

Countering Enemy “Informationized Operations” in War and Peace

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INTRODUCTION

[T]he PLA's [People's Liberation Army's] emerging doctrine continues to adhere to the traditional strategy of “pitting the inferior against the superior” (*yilie shengyou*) . . . Relative superiority in selected areas, however, can be applied against an enemy's weaknesses. . . . This does not require annihilation of the enemy or occupation of his territory, only a paralyzing “mortal blow” (*zhiming daji*), “winning victory with one strike” (*yizhan, ersheng*). . . . PLA writings strongly indicate the foundation of the emerging doctrine is the concept of information dominance (*zhixinxiquan*).

— Mark A. Stokes, 1999¹

This report is based on two workshops that the Center for Strategic and Budgetary Assessments (CSBA) conducted in 2013 for the Office of Net Assessment (ONA), Office of the Secretary of Defense. The original aim of the project was to investigate how to defeat enemy command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR). As the research proceeded, however, it became evident that neither CSBA nor ONA had the manpower or technical knowledge to provide useful insights—especially at the tactical and operational levels—as to how to defeat the emerging C4ISR capabilities of China or of any other country.

Heeding Albert Wohlstetter's advice that the structure of an analysis may need substantial revision as more is learned about the problem under investigation, the project refocused on the broader conceptual issue of better understanding the growing divergence between U.S. and Chinese approaches to the information dimension of future warfare. In this regard, a major insight emphasized by China experts at the first workshop was that the U.S. military does not have a term or overarching concept corresponding to the People's Liberation Army's understanding of “informationized operations (信息化作战 or *xinxi hua zuozhan*).”² When viewed through the lens of PLA writings since the early 1990s on local,³

¹ Mark A. Stokes, *China's Strategic Modernization: Implications for the United States* (Carlisle, PA: U.S. Army Strategic Studies Institute, 1999), pp. 8-9.

² Yuan Wenxian (chief editor), *Lectures on Joint Campaign Information Operations* (联合战役信息作战教程 *lianhe zhanyi xinxi zuozhan jiaocheng*), (Beijing: PLA National Defense University Press, 2009), translation Foreign Systems Research Center, Science Applications International Corporation, FOUO, p. 4.

³ In 1985, Deng Xiaoping declared that the likelihood of a major war was remote and that “local war” on China's periphery would be “the most likely form of future combat.” Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century* (London and New York: Routledge, 2012), p. 119.

high-technology (high-tech) wars under “informationized” conditions, the Chinese term therefore seemed a better choice for use in the title of this report than “C4ISR.”

Report Structure

Section 1 offers a basic assessment of the growing divergence between Chinese and American views of the role of information and “informationized” (or “informatized”)⁴ operations in future warfare. The U.S. Joint Staff has banished “information warfare” from its official lexicon and largely relegated information operations to a combat support role that exploits cyber tools to influence enemy cognition and decision-making processes. While some theorists in the Chinese military once held similar views, Yuan Wenxian at the PLA’s National Defense University argued in 2009 that information operations had progressed from a supporting role to that of “an indispensable important measure in joint campaign operations under informationized conditions.”⁵

Perhaps the most striking point that emerged from this assessment was just how profoundly different the Soviet and American approaches to C₃ were. Soviet theory and practice attributed far greater importance to C₃ than did the longstanding emphasis on firepower evident in American doctrinal thinking. One might have expected the discovery of these differences to precipitate some rethinking of American attitudes toward the importance of C₃ in combat interactions and outcomes. Nevertheless, there was only fleeting interest within the U.S. military services in making the intellectual effort to develop a more comprehensive understanding of C₃’s role in modern warfare.

