Party's Military Guidance Theory since the Reform and Opening-Up (5/2008); A Study of the Laws in Ethnical and Religious Issues Involved in Armed Conflicts (2/2009); An Analysis of the New Changes in the Principles of Informatized Warfare (3/2009); Relations between Military Soft Power and Comprehensive National Power Plus State Soft power (5/2009); Characteristics and Trends of the Development of Special Forces (5/2009); The Nature of Psychological Warfare, 'Spiritual Warfare' as Opposed to War of Flesh and Blood—a Philosophical Perspective on the Nature of Psychological Warfare (6/2009); Innovative Development in Compiling and Revising PLA's Operational Doctrines and its Implications (6/2009); A Preliminary Study of Compressed Operations in Modern Warfare (1/2010); On the Development of National Interests and the Development of Military Strategy (3/2010); Characteristics of China's Traditional Strategic Thought (3/2010); An Analysis of the Laws of Sea Powers Contending for and Controlling Strategic Maritime Passage Ways (5/2010); PLA Informationization and the Development of a Space Military Force (6/2010); Fundamental Strategy for Building the PLA into a Powerful Iron Army—Studying the Newly Revised

*Regulations of the People's Liberation Army on Political Work* (6/2010); An Explorative Study of the Laws in Developing Capabilities for Systems Operations Based on Information Systems (1/2011); A Study of Basic Issues on Systems Operations Based on Information Systems (1/2011); Thoughts on Building Military Force Structure Based on Information Systems (1/2011); Clearly Understand the Laws, Master the Direction, Speed Up Promoting the Change of the Formation Mode of War-Fighting Capabilities (3/2011); Hu Jintao's Important Instructions on National Defense and Army Building As Creative Development of the Party's Military Guidance Theory (4/2011); Unified Planning for Weapons and Equipment Mobilization under the Guidance of Scientific Development Methodology—Views on Studying Hu Jintao's Mastering and Applying the Fundamental Methods of Overall Planning and All-Round Consideration (4/2011); On the Problem of Cultural Development for Joint Operations with PLA Characteristics (4/2011); An Exploration of Hu Jintao's Strategic Thinking on Strengthening the Military by Means of Science and Technology (5/2011); Strategic Considerations of the Army in Speeding Up Transforming the Mode of Generating Warfighting Capabilities (1/2012); Scientifically Judge the New Situation and Calmly Respond to New Challenges—An Interview on 'The Strategic Review 2011' with Major General Chen Zhou, Director of the AMS Center for National Defense Policy (3/2012); Basic Issues in Speeding Up Transforming the Mode of Generating Warfighting Capabilities (5/2012); A Study of Systemic Warfighting Command Based on Information Systems (6/2012); Reflections on the Methodology to Further Advance the Transformation of PLA Military Training (6/2012); Leadership of the CPC and the Development of National Defense Science and Technology (6/2012); Explorations into the Issues of Advancing the Training of Military Personnel (6/2012). No titles are listed for special topics, just general subject areas for which there may or may not be translations available. **Special topics** of interest do not have titles, just the number of times they appeared, which included the following: historical/ancient experiences; war guidance; RMA (25); strategic deterrence (2); system of systems; Marx (29); psychological war (13); 3 warfares; geostrategy/geographical (14); nature of war; war theory; space warfare/power (8); war control; national interests (6); urban operations; Hu on the military (42); military guidance (17); non-war military operations (8); military pre-practice (6); warfighting capabilities (21); advanced military culture (starts in 2012, 18).

In addition, the following articles were available on the topics of active defense, People's War, frontier or border defense, Sun Tzu, and Mao Zedong.

**Active defense** was only discussed in one article in the time period: 60 Years of Sticking to Active Defense Military Strategy in New China (5/2009).

**People's War** was mentioned several times: Adapting to the Changed War Forms and Inventing New Ways of People's War (3/2004); Fundamental Theoretical Issues on People's War under Modern Conditions (6/2008); Recent Development in the Study of People's War Thought under Information Conditions (2/2009); Great Unprecedented Undertaking of People's War (4/2010); Zhou Enlai on People's War (5/2010); and A New Explanation of the Historical Development of Theories of People's Warfare (1/2011).

**Civil-Military Integration** is first mentioned during Hu's time frame. It was highlighted 14 times: A Study of the Strategy of Building Up a Civil-Military Integrated Support System with Chinese Characteristics (5/2008); The Cut-in Point for Civil-Military Integration (5/2008); Military and Civil Integrated Development: Important Strategic Thinking for Overall Planning in National Defense and Economic and Social Development (1/2009); Retrospect and Enlightenment of the Development of a Military and Civil Integration Concept (1/2009); Strategic Consideration of Military and Civil Integrated Development with Chinese Characteristics (1/2009); Construction of the Mobilization Preparation Mode of 'Virtual Combined Military-Civilian Integration' for Defense-Related Science, Technology, and Industry (2/2010); A Preliminary Analysis of Risk Management against the Breaking of Integrated Military-Civilian Supply Chain of Emergency Logistics (2/2010); Mechanism of Coordinating Integrated Military-Civilian Investment Based on an Economic Perspective (5/2010); On an Exploration into the Road for Joint Military-Civilian Development in the New Situation (6/2010); Enforce Civil-Military Integration of the Innovative System for the Defense of Science and Technology in Innovative National Construction (2/2011); Exploration and Practice of the Path of Integrated Civilian-Military Development by the Communist Party of China (3/2011); On the Construction of Driving Mechanisms for Military-Civilian Integrated Development (5/2011); Hu Jintao's Important Instructions on the Integrated Civilian-Military Development with Chinese Characteristics (6/2011); Civil-Military Integrated Development in Terms of Strategy (3/2012).

**Frontier or Border Defense** (forward edge defense was not mentioned) was seldom discussed. The articles were: Relations to be Correctly Handled in Strengthening Border Defense (2/2006); Sun Zi's *Art of War* and Modern Frontier Defense Construction (5/2006); Historical Experience of the Border Defense of Northwest China (3/2007); A Study of China's Coastal Defense Strategy (5/2007); Policy and Practice of Resolving Frontier Minority Nationality Issues in the Qing Dynasty (3/2008); Considerations on Building Up Frontier Defense in the New Situation (5/2010); Frontier Troops Should Play an Important Role in Promoting Economic and Social Development and Guaranteeing Lasting Stability (5/2012).

**Sun Tzu** was mentioned often, with the following 37 titles devoted to him: Important Issues in Correctly Handling the Study of Sun Zi's *Art of War*—Commentary on Lu Yunchang's Recent Study of Sun Wu (2/2004); On Sun Zi's Strategy of 'Attacking their Alliances' (5/2004); Study Sun Zi's *Art of War* and Bring Benefit to Mankind (6/2004); Push Forward the Study of Sun Zi into New Range and Quality (6/2004); Features and Modern Inspirations of Military Thinking in Sun Zi's *Art of War* (6/2004); Continue to Promote the Study of Sun Zi's *Art of War* along a Scientific and Healthy Road (6/2004); Sun Zi's *Art of War* and Mainstream Contemporary Chinese Theories of War (6/2004); Sun Zi's *Art of War*: Gem of Chinese Strategic Culture (6/2004); The Theoretic Structure and Actual Significance of Sun Zi's Strategic Thinking (6/2004); Push Forward the Study of Sun Zi's *Art of War* with Strategic Culture in the Lead (6/2004); The Peace Views of 'Preventing Wars'—On the Main Points of the Ancient Chinese Art of War Culture (6/2004); On Comprehensive Understanding of the Military thinking of Sun Zi's Art of War (6/2004); Sun Zi's 'Winning Conception' and Air-Space Power of the Information Age (6/2004); An Analysis of the Paradox of Sun Zi's *Art of War* (6/2004); Sun Zi's *Art of War* and Modern



Logistics (6/2004); Sun Zi's View of War Effectiveness and Its Actual Significance (6/2004); Summary of Symposium on the Study and Application of Sun Zi's *Art of War* in the Information Age (1/2005); Contrast and Analyze Sun Zi's *Art of War* and the Thirty-Six Stratagems (3/2005); Fundamental Scientific Spirit Contained in Sun Zi's *Art of War* (5/2005); Peaceful Development and National Defense Modernization in China (5/2006); Further the Study of Sun Zi's *Art of War* for Harmony, Peace, and Development in the World (5/2006); Sun Zi's *Art of War* and the Road of Peaceful Development (5/2006); Sun Zi's *Art of War* and Modern Frontier Defense Construction (5/2006); On 'Neutralization' Culture and Strategic Management (5/2006); On War Ethics of Confucianism in the Early Qin Dynasty (5/2006); Orientation of Interest in Sun Zi's War Theory (5/2006); A Comparative Study of Chinese and US Literature on Sun Zi's *Art of War* (6/2006); Why Sun Zi's *Art of War* Can Become a Lasting Work of Military Art (1/2007); On the Weak Defeating the Strong under Information Conditions (1/2008); Works of a Painstaking Effort and Gold Uncovered Below the Dust—After Reading Wu Rusong's New Interpretation of Sun Zi's *Art of War* (3/2008); A Review of 'Criticism on Sun Tzu from Clausewitz's Perspective' (1/2010); New Gains in Sorting Out and Studying Sun Tzu's *Art of War*—A Review of Thirteen Chapters of Sun Tzu (Rectified Bamboo Slips Version) (1/2010); On the Thoughts of Quantitative Analysis in Sun Tzu's *Art of War* (4/2010); Studies of Sun Zi's *Art of War* during the Republic of China (1912-1949) (6/2010); Another Interpretation of 'Subduing the Enemy without Fighting' (1/2011); Swedish Art of War and Sun Tzu's *Art of War* (2/2011); An Analysis of the Military Thought in 'Extraordinary and Normal Art of Operations' from the Yinqueshan Han Bamboo Slips (4/2012);

Naturally **Mao Zedong** was another focus of attention with 29 articles focused on his teachings that included the following: On the Characteristics of Strategic Thinking of Mao Zedong in War Guidance (1/2004); Mao Zedong Thought of International Strategy (1/2004); Mao Zedong Geostrategic Thought and the Security and Development of New China (1/2004); Mao Zedong's Concept of War and Modern War (1/2004); Essentials of Mao Zedong's Art of War Guidance (1/2004); Mao Zedong's Military Strategies and their Practical Value (1/2004); An Outstanding Masterpiece with Philosophic Truth (1/2004); Inspiration of the Methodology of Mao Zedong Thought of Army Building (1/2004); Mao Zedong and PLA Modernization and Regularization in the 1950s (1/2004); Mao Zedong Military Thought and Chinese Advanced Culture (1/2005); Creative Development of Mao Zedong Military Thought in the Period of the Anti-Japanese War (4/2005); New Annotations of Mao Zedong's Study of *On War* (1/2006); Mao Zedong's Theory and Practice in Handling Relations between Economic Building and National Defense Building (2/2006); Historic Outstanding Strategic Planning—Commentary on *Mao Zedong and the War to Resist US Aggression and Aid Korea* (3/2006); Zhu De and the Creation and Development of Mao Zedong Military Thought (6/2006); On Mao Zedong's Serviceman Values and their Modern Value (6/2007); Mao Zedong's Theory and Practice of Containing War and Maintaining Peace (2/2008); Mao Zedong Strategic Thought is a Treasure of Wisdom to Conquer the Enemy (4/2008); Basic Experience of Mao Zedong in Handling Military Crises after the Founding of the People's Republic of China (6/2009); A Re-study of Mao Zedong's Theory on Defeating the Strong by the Weak (3/2010); New Developments in Mao Zedong Military Thought after the Founding of the People's Republic of China—Views on the Compilation and Studying of *Mao Zedong's Military Manuscripts since the Founding of the PRC* (4/2010); An Analysis of Mao Zedong Thought of

‘Luring the Enemy in Deep’ after the Founding of the PRC (5/2010); A Study of Mao Zedong Thought on Strategic Transformation for Army Building after the PRC Was Founded in 1949 (6/2010); Scientific Methodology of Mao Zedong in his Study of Wars and Its Practical Significance (2/2011); An Outline of Profound Development in Mao Zedong Military Thought after the Founding of the People’s Republic of China—Notes on Editing *The Military Manuscripts of Mao Zedong since the Founding of the People’s Republic of China* (3/2011); Mao Zedong’s Views on War and Peace since the Founding of the People’s Republic of China (3/2011); Innovative Development of Mao Zedong’s Operational Modes of Annihilation Warfare in the War to Resist US Aggression and Aid Korea (2/2012); A Study of Maritime Strategic Thoughts of Mao Zedong, Deng Xiaoping, and Jiang Zemin (2/2012); An Exploration of Mao Zedong Thought on War Judgment after the Founding of the People’s Republic China (4/2012).

### **APPENDIX THREE: CMS DURING XI'S REIGN (2013-Present; No CMS issues were available for 2019 and 2020)**

#### **Articles on General Topics, Active Defense, People's War, Frontier Defense, Sun Tzu, Mao Zedong, Chinese Military Culture, and Special Topics of Interest**

There were many topics along with those on information and strategy in *CMS* in the Xi era: A Study of Basic Operational Theories for New-Types of PLA Army Combat Forces (1/2013); Considerations on Understanding and Seizing the Turning Point in the Transformation of the Form of Warfare (2/2013); An Analysis of Vital Points in Operations (2/2013); Strategic Considerations on Promoting the Building of the PLA's New-Type Operational Forces (3/2013); Geographical Distance, Law of Distance Attenuation, and Overseas Military Bases (3/2013); On Control and Management of Military Crises (4/2013); Understanding of and Consideration on Improving Warfighting Capabilities of the PLA Infantry Forces (4/2013); A Review of Research on the Concept of Strategic Preposition (5/2013); Considerations Triggered by Cyber Warfare on the Law of Armed Conflict—A Case Study and Nomological Exploration (5/2013); The Theory and Practice of Target-Centric Warfare (5/2013); Considerations on the Construction of a Modern Land Battlefield (5/2013); A Strategic Consideration on Battlefield Construction for Joint Operations under Informationized Conditions (6/2013); On War Control—A Study from the Perspective of Military Thought (2/2014); On Warfighting Experimentation (4/2014); Further on War Control (4/2014); On the Innovative Development of the Science of Strategy (4/2015); Strategic Thinking in the Game of Go (6/2015); An Exploration of Future War and Environmental Security Issues (4/2015); An Analysis of the Impact of Modern Biological Technology on Future Forms of War (3/2016); Main Experiences of Russia's Military Operations in Syria (3/2016); Guidelines for Armed Forces Building and Preparations for Military Struggle—Understanding of the Military Strategic Guidelines in the New Situation (1/2017); Building Informatized Support for Army Weaponry in the New Era (2/2018). **Special topics** of interest do not have titles, just the number of times they appeared, which included the following: warfighting capability (9); Marx (7); space (4); vital points (1); turning points (1); total war (1); law of distance attenuation (1); military crises (2); cloud operations (3); strategic preposition (1); battlefield construction (2 in 2013, 1 in 2016); target centric warfare (1); MOOTW (1); psychological warfare (1); war control (2 in 2014); local war under informationized conditions (1); holistic view of national security (2); Nansha Islands (1); South China Sea (4 in 2016); protracted war (3); future war (1); all-domain (2 in 2015, 1 in 2016; 3<sup>rd</sup> offset in 2017); biotechnology and the RMA (1 in 2015) and biological technology and Future forms of war (1 in 2016); peacekeeping (4); game of go (3); decision-making (1 in 2016, 1 in 2017); just war (1); fair trial principle in armed conflicts (1); time dominance (1); new intelligence era challenges (1); proxy wars (1); deterrence (2); strategic projection systems (1); algorithm war (1); understanding war (1); polar rights (1); information operations/warfare (23); cyber issues (11); US light footprint to intervention (1); modernized military theories (2); use AI to dispel the fog of war (1); AI and law of armed conflict (2/2018); UAVs (3); BRI for Africa (1); Autonomous weapons systems (robots, 1); big data (4).

In addition, the following articles were available on the topics of active defense, People's War and civil-military integration, frontier or border defense, Sun Tzu, Mao Zedong, and Xi Jinping.

**Active defense** was only discussed in one article in the time period in the following manner: On China's Strategy of Active Defense and Its Innovative Development (1/2014).