Section 3 highlights a few of the more profound differences between the strategic cultures and conceptual frameworks of the People’s Republic of China and the United States. While Soviet radio-electronic combat (REC) doctrine was more comprehensive and coherent than comparable U.S. doctrine, the strategic culture of the Union of Soviet Socialist Republics (USSR) at least belonged to the Western cultural tradition. China’s strategic culture, like that of Imperial Japan during World War II, does not. To offer one indication of the resulting differences, Chinese military theorists continue to look back to the Warring States pe-

⁴ English translations of Chinese characters such as 信息化作战 have produced a number of different terms, “informationized operations” and “informatized operations” being the most common. A more literal translation is “information technology-based combat.”

⁵ Yuan, *Lectures on Joint Campaign Information Operations*, p. 18.

riod (roughly 400-220 BC)⁶ for solutions to contemporary problems whereas the American security establishment seldom looks to historical experience earlier than World War II. Section 3 also argues that China is pursuing a contemporary “Warring States” strategy with two main tiers. The upper tier focuses on deterring other nations from using military force to prevent China from achieving its interests. The lower-tier deals with defeating a more powerful opponent should deterrence fail.

Section 4 discusses what is known about the various Chinese military organizations and supporting institutions that the PLA has developed to prevail in high-tech local wars under informationized conditions against a technically superior adversary, namely the United States. The primary focus is on what is known about the evolving structure of the PLA’s General Staff Department (GSD). The GSD is one of four “General Departments” directly under the Central Military Commission (CMC), which is considered in the West to be the People’s Republic of China’s (PRC’s) equivalent to the U.S. national command authorities.⁷ The General Staff Department is a large organization, but the Chinese defense establishment has been reluctant to provide much insight into its structuring and functioning.⁸

Section 5 briefly reviews the evolution of PLA thinking since the late 1990s on the nature and role of information operations in future war, should the actual use of military force become unavoidable. The primary sources on which this discussion relies are three Chinese works currently available in English. They are: Qiao Liang and Wang Xiangsui’s 1999 *Unrestricted Warfare*, Peng Guangqian

⁶ Deng Xiaoping sponsored a renaissance in the study of the Warring States period. He argued that China’s position in the late 20th century resembled the ancient period in which “roughly seven small kingdoms vied for ascendancy over the territory now considered China’s Han core, before the state of Qin emerged victorious, unified China, and launched the dynastic era that lasted into the twentieth century” (Jacqueline Newmyer, “Oil, Arms, and Influence: The Indirect Strategy Behind Chinese Military Modernization,” *Orbis*, Spring 2009, p. 207). Deng’s assessment in the mid-1980s was that in this security environment China could safely focus on building up its economy, but only if it avoided being crushed by more powerful nations such as the United States. Hence Deng’s famous injunction that China should “hide brightness” and “nourish obscurity” while building up its Comprehensive National Power (CNP). Michael Pillsbury, *China Debates the Future Security Environment* (Washington, DC: National Defense University Press, 2000), pp. xxxix, 313-314. For an overview of CNP see Pillsbury, *China Debates the Future Security Environment*, pp. 225-242.

⁷ The other three General Departments (*Zong Bu*) are the General Political Department (GPD, *Zong Zhengzhi Bu*), the General Logistics Department (GLD, *Zong Houqin Bu*) and the recently established (1998) General Armament Department (GAD, *Zong Zhuangbei Bu*).

⁸ James C. Mulvenon and Andrew N. D. Yang (eds.), *The People’s Liberation Army as Organization: Reference Volume v1.0* (Santa Monica, CA: RAND, 2002), p. 127.

and Yao Youzhi's 2001 *Science of Strategy*, and Yuan Wenxian's 2009 *Lectures on Joint Campaign Information Operations*.