**People's War** was mentioned a few times, most often in reference to China's war with Japan: Democratic Revolution is the Only Path to Victory of the Chinese People's War of Resistance against Japanese Aggression—Two Principles of the CPC's Military Economic Policy and their Practices (4/2015); The Great Spirit of the Chinese People's War of Resistance against Japanese Aggression is a Strong Driving Force to Achieve the Rejuvenation of the Chinese Nation (4/2015); A Historical Review of the Basic Experience of the Victory of the Chinese People's War of Resistance against Japanese Aggression (5/2015); On People's War on Terror (1/2017). **Civil-military integration**, on the other hand, was mentioned 32 times as follows: A Survey of Integrated Military-Civilian Development (1/2013); On Further Boosting the Integrated Military-Civilian Development (5/2013); A Study of Deepening Civilian-Military Integration (1/2014); On Building Strategic Projection Power with Deepened Civilian-Military Integration (1/2014); Considerations on Deepening Military-Civilian Integration (3/2014); On the Establishment of a Policy System for In-Depth Development of Civil-Military Integration (3/2015); Meet the Requirements of In-Depth Development of Civil-Military Integration and Enhance the Development of Reserve Forces for National defense (3/2015); Bring the Integrative Advantages of Power Grid Enterprises into Full Play and Promote In-Depth Development of Civil-Military Integration (3/2015); Promote Further Development of Military-Civilian Integration on a New Historical Start (5/2015); Benefit from International Experience and Promote Further Development of Military-Civilian Integration (5/2015); Implement the National Strategy for Civil-Military Integration and Promote the Integrated Development of Economic Construction and National Defense Building (1/2016); Considerations on Establishing a Project System with Chinese Characteristics for Civil-Military Integration (1/2016); In-Depth Civil-Military Integration of Science, Technology, and Industry for National Defense (1/2016); A Summary of the Fourth Military-Civilian High-End Strategic Forum (1/2016); The Role of National Guidance in Deepening Civil-Military Integration (5/2016); On Building the System and Mechanism for In-Depth Development of Civil-Military Integration (5/2016); On the Four Principal Points in the Strategy of Civil-Military Integrated Development (6/2016); Xi's Thoughts on Military-Civil Integration (2/2017); Firmly Grasp the General Landscape of Civil-Military Integration Strategy (3/2017); Enhance Strategic Support for Civil-Military Integration (3/2017); Strategic Framework for Civil-Military Integrated Development in China (4/2017); Start from the Management Mechanism for Equipment Procurement and Promote In-Depth Civil-Military Integration in Key Areas (4/2017); Vigorously Advance the In-Depth Civil-Military Integration of the Armed Police Force under the Guidance of Xi Jinping's Thought on Civil-Military Integration (6/2017); Develop a System of Laws and Regulations for In-Depth Civil-Military Integration (6/2017); Management Mechanisms for the Network of Civil-Military Integrated Technological Innovation and Their Realization (6/2017); Resolutely Implement the Civil-Military Integration Strategy and Strive to Create a New Situation for Equipment Development (1/2018); Give Full Play to the Role of

Strategic Assessment and Scientifically Promote In-Depth Civil-Military Integration (1/2018); The Course of and Basic Experience in Civil-Military Integration over the 40 Years of Reform and Opening-up (3/2018); Development in Civil-Military Integration of National Defense Mobilization (5/2018); Historical Progress of and Basic Experience in China's Civil-Military Integration since the Reform and Opening Up (6/2018); China's Rule of Law of Civil-Military Integration since the Reform and Opening Up (6/2018); Modes of Civil-Military Integration with Chinese Characteristics and their Game Features (6/2018).

**Forward edge defense** was not mentioned. There were articles on borders (5) and coastal defense (1). Three articles mentioned both together in the title.

**Sun Tzu** was mentioned often, with the following titles: A Scripture for Military Strategists and A Reader for Wise Men—From Sun Tzu's *Art of War* to the Strategies for World Peaceful Development (5/2014); On Sun Tzu's Prudence, Pacifism, and Prevention of War (5/2014); Sun Tzu's Thought of Complete Victory and Peaceful Reunification of China (5/2014); The Significance of Comparative Studies on Sun Tzu and Jean Monnet Thoughts (1/2015); The Present and Future of Research on Sun Tzu's *Art of War* (6/2015); A Summary of the Academic Symposium on 'The Status Quo and Development of Research on Sun Tzu's *Art of War*' (6/2015); Sun Tzu's Thought on 'Attacking the Troops' (1/2016); On the Academic Status of Sun Tzu's *Art of War* (4/2016); A New Understanding of Research on Sun Tzu's *Art of War* (4/2016); Several Issues on Innovative Research on Sun Tzu's *Art of War* (2/2017); Research on Sun Tzu's *Art of War* and the Cultivation of Martial Virtue with Chinese Characteristics (2/2017); Thoughts on the Heritage and Innovation of Sun Tzu Culture (2/2017); A Summary of the Symposium on Research on Sun Tzu's *Art of War*: Innovation and Development (2/2017); Nothing on Sun Tzu in 2018, which is odd.

**Mao Zedong** continued to be a focus of attention. In Issue's 5 and 6 of 2016 there were 11 articles on the "Long March," but the titles did not mention Mao specifically, so they are not in the listing below. Articles focused on his teachings included the following: On the Development of Mao Zedong Military Thought after the Founding of the PRC in 1949 (2/2013); On Mao Zedong Thought on Armed Forces Building (2/2013); On the Historical Evolution of Guerrilla Warfare and Mao Zedong's Theoretical Contributions (2/2013); On Mao Zedong's Way of Thinking on Military Affairs (4/2013); On the Relationship between the CPC Innovations in Military Guidance Theory and Mao Zedong Military Thought (4/2013); Correctly Understanding the Scientific Value of Mao Zedong Military Thought (5/2013); Mao Zedong Military Thought and the Innovative Development of the Military Guiding Theory of the CPC since the Reform and Opening Up in 1978 (5/2013); Mao Zedong Thought on the Development of National Defense Science and Technology and of Weapons and Equipment (5/2013); On Mao Zedong Thought on Building the Military through Diligence and Frugality (5/2013); On Mao Zedong's Wisdom, Stratagem, and Sentiments (6/2013); On Mao Zedong's View on War in Time and Space (6/2013); A Study of Mao Zedong Thought on Building a Powerful People's Air Force (6/2013); On Mao Zedong Thought on Building a Powerful People's Navy (6/2013); A Study of Mao Zedong's Art of Operational Guidance in the Early Phase of the War of Liberation (1945-1949)—A Case Study of Mao Zedong's Operational Guidance for the Shanxi-Chahar-Hebei Theater (6/2013); Mao Zedong

Thought on Party Building in the Army and its Current Value (1/2014); Mao Zedong Art of **Local Warfare Guidance** (1/2014); A Model of Voluntarily Applying Military Dialectics—New Review of Mao Zedong’s *On Protracted War* (2/2015); An Exploration into Mao Zedong’s Military Research Methods (3/2015); Mao Zedong’s Strategy and Tactics for a Full-Scale Civil War in the Transition Stage of the Liberation War (1/2017);

**Xi Jinping** was noted in association with numerous topics. Some may seem repeated, but they are simply other analysts using Xi’s thoughts and underscoring them with their own interpretations. The titles, due to their length, are abbreviated: National Defense modernization (1/2014); Promoting the National Defense Economy (2/2014); The Standard of Warfighting Capability (2/2014); Strategic Thinking on Planning and Managing Maritime Affairs (4/2014); Strengthening the Role of the Communist Party of China in the Armed Forces (4/2014); Developing the CPC’s Military Guidance Theory (6/2014); Strategy for Governing the Armed Forces (1/2015); Building Grass Root CPC Branches in the New Situation (2/2015); Value of Military Personnel in the New Situation (2/2015); Military Institutional Education (2/2015); On Deepening Reform (3/2015); Global Community of a Shared Community (4/2015); National Defense and Armed Forces Building (4/2015); On National Defense and Armed Forces Building (5/2015); Deepening National Defense Reform (6/2015); Deepen National Defense and Armed Forces Reform (1/2016); On Scientific Thinking (2/2016); Building World-Class Armed Forces (4/2016); World-Class Armed Forces are a Strategic Requirement (4/2016); Building World-Class Armed Forces (4/2016); Strategy for Building the Armed Forces Politically (5/2016); Thoughts on Improving Warfighting Capabilities (5/2016); Military Dialectic Thinking (6/2016); Building World-Class Military Academies (1/2017); Building a Human Community of Shared Destiny for China’s Military Strategy (2/2017); Xi’s Thoughts on Military-Civil Integration (2/2017); On Governing the Military by Law (2/2017); On Military Strategy (3/2017); Thoughts on Military Dialectics (3/2017); Create a New Situation of Strengthening and Revitalizing the Armed Forces (4/2017); 6 articles in the issue on the topic of Strengthening the Military (4/2017); On Strengthening the Military (5/2017); Mobilization Improvements for Strengthening the Military (5/2017); New-Era Weapons to Strengthen the Military (5/2017); Innovative Developments in Strengthening the Military (5/2017); Vigorously Advance the In-Depth Civil-Military Integration of the Armed Police Force under the Guidance of Xi Jinping’s Thought on Civil-Military Integration (6/2017); On Building Up the Modern Armed Police Force (6/2017); Cultivating First-Class Military Personnel (6/2017); Outlook on War (6/2017); Governing the Armed Forces by Law in the New Era (6/2017); Modernize PLA Weaponry (1/2018); Develop Strong Joint Operations (1/2018); Revitalize the Military with Science and Technology (1/2018); Thoughts on Strengthening the Military (1/2018); Cultivate High-level Talents (1/2018); Govern the Armed Forces by Law (1/2018); National Security Strategy (1/2018); On Military Training and Accelerating Innovation (1/2018); Military Personnel Modernization (2/2018); Adhere to the CPC’s Strategy of Absolute Leadership over the Armed Forces (2/2018); New Era Scientific Systems (3/2018); Innovative Development of Military Education (3/2018); Build a Community with a Shared Future (3/2018); Build a Community with a Shared Future (4/2018); On Cyber Security (5/2018); Three Meanings Build a Community with a Shared Future (5/2018); Enhancing

Political Loyalty of the Armed Forces (5/2018); Structure of Xi's Thought for Strengthening the Military (5/2018); CPC Military Guidance Theory to Strengthen the Military (5/2018).

## APPENDIX FOUR: RUSSIAN VERSUS CHINESE MILITARY THOUGHT

One of the most important elements of understanding China's way of war is to understand how members of the PLA utilize specific thought constructs to plan military operations. This section initially discusses similarities in military thought concepts used by Russia and China. That section is followed by a few specific terms in the PLA's lexicon that do not appear in Russia's.

### *Similarities*

#### *Trends:*

Russia: In the 21<sup>st</sup> century there are three significant trends in the "nature of armed struggle."<sup>149</sup> First is the shift toward aerospace (longer range, greater power and accuracy, possibility of consecutive and simultaneous attacks across the entire theater of operations by piloted and pilotless aerial vehicles)<sup>150</sup>; Second is the move from positional confrontations to the evolution of exchanging fire from a distance (precision guided munitions, etc.) with critical infrastructure (control, economic, and logistic systems) targeting priorities in the IPW;<sup>151</sup> Third is the role played by information superiority, special operations forces, and EW (to disorganize control); network-centric methods used to control actions, which are characterized by increased operational speed and efficiency; and the use of special forces to achieve strategic goals [destroy launchers, destroy air defenses, capture oil platforms, PSYOP, etc.].<sup>152</sup>

China: Describing future trends has long been a PLA tradition. For example, in the book *Chinese Views of Future Warfare*, author Gao Heng, a research fellow at the Institute of World Economics and Politics (Beijing, Academy of Social Sciences) authored a chapter in 1995 on "Future Military Trends."<sup>153</sup> In the 2013 version of the PLA's *The Science of Military Strategy* (hereafter *SMS*), it was stated that it is necessary to study evolutionary trends in the international strategic setup and trends in world military developments.<sup>154</sup> It is important to reveal the contradictions in military practices, which require that trends, stages, and characteristics in future military conflicts be revealed in an accurate manner.<sup>155</sup> It is important to study developmental trends in wars in other countries, with *SMS* noting the following:

Practices before a war happens are a scientific method for designing a war in advance, planning national defense and the military's long-term development and building, and winning the initiative in future wars, all based on developmental

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<sup>149</sup> S. V. Kuralenko, "Tendencies in the Changing Character of Armed Struggles in Military Conflicts in the First Half of the 21<sup>st</sup> Century," *Voennaya Mysl'* (*Military Thought*), No. 11 2012, pp. 40-46.

<sup>150</sup> Ibid., p. 41.

<sup>151</sup> Ibid., p. 43.

<sup>152</sup> Ibid., pp. 43-45.

<sup>153</sup> Michael Pillsbury, editor, *Chinese Views of Future Warfare*, National Defense University Press, Fort Lesley J. McNair, Washington DC, 1997, pp. 85-94

<sup>154</sup> Sun Zhaoli, copy editor, *The Science of Military Strategy* (*Zhanlue Xue*, hereafter *SMS*), Military Science Press, 2013 edition (2013 *Nianban*), p. 23.

<sup>155</sup> *SMS* (2013), p. 21.



trends in future warfare. Their essence is to face the future, to design the future, and to win the future.<sup>156</sup>

*Forecasting:*

Russia: In a 1975 Russian book on forecasting,<sup>157</sup> authors Yu. V. Chuyev and Yu. B. Mikhaylov stated that a forecast “was what may occur,” while a plan was defined as “what is supposed to occur.”<sup>158</sup> Forecasting was more specifically defined as “the study of the military-political situation, the pattern of future war, the prospects of developing strategy, operational art, and tactics, the qualitative and quantitative composition of the means of armed conflict (one’s own and the enemy’s), the prospects for the development of the war economy in the future, and also the forecasting of the enemy’s strategic and tactical plans.”<sup>158</sup> All of these are linked. Four types of military forecasting were described: military-strategic, operational-tactical, military-economic, and military-technical.

China: Foresight means predicting the characteristics of the age and developments and changes in the international and domestic strategic environment. The more accurate the foresight, the better the planning and guidance. The following foresight predictions were listed as needed:

- Predicting trends in military matters and military science and technology.
- Predicting potential strategic opponents and operational targets;
- Predicting potential changes in the ratios between an enemy’s strength and China’s;
- Predicting the nature, direction, and levels of potential threats;
- Predicting possible opportunities, forms, direction, scale, process, and outcome of future wars;
- And revealing the features and laws of future wars, providing an objective basis for determining strategy and defense building.<sup>159</sup>

*Strategic thought:*

Russia: General Staff Chief Gerasimov noted regarding strategy that “each conflict has a logic all its own.” It is also a part of military art, a system regarding the nature of modern warfare’s preparations to resist invasion; and the methods and forms to carry out total warfare on a strategic scale.<sup>160</sup>

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<sup>156</sup> SMS (2013), p. 27.

<sup>157</sup> Yu. V. Chuyev and Yu. B. Mikhaylov, *Forecasting in Military Affairs*, Moscow 1975, translated into English by the DGIS Multilingual Section, Secretary of State Department, Ottawa Canada, Published under the auspices of the United States Air Force.

<sup>158</sup> Ibid., p. 14.

<sup>159</sup> SMS (2013), pp. 11-12.

<sup>160</sup> A. C. Skvortsov, *Course on Military Strategy*, Military Academy of the General Staff of the Armed Forces of the Russian Federation, 1995, p. unknown

China: In *SMS 2013*, it was stated that there is no strategy where “one size fits all”<sup>161</sup> and that, like water, “war has no permanent situation.”<sup>162</sup> Strategy was further described as the guidelines and ploys for planning and guiding the overall war situation, divided into offensive strategy and defensive strategy. It is high-level and long-term.<sup>163</sup> It manifests in a commander’s subjective ability to manipulate the objective reality before him.

#### *Forms and Methods:*

Russia: Forms are organizations or operations, and methods are the weapons and military art that will be used. In 1971, General Major Aleksandr A. Stokov wrote in the book *Military History* that war’s fierce character will predetermine its goals and the methods and forms of waging it.<sup>164</sup> In 1984, in *Military Thought*, author N. N. Kuznetsov noted that “the laws of armed struggle include the dependence of the course and outcome of an armed struggle on the correlation of combat power of the forces of the opposing sides ... the dependence of forms and methods of operations on weapons, equipment, and personnel, and the interdependence of the forms and methods of operations being conducted at different levels.”<sup>165</sup> In 1991, Colonel General I. N. Rodionov wrote that the successful conduct of strategic operations is “impossible without a knowledge of the objective laws of warfare, correct foresight of the development of operations, and choice of the most effective forms and methods of military operations.”<sup>166</sup> In 1997, S. A. Komov stated that the forms and methods of attaining information superiority over an enemy are key elements of the information warfare discipline.<sup>167</sup> In 2002, Colonel General V. V. Bulgakov wrote on “Armed Conflict: Forms and Methods of Troop Operations.”<sup>168</sup> In 2011, A. V. Dolgoplov and S. A. Bogdanov penned “The Evolution of the Forms and Methods for Waging Armed Struggle under Network-Centric Conditions.”<sup>169</sup> In 2016, A. P. Korabelnikov composed “Promising Trends in the Development of Aerospace Defense Forms and Methods in the Russian Federation.”<sup>170</sup> This short summary only represents a small sampling of the number of articles and presentations that include the concept of forms and methods. It is obviously a standard approach to implementing strategy and operational art in both Soviet as well as contemporary times.