Section 6 addresses the major trends, asymmetries and uncertainties affecting the comparative capabilities of the U.S. and Chinese militaries to dominate the information confrontation that are likely to be increasingly central in future military conflicts. One major asymmetry between the two sides is combat experience. In 1967 Alexander George pointed out that the PLA had not fought on a large-scale since the end of the Korean War.⁹ The PLA last mounted a major operation in 1979. On that occasion, to teach the Vietnamese a lesson, the PLA conducted a brief punitive campaign (February 17 to March 16, 1979) with an invasion force of nine regular armies along with special and local units that totaled more than 300,000 troops.¹⁰ However, the PLA performed poorly and recent scholarship suggests that it was China rather than Vietnam that "received the lesson."¹¹ In any case, the PLA has not engaged in a major conflict since 1979, and its combat experience in high-tech local wars under informationized conditions is virtually nil—especially compared to the experience the U.S. military has acquired in recent operations in Serbia, Iraq, Afghanistan, and Libya. This disparity highlights one of the major uncertainties as to whether Chinese or American forces would be more successful in winning the information confrontation on future battlefields.

An even more important asymmetry, however, may be the fact that the U.S. approach to information warfare remains stove-piped into a series of disparate communities and organizations: electronic warfare, signals and electronic intelligence (SIGINT and ELINT), C4, ISR, information operations, cyber, computer network operations, etc. This fragmentation acerbates the difficulties of understanding the Chinese approach to informationized operations. But its more worrisome implication may be that, in the event of a military conflict between the United States and China, the information dimension could prove to be a major, possibly critical, area of U.S. weakness, much as it was assessed to be in the late 1970s vis-à-vis the Soviet Union.

⁹ Alexander L. George, *The Chinese Communist Army in Action: The Korean War and Its Aftermath* (New York & London: Columbia University Press, 1967), p. 225. George did not consider the 1962 Sino-Indian Border Conflict, which occurred during the Cuban Missile Crisis, a large-scale conflict. Certainly compared to the Korean War the 1962 China-India border clash was not.

¹⁰ Xiaoming Zhang, "China's 1979 War with Vietnam: A Reassessment," *The China Quarterly*, 2005, pp. 861, 865.

¹¹ Xiaoming, "China's 1979 War with Vietnam," p. 851.



1. BASIC ASSESSMENT

The Japanese [in World War II] were the most alien enemy the United States had ever fought in an all-out struggle. In no other war with a major foe had it been necessary to take into account such exceedingly different habits of acting and thinking. . . . We had to understand their behavior to cope with it.

— Ruth Benedict, 1946¹²

The fundamental aim of a net assessment is to compare the most important features of a long-term military competition between potential adversaries. A good net assessment calls attention to emerging strategic problems or opportunities far enough in the future for senior Department of Defense (DoD) managers to still have time to make decisions that respond to those challenges or opportunities. This basic assessment focuses on the growing role of information in current and future military competition between the United States and the People’s Republic of China. It highlights the considerable differences in the ways the two sides are approaching the information aspects of future war.

The most consequential trend in 21st century warfare is the growing role and influence of information. Information has always been important in warfare but its increasing pervasiveness argues that it is becoming more dominant relative to other warfare domains. Air power became relatively more important during World War II;¹³ nuclear weapons dominated the long-term competition between the United States and the Soviet Union during the Cold War; and, since the 1991 Persian Gulf War (Operation Desert Storm), precision strike has assumed an ever-greater role in the American way of war. Over the next 10-20 years, the information dimension of military competition and warfare seems destined to grow in importance compared to precision strike, air power, or even nuclear weapons. Achieving an overall advantage in information may well become the dominant factor in deciding the outcomes of battles and campaigns.

There are two aspects of information that are central to its growing importance in 21st-century warfare. First, at the tactical level are the intelligence, surveillance and reconnaissance (ISR) capabilities on which U.S. precision-centric operations are critically dependent. Without accurate target locations,

¹² Ruth Benedict, *The Chrysanthemum and the Sword: Patterns of Japanese Culture* (Boston, MA: Houghton Mifflin, 1989), p. 1. This research sought to answer questions such as: Was Japanese capitulation possible without invasion of the home islands?