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<sup>161</sup> *SMS* (2013), p. 11.

<sup>162</sup> *Ibid.*, p. 12.

<sup>163</sup> *Ibid.*, p. 2-3.

<sup>164</sup> A. A. Stokov, “Changes in the Methods and Form of conducting Military Operations,” *Voyennaya Istoriya* (*Military History*) Moscow: Voenizdat 1971, pp. 340-345, excerpts, cited in Harriet Fast Scott and William F. Scott, eds., *The Soviet Art of War*, Boulder, CO, Westview Press, 1982, pp. 222-223.

<sup>165</sup> N. N. Kuznetsov, “On the Categories and Principles of Soviet Military Strategy,” *Military Thought*, No. 1 1984, p. 34.

<sup>166</sup> I. N. Rodionov, “On Certain Problems of the Development of Military Science,” *Military Thought*, No. 11-12, 1991, pp. 46-51.

<sup>167</sup> S. A. Komov, “On the Methods and Forms for the Conduct of Information War,” *Military Thought*, No. 4 1997, p. 18.

<sup>168</sup> V. V. Bulgakov, “Armed Conflict: Forms and Methods of Troop Operations,” *Military Thought*, No. 1 2002, pp. 39-43.

<sup>169</sup> A. V. Dolgoplov and S. A. Bogdanov, “The Evolution of the Forms and Methods for Waging Armed Struggle under net-work-Centric Conditions,” *Military Thought*, No. 2 2011, pp. 49-58.

<sup>170</sup> A. P. Korabelnikov, “Promising Trends in the Development of Aerospace Defense Forms and Methods in the Russian Federation,” *Military Thought*, No. 1 2016, pp. 70-78.

China: The following forms and methods were offered in one Chinese article addressing the transformation to new-type operations:

- Forms and methods of long-range operations include ways to defeat the enemy far away from one's borders to capture key points and stage strategic sabotage.
- Forms and methods of information-firepower integrated operations combine soft attacks with hard strikes that include information-fire deterrence, information-fire raids, information-fire targeted attacks, information-fire blockades, and information-fire encirclement and annihilation.
- Forms and methods of precision operations include precisely conducting battlefield sensing, command and control, fire-strike effects evaluations, and comprehensive support, thereby shaping the closed cycle of reconnaissance-control-striking-evaluation-support.
- Forms and methods of low-altitude operations include air-ground integrated assaults and vertical speed-based attacks.<sup>171</sup>

In the work *SMS* it was noted that studying the enemy's forms and methods of operations was important, as well as establishing the basic guiding thought for friendly operations and its main forms and methods.<sup>172</sup> A strategic concept includes determining not only opponents and targets of operations but also the basic forms of operations and main combat methods to be used.<sup>173</sup> Studying contemporary wars conducted in other countries enable the PLA to grasp the current forms of operations, the basic feature of methods of operations, and better understand the contemporary laws of war.<sup>174</sup>

### *Active defense*

Russia: In his 2019 presentation at the Academy of Military Science, Russian General Staff Chief noted the following: "For the past few years military scholars, together with the General Staff, have been developing conceptual approaches regarding the neutralization of aggressive actions by probable enemies. The basis of 'our response' is the 'strategy of active defense,' which, taking into consideration the defensive nature of Russian Military Doctrine, envisions the conduct of a set of measures for the preemptive neutralization of threats to the security of the state. It is namely the validation of the measures being developed that should comprise the activities of military scholars. This is one of the priority trends for safeguarding the security of the state. We must outstrip the enemy in the development of military strategy and move 'one step ahead.'"<sup>175</sup>

China: It was stated that active defense is manifested in the following: adhering to a position of self-defense and striking back, which does not preclude preemptive strikes as regards campaigns and combat; combining strategic defense with campaign and tactical offense, since active defense

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<sup>171</sup> Lu Zhisheng, "Make Giant Strides into the New Epoch of All-Area Operations—Some Thoughts on the Transformation of the New-Type Army's Military Operations," *Jiefangjun Bao Online*, 14 September 2017, p. 7.

<sup>172</sup> *SMS* (2013), p. 5.

<sup>173</sup> *SMS* (2013), p. 24.

<sup>174</sup> *SMS* (2013), p. 25.

<sup>175</sup> V. V. Gerasimov, "The Development of Military Strategy under Contemporary Conditions. Tasks for Military Science," *Vestnik Akademii Voennykh Nauk (Journal of the Academy of Military Science)*, No. 2 2019, p. 7.

is an offensive defense and not an exclusively defensive defense; operations are based upon fully taking the initiative; do not fight a battle for which you are not prepared, meaning first be sure of victory and only then seek a fight; restrain war from starting with preparations but if unavoidable, resolutely make your opening move to use war to stop war; and soldier and the people are the source of victory.<sup>176</sup> The PLA's July 2019 *Defense White Paper*, in regard to strategic guidance, noted that:

The military strategic guideline for a new era adheres to the principles of defense, self-defense and post-strike response, and adopts active defense. It keeps to the stance that 'we will not attack unless we are attacked, but we will surely counterattack if attacked,' places emphasis on both containing and winning wars, and underscores the unity of strategic defense and offense at operational and tactical levels...China's armed forces give full play to the overall power of the people's war by innovating in its strategies, tactics, and measures.<sup>177</sup>

Thus, the active defense concept continues to occupy a special place in Chinese military theory.

In 2015 China produced a White Paper titled "China's Military Strategy" that mentioned active defense twelve times. Section III discussed the concept the most and, in addition to calling active defense the essence of strategy, offered the following definition:

From the long-term practice of revolutionary wars, the people's armed forces have developed a complete set of strategic concepts of active defense, which boils down to: adherence to the unity of strategic defense and operational and tactical offense; adherence to the principles of defense, self-defense and post-emptive strike; and adherence to the stance that 'We will not attack unless we are attacked, but we will surely counterattack if attacked.'... China's socialist nature, fundamental national interests, and the objective requirement of taking the path of peaceful development all demand that China unswervingly adhere to and enrich the strategic concept of active defense.<sup>178</sup>

The implementation of the active defense concept will include the following:

- The basic point for the preparation for military struggle (PMS) will be placed on winning informationized local wars, highlighting maritime military struggle, and maritime PMS.
- China's armed forces will innovate basic operational doctrines. Integrated combat forces will prevail in system-vs-system operations featuring information dominance, precision strikes, and joint operations.
- China's armed forces will optimize the military strategic layout. In view of China's geostrategic environment, the armed forces will make overall planning for

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<sup>176</sup> *SMS (2013)*, pp. 48-50.

<sup>177</sup> *China's National Defense in the New Era*, The State Council Information Office of the People's Republic of China, July 2019. As cited at <http://www.andrewerickson.com/2019/07/full-text-of-defense-white-paper-chinas>

<sup>178</sup> "China's Military Strategy," *Xinhua* (in English), 26 May 2015.

strategic deployment and military disposition, clearly divide areas of responsibility for their troops, and enable them to support each other and act as an organic whole.

- China's armed forces will uphold nine basic principles (see Appendix One).<sup>179</sup>

#### *New type:*

Russia: In February 2015 Colonel-General Kartapolov, at the time the head of the Main Operations Directorate of the General Staff, discussed Western actions as built on a foundation of hybrid actions which “include both measures of a military nature and measures without the employment of military force.”<sup>180</sup> He outlined a new-type war being fought against Russia that associated indirect actions with hybrid ones. Further, in October 2015 in Issue 10 of *Military Thought*, two Russian officers who write often for the journal, Colonel (retired) S. G. Chekinov and General (retired) S. A. Bogdanov, used the new-type warfare terminology often in an article on forecasting.