¹³ As Field Marshal Erwin Rommel observed in May 1944, battling a foe with air superiority was like “being nailed to the ground.” Rick Atkinson, *The Guns at Last Light: The War in Western Europe, 1944-1945* (New York: Henry Holt, 2013), p. 81.

precision-guided munitions are impotent. Second, current U.S. advantages in information depend on more than sensors and ISR systems, whether they are on manned aircraft, unmanned aerial vehicles or satellites. Functioning battle networks that provide command, control, communications and computers (C4) are necessary to exploit ISR before and during operations, especially in near-real time. In addition, today's battle networks must also be able to assimilate vast amounts of data from diverse sources.

The U.S. military is currently far ahead of any other nation in the speed with which it can find patterns and connections in the huge amounts of data generated and communicated day in and day out across the electromagnetic (EM) spectrum. However, the United States is not alone in seeking to exploit information for military ends. The country that is investing the most intellectual effort if not the most resources into understanding and exploiting the information dimension of 21st century warfare is China. Spurred by American performance in Desert Storm, U.S. discussions of the revolution in military affairs (RMA) and the 1995-1996 Taiwan Strait crisis, the People's Liberation Army (PLA) is concentrating its modernization efforts on building an informationized military able to win high-tech local wars under informationized conditions. While PLA strategists assess China's technical capabilities in the information dimension to be inferior to those of the United States, they are making every effort to develop a comprehensive conception and theory of "information power" as part of a broader strategy aimed at defeating a superior opponent. In this regard the Chinese need not match overall U.S. military capabilities in order to be able to achieve their political and strategic objectives in the Asia-Pacific region, including the Indian Ocean. Indeed, as the inferior power, the Chinese strategic preference is to avoid war with the world hegemon. But by developing and demonstrating an increasingly informationized military, Chinese strategists hope to deter U.S. military intervention in local wars in the first place.

But deterrence could fail. In the PLA's current view, the information operation is assuming an increasingly "profound position" in the effectiveness of the joint operation and hence can, in conjunction with trump-card weapons, stratagems and deception, provide advantage even against a superior power. PLA strategists who emphasize informationized operations do not reject "mechanization" (or "kinetic") operations. Rather, they seek to exploit an information advantage to increase their effectiveness. The informationized operation occurs within a multi-dimensional space that can include land, sea, air, space and electromagnetic components. Note, too, that the Chinese do not restrict this multi-dimensional battlespace geographically. It can also include attacks on an enemy's homeland infrastructure. By contrast, the kinetic, electromagnetic, and cyber aspects of fu-

ture war that the PLA hopes to knit into an organic whole are largely pigeon-holed into distinct, separate compartments in the doctrine and thinking of the American military.

The asymmetry between the PLA's thinking about informationized operations and that of the U.S. military appears likely to grow in the foreseeable future. American reluctance to develop a comprehensive approach to evolving ISR and C4 capabilities dates back at least to the discovery, late in the Cold War, of just how profoundly different Soviet planning for radio-electronic combat was from the U.S. approach. In Central Europe, for example, the Soviets had identified C3 (command, control, and communications) as a high priority warfare area and planned to attack the C3 of North Atlantic Treaty Organization (NATO) forces at every level of command. While U.S. forces enjoyed large technical advantages in C3 sub-functions such as sensors and data processing, these advantages were marginalized by the fragmented U.S. approach to the "C3 system."

A similar disparity is now evident—and widening—between the U.S. and Chinese militaries. After the Cold War ended, the U.S. military's approach to information warfare continued to be a fragmented series of afterthoughts. Al Qaeda's September 11, 2001 (9/11) attacks on the Pentagon and the World Trade Center reinforced this unfortunate tendency due to the demands of the subsequent counterinsurgency campaigns in Afghanistan and Iraq. Despite the lip service given to systems of systems in the 1990s and network-centric warfare in the early 2000s,¹⁴ by 2006 Joint Publication 3-13, *Information Operations*, had banished "information warfare" from the U.S. lexicon and narrowed information operations to the cognitive task of "affecting enemy decisions and decision-making processes" while defending friendly decisions and decision processes.¹⁵ Instead of taking a "system-of-systems" approach, U.S. information operations (IO) have been relegated to being enablers added as appendices to joint campaign plans by IO cells. [REDACTED]