China: PLA authors note that new-type operational forces must have special characteristics, to include timeliness, high efficiency, and the ability to be relative to the contemporary situation. Future war will be based on the “three no’s” of warfare: “nobody” (unmanned weapons such as robots or drones), “no-see” (invisible, such as stealth fighters), and “no-hear” (silent, such as infrasound weapons that create psychological havoc). The new-type operational forces must protect friendly operational systems while “at the same time finding the ‘acupuncture points’ and ‘floating ribs’ of enemy operational systems.”<sup>181</sup> These systems must be paralyzed. Further, the author notes that it remains necessary to continue to use self-criticism as a methodology and to integrate both civilian and military forces into the new-type operational force.<sup>182</sup>

#### *IPW vs prepositioning:*

Russia: the Initial Period of War (IPW) was defined as when warring states “conduct military operations involving groups of their armed forces that were deployed before the start of the war to achieve their short-range strategic objectives or to create favorable conditions for committing their main forces and continuing with more operations;”<sup>183</sup> the IPW has new political, economic, and military conditions that are changing its parameters, which accords with history’s lessons that each war appears as a special case with different factors affecting the IPW;<sup>184</sup> the projected speed of future wars may not allow countries time to put their economies on a war footing, making it even more important to prevent potential adversaries from achieving military and technological superiority [note: there appear to be three phases to an IPW plan: commit forces in secret before war begins; create conditions for the main force; and

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<sup>179</sup> Ibid.

<sup>180</sup> A. V. Kartapolov, “Lessons of Military Conflicts and Prospects for the Development of Means and Methods of Conducting Them, Direct and Indirect Actions in Contemporary International Conflicts,” *Vestnik Akademii Voennykh Nauk (Bulletin of the Academy of Military Science)*, No. 2 2015, pp. 28-29.

<sup>181</sup> Lu.

<sup>182</sup> Ibid.

<sup>183</sup> S. G. Chekinov and S. A. Bogdanov, “Initial Periods of War and Their Impact on a Country’s Preparations for a Future War,” *Voennaya Mysl’ (Military Thought)*, No. 11 2012, pp. 14-27.

<sup>184</sup> Ibid., p. 17.

be aware that new conditions will continuously change the initial parameters].<sup>185</sup>

China: The modern battlefield was described by Wei Daiqiang, a PLA lecturer, in 2013 as a place where the strategic prepositioning of forces and materials must be studied in order to attain a strategic advantage and reduce uncertainty. Wei, a lecturer in the Department of Military Thinking and Military History at the Nanjing Political College, noted that the official 2011 book *Military Terminology of the Chinese People's Liberation Army* defined strategic prepositioning as the arrangement or distribution of troops, material, and equipment made in preparation for satisfying future strategic needs. Wei added that the noted PLA strategist, retired General Li Jijun, had defined strategic prepositioning as a practice of military strategy that enables the seizure of strategic opportunity; and that a principle of war is to use battlefield creation and strategic prepositioning as a means for gaining strategic and battle initiative. The authors of the 2001 version of *The Science of Military Strategy* noted that all strategic thoughts are embodied in foresight and prepositioning. Another author wrote that strategy is essentially a strategic prediction and strategic prepositioning.<sup>186</sup> As Wei notes, it is similar to the Western idea of prepositioning with regard to the Trojan horse.<sup>187</sup> A strategic advantage is established through strategic prepositioning.<sup>188</sup>

#### *Asymmetry:*

Russia: Asymmetric operations are defined in Russia as a strategy of the struggle of a weak side against a strong one, a strategy employed in conflicts between enemies' unequal with respect to economic development or their level of military force.<sup>189</sup> However, that is the soft side to the term's definition. Asymmetric means discussed in Russian publications include what is described as "nonstandard" forms and methods of operations and the use of prohibited means. Clearly, something nonstandard and prohibited imply the use of illegal means as an asymmetric method, and such examples represent the hard side of the term's definition.

China: Differences in weapons, numbers of personnel, structure, thoughts, cultural background, behavioral criteria, temporospatial conditions, and operations activities constitute asymmetric relations.<sup>190</sup> Asymmetric operations require specific analyses of specific situation and the exploitation of them for all variable factors along with flexible application. The subjective qualities (creative thought) of officers should be fully brought into play. Exploit all conditions (weather, geography, etc.) and adopt irregular, nontraditional operational models, methods, and means as required. Methods should not be limited to established practices.<sup>191</sup>

#### *Reflexive control versus stratagems:*

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<sup>185</sup> Ibid., p. 18.

<sup>186</sup> Wei Daiqiang, "A Review of Research on the Concept of Strategic Prepositioning," *China Military Science*, No. 5 2013, pp. 147-154.

<sup>187</sup> Ibid.

<sup>188</sup> Ibid.

<sup>189</sup> N. N. Tyutyunnikov, *Military Thought in Terms and Definitions, Voennaya Mysl' (Military Thought)*, Volume One, Armed Forces of the Russian Federation, 2018, p. 29. This definition was translated by Dr. Harold Orenstein.

<sup>190</sup> SMS (2013), p. 127.

<sup>191</sup> Ibid., pp. 128-129.

Russia: Reflexive control is the ability to get an opponent to do something for themselves they are really doing for you. RC is essentially information and psychological effects against persons on the opposing side who are making decisions. It is “a set of measures, interconnected with respect to goal, place, and time, aimed at...forcing the enemy to reject his initial plan and accept knowingly a decision that is disadvantageous for him...”<sup>192</sup> Another author noted that:

This instrument is reflexive analysis, the content of which is the reproduction of the enemy’s probable goals, methods of achieving them, the logic of his thinking, and assumed methods of obtaining the necessary information about the situation. Reflexive analysis is a mirror of complex military thinking, which determines the degree of practically implementing a systemic approach and the basis of a creative approach to accomplishing the tasks assigned to commanders in combat.<sup>193</sup>

China: There are many types of stratagems, located at all levels of military art. The Chinese have written entire books on these topics, such as the 2002 volume *Campaign Stratagems*. In that volume, it was noted that a campaign stratagem is when

The commanding officer, on the basis of certain strength, fully performs his subjective initiative, and manipulates and drives the enemy in the confrontation of intelligence, so as to create a situation that is favorable to his own troops but unfavorable to the enemy.<sup>194</sup>

The aim is to control the intelligence-judgement-decision cycle of an opposing force, that is, the intelligence processing procedures of an opponent.

According to Michael Pillsbury, a stratagem is closely aligned with the concept of *shi*, or the alignment of forces, where one studies an opponent’s psychology and manipulates them into acting according to a friendly plan. Pillsbury noted that a feature of *shi* is called *wu wei*, “which means to get other nations to do your work for you.”<sup>195</sup> Another long time China analyst stated that stratagem is “creating the enemy’s perception.”<sup>196</sup> All told, the concept is very similar to Russia’s concept of reflexive control.

#### *COF versus CNP:*

Russia: When constructing strategy against a potential adversary, the latter’s “political, economic, scientific and technical, military, ideological, demographic, psychological, geographic, and other factors” are considered as part of the correlation of forces (COF), according to a 1968 *Military*

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<sup>192</sup> Stanislav Ermak and Aleksandr Raskin, “Are All Methods Good in Battle? On Some Aspects of Reflexive Control of the Enemy,” *Armeyskiy Sbornik (Army Journal)*, No. 7 2002, p. 44. The author would like to thank Dr. Harold Orenstein for his translation of this article from Russian to English.

<sup>193</sup> F. Chausov, “Command and Control of Battle on the Basis of a Reflexive Analysis of the Situation,” *Morskoi Sbornik (Navy Journal)*, No. 6 2017, p. 53. The author would like to thank Dr. Harold Orenstein for his translation of this article from Russian to English.

<sup>194</sup> Li Qi, “Introduction to Campaign Stratagems,” in Zhang Xing Ye and Zhang Zhan Li, *Campaign Stratagems*, National Defense University, 2002, p. 9.

<sup>195</sup> Michael Pillsbury, *The Hundred-Year Marathon*, Henry Holt and Company, 2015, p. 42.

<sup>196</sup> E-mail correspondence with Dr. William W. Whitson, 13 April 2004.