¹⁴ Admiral William A. Owens, "The Emerging System of Systems," *Proceedings*, May 1995, pp. 35-39; Office of Force Transformation (OFT), "Military Transformation: A Strategic Approach," Fall 2003, pp. 32-34; OFT, "Network-Centric Warfare: Creating a Decisive Warfighting Advantage," Winter 2003.

¹⁵ Joint Publication 3-13, *Information Operations*, February 13, 2006, pp. iii, I-6. The November 2012 update of Joint Publication 3-13 defines information operations as endeavoring to "influence, corrupt, or usurp the decision making of adversaries and potential adversaries while protecting our own" (p. iii).

[REDACTED]

By comparison, authoritative Chinese military theorists such as Yuan Wenxian argue that the PLA's concept of joint "informationized operations" reflects a comprehensive approach to the information domain with special Chinese military characteristics. It captures the "essential characteristics and working patterns of the informationized war."¹⁷ Although there is no equivalent U.S. term, Yuan has suggested that the Chinese concept is closest to the American notions of "network centric warfare" and "rapid decisive operations."¹⁸ But neither of these concepts have endured since 9/11 within any of the U.S. military services, and the lack of a shared lexicon points to the difficulties of appreciating just how different Chinese thinking about information operations is from the prevalent thinking in the U.S. military. By way of underscoring how different and more holistic the Chinese approach appears to be, the counter-intervention campaign is a major PLA mission area in the information confrontation and could include both anti-access/area-denial (A2/AD) efforts as well as attacks on the U.S. homeland.

The gap between U.S. and Chinese approaches to informationized operations constitutes a growing asymmetry between the American and PLA militaries. Both competitors judge China to be technically inferior to the United States in ISR and C4 for the time being. After all, the U.S. military has been developing extended-range precision strike for over two decades and has accumulated extensive experience in executing reconnaissance strike under combat conditions. But PLA leaders are clearly striving to catch up. Chinese theorists now see information as providing the "bonding action" that coagulates various combat units and weapon systems into a whole—a single, unified "operational body." Without this bonding action military systems and forces lose their cohesion and effectiveness.¹⁹ And while the U.S. military views information operations primarily in terms of tactical advantage, the Chinese are seeking operational-level effects.

To what extent will the PLA be likely to achieve its goal of building an informationized military able to win high-tech local wars under informationized conditions involving the U.S. military in the years ahead? Tracking the realism of PLA experimentation, exercises, and combat training should provide a significant

[REDACTED]

¹⁷ Yuan, *Lectures on Joint Campaign Information*, p. 4.

¹⁸ Yuan, *Lectures on Joint Campaign Information Operations*, p. 4.

¹⁹ Yuan, *Lectures on Joint Campaign Information Operations*, p. 2.

part of the answer. Within the narrower confines of the U.S. conception of C4ISR, senior American officers who have considered this question suggest that the Chinese might be able to compete effectively against the United States in this growing area of military competition within a decade—assuming that the American military continues to spurn a more integrated, comprehensive, system-of-systems approach to the role of information in future warfare. Recent revelations about the PLA’s ability to steal intellectual property from American companies and gain access to classified information on U.S. military systems tend to support this judgment. The list of Defense Department system designs and military technologies already compromised by Chinese hackers is a long one.²⁰

The more fundamental issue, however, is whether the U.S. military will develop the operational concepts and make the organizational changes needed to cope with the challenge of PLA informationized operations. At present, only one of the services, the U.S. Navy, appears to be waking up to this dawning challenge. As Chief of Naval Operations (CNO) Admiral Jonathan Greenert observed in 2012, to seize the high ground in what a recent CNO Strategic Studies Group termed “electromagnetic maneuver warfare,” “we need to fundamentally change our approach to operations and warfare.”²¹ How willing DoD and service cultures may be to embrace such fundamental change remains to be seen. [REDACTED]