*Thought* article, in order “to uncover intentions, plans, capabilities, concepts, and methods.”<sup>19</sup> Strategy requires a continuous reassessment of the capabilities of potential adversaries and results in updated modeling of the correlation of forces between nations. Superiority is nothing but a favorable opportunity. A 1969 *Military Thought* article noted that the decisive role in battle is played by the commander’s skill which, in author S. Tyushkevich’s assessment, is another aspect of the COF.<sup>197</sup> He added that timely logistic deliveries are “most essential” to COF; an effective change in the COF comes about through the offensive; forecasts should be prepared ahead of time to anticipate events and facilitate corrections to plans; and, in addition to evaluating quantitative and qualitative factors, commanders can uncover hidden factors that have the capability of influencing the COF.<sup>198</sup>

With conventional forces, the COF changes slowly. Nuclear weapons change the COF immediately, according to Tyushkevich. With capabilities changing, the COF also depends on the function of time. The methods and means of using the time factor are interrelated with the element of surprise, which can change the COF quickly when properly employed. In addition to evaluating quantitative and qualitative factors, commanders can also uncover hidden factors that have the capability of influencing the COF.<sup>199</sup> All of the above objective opportunities are dependent on a commander’s use of his subjective factor to take advantage of them.

China: Huang Shuofeng, perhaps China’s leading expert on comprehensive national power (CNP), writes, “Comprehensive National Power research is done in order to accurately analyze the international strategic situation and evaluate the comprehensive power of enemy states, allies, and one’s own country for the purpose of scientifically planning one’s own national strategic decision making.”<sup>200</sup> He uses theoretical research, systems theory, and mathematical methods to develop his qualitative and quantitative analysis. CNP represents an objective reality assessment of the strategic environment.<sup>201</sup> CNP is a dynamic process but establishing superiority in CNP does not automatically spell success, as things change over time, and the subjective input of commanders, leaders, or scientists can dramatically change earlier calculations. Qualitative factors impacting on CNP include technological advancements, economics, strategy, population, national territory, and international influence.

Huang describes CNP as a system composed of many levels or subsystems. The four major index subsystems of his assessment are material, spiritual, coordinated, and environmental power. Material power includes the sub elements of natural resources, economics, science and technology, and national defense. Spiritual power includes politics, foreign affairs, culture, education, and psychological and intellectual soft power factors. They help determine material power’s effectiveness. Coordinated power includes organizational, command, management, and decision-

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<sup>197</sup> S. Tyushkevich, “The Methodology for the Correlation of Forces in War,” *Military Thought*, No. 6 1969, as translated and printed in *Selected Readings from Military Thought: 1963-1973* (in English), Volume 5, Part II, pp. 57-71.

<sup>198</sup> Ibid.

<sup>199</sup> Ibid.

<sup>200</sup> Michael Pillsbury, *China Debates the Future Security Environment*, National Defense University Press, Washington DC, 2000, p. 222.

<sup>201</sup> Ibid., p. 212.



making criteria. Finally, environmental power assesses international (balance of power), natural (geography, ecology, etc.), and social (stability, etc.) factors. Altogether more than 18 factors are under consideration. Huang's CNP index system is multilayered with subsystems and sub-subsystems.

Huang further states that CNP continually evolves. CNP changes with time and with changes in the world's structure. He writes that CNP changes with the interchange of energy flows, material flows, and information flows of science and technology (he believes a type of "motion equation" is needed to explain this flow). Huang adds that his equations are "in keeping with the universal relations principle in the Marxist materialist dialectics theory system."<sup>202</sup> Pillsbury offered a detailed description of Huang's CNP "function" and CNP "system" equations, both of which are beyond the scope of this paper.<sup>203</sup>

#### *Operational design versus campaign design:*

Russia: Operational design is a broad outline of forthcoming combat operations. It includes the direction or axis of the main attack and other thrusts (area of concentration of main efforts); sequence and modes of accomplishing the adversary's defeat; procedure of delivery of fire for effect and, in a nuclear war, nuclear weapons as well; force groupings and tactical order of battle (disposition).

China: It was noted that the form of planning had changed from schematic designs which are primarily qualitative to what was termed "meticulous" design that combine man and machine. Design is focused on overall planning more than on single items, and on top-level designs to implement strategic objectives.<sup>204</sup> The term top-level design indicates that this design is more likely at the strategic level than Russia's operational design.

#### *Some Differences in Chinese Thought from Russian Thought*

The following terms offer a more specific Chinese method for visualizing warfare to include its preparation and conduct.

*Turning point:* An analyst with a broad strategic view and sense of innovation is needed to identify a turning point. Science and technology are the main elements for analysts to consider, as they help distinguish the form of warfare (mechanized, information, nuclear, etc.) from one era to another.<sup>205</sup> A turning point is a strategic opportunity whose value is often inversely proportional to the clarity of the transformation. That is, the technological transformation may not be clear to others and thereby offers friendly forces a strategic opportunity for reform. The army that survives is the one constantly seizing strategic opportunities. Benefits are directly proportional to the timeliness of decisions.<sup>206</sup> It was stated that the "key to exploiting the turning point is to base it on

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<sup>202</sup> Ibid., p. 234.

<sup>203</sup> Ibid., p. 233. For this detailed description of the Academy of Military Sciences dynamic equation, see Pillsbury, pp. 232-238.

<sup>204</sup> SMS (2013), p. 24.

<sup>205</sup> Zheng Zonghui, "Considerations on Understanding and Seizing the Turning Point in the Transformation of the Form of Warfare," *China Military Science*, No. 2 2013, pp. 72-79.

<sup>206</sup> Ibid.

the condition of the country and army and to seize the timely opportunity subjectively and objectively.”

*War engineering:* In 2007, Hu Xiaofeng, a professor in the Information Operations and Command Training-Teaching and Research Department at China’s National Defense University, stated that war engineering is “a method of systems engineering that studies, designs, tests, controls, and evaluates war systems and that is guided by systematic thinking, based on information technology.”<sup>207</sup> The most important element of war engineering is to maintain control of war systems, through which control of the course of operations is possible.<sup>208</sup> The concept takes all of war space and time into consideration, as well as politics, military affairs, economics, and diplomacy, to obtain the best results overall. Hu wrote that the path to victory depends on making innovations, which means creating asymmetries in the shape of warfare, methods of operations, and in war methods and training methods. Only then is war control possible.<sup>209</sup> The concept was mentioned in 2013 in an article on the construction of a battlefield under informatized conditions.

*Capabilities Index:* An information network linking fighting forces, fire control systems, reconnaissance assets, and communication capabilities becomes a way to measure a “capability index” when constructing a battlefield.<sup>210</sup> Most likely these capabilities would be measured against those of a potential opponent in a specific area. Another article noted that developments must be able to provide an asymmetrical advantage over an opponent and the full use of China’s advantages must be used in the creation of asymmetrical developments. Examples of such forces include cyber-warfare, space warfare, remote warfare, and unmanned warfare. Combat standards will be developed in the form of capability indexes.<sup>211</sup>

*Acupuncture war:* The Chinese call key node attacks “acupuncture war” since key points on the network become targets. Net points are of crucial importance to the survivability of a network, since Metcalfe’s Law notes “the value of a network is the square of the number of net points.” Destroying net points enable twice the results with half the effort in geometric terms.<sup>212</sup> The topic was brought up again in a Taiwanese publication, where Lin Chin-Ching, director of the Telecommunications Bureau of the Ministry of National Defense, citing electronic warfare theory, noted that China would use “acupuncture-point-prodding,” the ancient Chinese martial art theory of taking out an enemy with a strike on a pressure point.<sup>213</sup> In 2013, in a discussion of new-type operational forces, it was noted that forces must protect friendly operational systems while “at the same time finding the ‘acupuncture points’ and ‘floating ribs’ of enemy operational systems.”<sup>214</sup>

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<sup>207</sup> Hu Xiaofeng, “The Basics of War Engineering,” *China Military Science*, No. 3 2007, pp. 13-21.

<sup>208</sup> Ibid.

<sup>209</sup> Ibid.

<sup>210</sup> Pan Zhaonian, “Strategic Thinking for Battlefield Construction in Joint Operations under Informatized Conditions,” *China Military Science*, No. 6 2013, pp. 39-46.

<sup>211</sup> Jia Xiaowei, “Strategic Considerations on Promoting the Building of the PLA’s New-Type Operational Forces,” *China Military Science*, No. 3 2013, pp. 92-98.

<sup>212</sup> Su Size, “Kosovo War and New Military Theory,” *Jiefangjun Bao (Liberation Army Daily)*, 1 June 1996.

<sup>213</sup> Maubo Chang, Taiwan *Central News Agency*, 21 May 1999.

<sup>214</sup> Ibid.

*System sabotage:* The *SMS* (2013) noted that operational thought had broken through the model of mechanized warfare and proposed the idea of a “sabotage and strike warfare against systems” that corresponds to the basic laws of local wars under informationized conditions.<sup>215</sup> It was noted that system of system sabotage methods would be used against nodes and vital sites when conducting integrated joint operations. Targets would include command, signal, software, and space systems. A 2007 book was even more assertive, noting that “the key to achieving the strategic requirement of destroying the enemy as a whole and paralyzing the enemy’s systems is carrying out focused precision attacks against strategic enemy targets, especially strategic vital points.”<sup>216</sup> This makes it necessary to establish a complete target system and the vital points therein.<sup>217</sup> The authors added the following:

System sabotage warfare is targeted at the enemy’s system as a whole, to include all the functional systems and the individual platforms that play a supporting role. Sabotage must destroy the enemy’s information flow and also damage physical enemy targets and annihilate the enemy’s effective strength...Use composite hard and soft attacks in the information domain and the physical domain to confuse the enemy’s perception and break down his psychological defenses, creating an ‘avalanche’ effect that destroys and paralyzes the enemy’s combat systems.<sup>218</sup>

*MOOTWA:* Military operations other than war (MOOTWA) has been a consistent theme of Chinese thought in the recent past. Chapters on the topic have appeared in publications since 2007 or earlier, and they reflect the focus of the PLA on earthquake, hurricanes, and other security responses within the nation. The PLA has not fought a war in some time and thus MOOTWA has become the way to foster interest in the military in the meantime and a way to offer realistic practice and scenarios for rescue operations. Chapter Eight of the *SMS* (2013) is titled “Strategic Guidance of Non-War Military Activities,” and the three sections under that title discuss the practice, characteristics, and strategic guidance for MOOTWA. The chapter noted that counterterrorism, maintenance of stability, disaster relief, protecting rights and interests, security alerts, international peacekeeping, and international rescues all fall under MOOTWA.<sup>219</sup>

*Combat Power development:* In 2012 six articles appeared on combat power generation in *CMS*. One of the first articles defined the topic of CPGM in the following way:

CPGM is a military state in which a military system that is composed of man, weapons and equipment, and other combat resources generates certain combat functions. The structure, actions, and state of the military system are in a dynamic stability within certain time and spatial scope, therefore, the combat power

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<sup>215</sup> *SMS* (2013), p. 47.

<sup>216</sup> Fan Zheng Jian and Ma Bao An, *The Theory of Military Strategy*, National Defense University Publishing House, 2007, p. 288.

<sup>217</sup> *Ibid.*

<sup>218</sup> *Ibid.*

<sup>219</sup> *SMS* (2013), p. 154.

generation model can be described using a military system's features, such as elements, structures, environment, and functions.<sup>220</sup>

The military system's features were then further explained. System elements were defined as man, weapons and equipment, and other combat resources. System structures were defined as the quality, quantity, time, and spatial structures among the system elements, and the connection among information, materials, and energy. A system environment was defined as the natural environment, human environment, operational objects, and so on, that exist outside of the military system under study and congregate with things associated with them. A military system's management level, information level, and science and technology level have become main factors for generating combat power. CPGM combines intelligence with human intelligence plus information systems and information energy plus various service and arms combinations. A man's intelligence replaces skills in an information-dominated environment, the latter a critical node in the generation of combat power. Since man's creative actions are key, subjective and objective efforts must be made to create the necessary condition to turn possibility into reality.<sup>221</sup>

Another key article discussed the PLA's combat power mode from the vantage point of former President Hu Jintao's major strategic thinking. Hu's ideas were used to push the scientific development of the armed forces, accelerate the informatization process, and improve the SoS capability of the armed forces.<sup>222</sup> The result would be a transformed CPGM. The latter is viewed as a complex system engineering project that involves various levels and various fields in national defense and armed forces building.

Hu's thoughts on the CPGM reflects the evolution of warfare's mode of development, where informatized weapons and equipment are key material factors for combat power; information capability becomes the engine and multiplier for combat power generation; and the CPGM transforms from a mechanized platform model to one dominated by information capabilities. The CPGM determines the level and strength of combat power and the breadth and depth of its scientific development. Initial measurements of the PLA's CPGM's efficiency indicate it is not commensurate with the requirement of winning local wars under informatized conditions. Much work remains to be done to transform the PLA from a quantity—to a quality—driven force and from a manpower-intensive force to one that is science and technology intensive, especially where combat power is no longer linear but based on a SoS's capability. The PLA's indigenous innovation of weapons and equipment based on information technologies is vital to success. New-type operational forces include strategic early-warning, air defense anti-missile troops, information attack and defense priorities, strategic projection, and digitized units. All are required elements of the transformation process.<sup>223</sup>

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<sup>220</sup> Guo Ruobing, Zhang Xi, and Li Jingwei, "Study on Basic Issues of Accelerating the Transformation of the Combat Power Generation Model," *China Military Science*, No. 1 2012, pp. 36-43.

<sup>221</sup> Ibid.

<sup>222</sup> Shi Zhongwu, "Scientific Guidance for Promoting the Transformation of the Armed Forces' Combat Power Mode—a Study on Hu Jintao's Important Exposition on Accelerating the Transformation of the Combat Power Generation Model," *China Military Science*, No. 1 2012, pp. 3-13.

<sup>223</sup> Ibid.

*Shi*: Noted Western Sinologist Roger Ames has called the concept of *shi* “the key and defining idea in Sun-Tzu’s *The Art of War*.” Ames translates the term as “strategic advantage.” He notes that *shi* “is a level of discourse through which one actively determines and cultivates the leverage and influence of one’s particular place.”<sup>224</sup> Retired Chinese general Tao Hanzhang defines *shi* in a similar manner, noting that it is “the strategically advantageous posture before a battle that enables it to have a flexible, mobile, and changeable position during a campaign.”<sup>225</sup> Chinese expert Michael Pillsbury has cited the following as an example of *shi*:

*Shi* assesses your side’s potential, the enemy side’s potential, weather, and geography to identify the moment in a campaign when an advantage can be gained over an opponent. *Shi* is a certain moment in the campaign when you could take the advantage from the enemy.<sup>226</sup>

In the case cited by Pillsbury, *shi* sounds like the ratio of capabilities between two forces that at some point will signal the superiority or advantage of one side over the other.

Chinese strategy contains a constant search to achieve a strategic advantage (which is also a goal of the popular Chinese strategic game of *Weiqi* or *Go*) over an opponent. *Shi* is sought everywhere, whether it be with the use of forces, electrons, or some other force. The Chinese 2015 *White Paper on Strategy* discussed this concept in four places:

- China’s Armed Forces will lay stress on farsighted planning and management to **create a favorable posture**, comprehensively manage crises, and resolutely deter and win wars.
- China’s Armed Forces will work harder to **create a favorable strategic posture** with more emphasis on the employment of military forces and means
- A principle of active defense is to **foster a strategic posture favorable** to China’s peaceful development
- China will strive to establish fair and effective security mechanisms...and **create a security environment favorable** to its peaceful development.<sup>227</sup>

*SMS Thought Section*: One section of the 2013 *SMS* described “The orientation of thought in drafting military strategy.” It stated that forward thinking (reveal trends, stages, and characteristics for the future state of warfare), holistic thinking (relationship among military, political, economic, and other aspects of conflict), active thinking (creating situations), and thinking through hardships (take precautions) were all required measures of thought.<sup>228</sup>

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<sup>224</sup> *The Book of War*, The Modern Library, New York, 2000, p. 50.

<sup>225</sup> Tao Hanzhang, *Sun Tzu’s Art of War: The Modern Chinese Interpretation*, Sterling Innovation, 2007, p. 124.

<sup>226</sup> He Diqing, *Campaign Course Materials*, China’s Academy of Military Science, 2001, as quoted from Timothy Thomas, *The Dragon’s Quantum Leap*, Foreign Military Studies Office, Fort Leavenworth, KS, 2009, p. 255.

<sup>227</sup> “China’s Military Strategy,” *Xinhua* (in English), 26 May 2015. This information was provided to the author by Dr. Michael Pillsbury.

<sup>228</sup> *SMS* (2013), pp. 20-22.