[REDACTED]

[REDACTED]

■ For a partial list, see Ellen Nakshima, “Key U.S. Weapon Designs Hacked,” *The Washington Post*, May 28, 2013, p. A4. See also “APT1 Exposing One of China’s Cyber Espionage Units,” *Mandiant*, 2013, available at http://intelreport.mandiant.com/?gclid=CN-hsv_uxbgCFU7NOgodx2MApQ, accessed July 23, 2013; Mike McConnell, Michael Chertoff and William Lynn, “China’s Cyber Thievery Is National Policy—And Must Be Challenged,” *The Wall Street Journal*, January 27, 2012, available at <http://online.wsj.com/article/SB10001424052970203718504577178832338032176.html>, accessed August 16, 2013; and Timothy L. Thomas, *Three Faces of the Cyber Dragon: Cyber Peace Activist, Spook, Hacker* (Fort Leavenworth, KS: Foreign Military Studies Office, 2012), pp. 93-123.

²¹ Admiral Jonathan W. Greenert, “Imminent Domain,” *Proceedings*, December 2012, Vol. 138, No. 12, p. 21; and Strategic Studies Group XXXI, “EM Maneuver Warfare,” January 2013, FOUO.

2. THE SOVIET APPROACH TO C3 REVISITED

In the West, command and control is generally viewed as a bottom-up process. This is because of the high value placed on human life, a strong belief in the fog of war, and without a scientific determinist view of the objective laws of war to create a prescriptive basis for victory. Lower level commanders are well trained, provided with resources, and expected to use initiative to achieve tactical level success, which in turn enables operational success, and eventually strategic success. This is the exact opposite of the Soviet philosophy [in which operations are formulated and executed from the top down and focused on achieving strategic success].

[REDACTED]

[REDACTED]

The primary weakness [REDACTED] was the American lack of a comprehensive framework—including performance metrics—for comparing U.S. and Soviet C3 capabilities. By and large, U.S. thinking about C3 has focused on tactical decisions and the technologies to support those decisions. Neither in the late 1970s nor today can one find theoretical works by American military practitioners or theorists on C3 comparable to Soviet-era works such as *Osnovy upravleniya voyskami v boyu* [*Fundamentals of Controlling Troops in Combat*].²³ [REDACTED]

[REDACTED]

[REDACTED]

²³ D. A. Ivanov, V. P. Savel'yev, and P. V. Shermanskiy, *Osnovy upravleniya voyskami v boyu* (Moscow: 1972). This book was translated by the U.S. Air Force and published in 1977 by the U.S. Government Printing Office as *Fundamentals of Tactical Command and Control: A Soviet View*.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

During the Cold War, Soviet efforts to protect strategic and theater C3 included extensive hardening of fixed C3 facilities, the provision of airborne command posts, the use of satellite communications and ground-mobile communications units, and emphasis on communications security. But Soviet doctrine and planning did not neglect counter-C3. Especially in Europe, the Soviets planned to attack NATO C3 at every level down to battalions. To this end, Soviet “radio-electronic combat” (REC) doctrine envisioned “the total integration of electronic warfare and physical destruction . . . to deny an enemy the use of his electronic control systems and, concurrently, to protect friendly electronic control systems from enemy disruption.”²⁶ In the early 1980s, the U.S. assessment was that be-

[REDACTED]

[REDACTED]

²⁶ Lt. Col. D. B. Lawrence, “Soviet Radioelectronic Combat,” *Air Force Magazine*, March 1982, at <http://www.airforcemag.com/MagazineArchive/Pages/1982/March%201982/0382radioelectron ic.aspx>, accessed August 9, 2013.

tween jamming and suppressive fires, the Soviets aspired, in the event of a NATO-WP conflict, to disrupt or destroy fifty percent of NATO's C3.²⁷ Locating NATO C3 facilities during wartime was a priority, and the Soviets planned to make extensive use of communications intercepts and direction finding to pinpoint REC targets. Indeed, there was evidence in 1978 that the size of Soviet mortar shells was based to some degree on the accuracy of the direction-finding equipment their ground units carried. In sum, the Soviets had concluded that troop-control processes, which were fundamentally about information, would be decisive in future wars.

Right to the Cold War's end, U.S. views of C3 and counter-C3 (C-C3) were strikingly different from those of the Soviets:

[REDACTED]

The asymmetry between the U.S. and Soviet militaries seemed especially acute in the area of counter-C3:

[REDACTED]

[REDACTED]

[REDACTED]

²⁷ Lawrence, "Soviet Radioelectronic Combat."

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Harold Brown did direct the Defense Department to pay more attention to C3 and counter-C3. And, starting in 1977, there was a surge in C3 research to promote more and improved C3 research and analytical capabilities. These efforts included a number of Defense Science Board C3 studies that were completed during 1977-1985. But subsequently U.S. interest in developing a more holistic, integrated approach to C3 and its information-era offspring appears to have waned. Today, all indications are that U.S. position regarding the information dimension of warfare vis-à-vis the Chinese is little changed from the U.S. position vis-à-vis Soviet troop control in the late 1970s.

[REDACTED]

3. CHINESE STRATEGIC CULTURE AND STRATEGY

Chinese literature on strategy from Sun Tzu through Mao Tse-tung has emphasized deception more than many other military doctrines.

— Lucian Pye and Nathan Leites, 1970³²

Chinese thought is way out of our rut, for it never constructed a world of ideal forms, archetypes, or pure essences that are separate from reality but inform it. It regards the whole of reality as a regulated and continuous process that stems purely from the interaction of the factors in play (which are at once opposed and complementary: the famous *yin* and *yang*).

Two notions lie at the heart of ancient Chinese strategy, forming a pair: on the one hand, the notion of a *situation* or *configuration* (*xing*), as it develops and takes shape before our eyes (as a relation of forces); on the other hand, and counterbalancing this, the notion of *potential* (*shi*), which is implied by that situation and can be made to play in one's favor.

— François Jullien, 2004³³

Chinese Strategic Culture

In the broadest sense, Chinese strategic culture proceeds from a fundamentally alien view of international relations compared with the view that has prevailed among Western nations since the series of treaties known as the Peace of Westphalia. The Westphalian treaties, which ended the Thirty Years War (1618-1648), recognized the sovereignty of legally co-equal states over their territories and peoples, including the right of each state to determine its own political system. They also accepted the principle that states had no right to intervene in the domestic affairs of others.

The Chinese view of international relations appears to be profoundly at odds with the Westphalian model found in the West. Christopher Ford has provided perhaps the most penetrating analysis of the conceptual divide between Western and Chinese assumptions about the relations between states and nation states.

³² Lucian W. Pye and Nathan Leites, "Nuances in Chinese Political Culture," *RAND*, P-4504, November 1970, p. 1.

³³ François Jullien, *A Treatise on Efficacy: Between Western and Chinese Thinking*, translation Janet Lloyd (Honolulu: University of Hawai'i Press, 2004), pp. 15, 17. Other English translations of 勢 (*shi*) include *tendency*, *power*, *influence*, *momentum* and *propensity*. *Shi* is about achieving a positional advantage that can be exploited now or in the future.

Chinese conceptions of international order are grounded in lessons from China's history, particularly the Warring States period, in which proto-nations struggled for hegemony and at the end of which the Qin (Ch'in) state gradually emerged as victorious. The Chinese tradition has as its primary model for interstate relations a system in which the focus of national policy is, in effect, a struggle for primacy, and legitimate, stable order is possible only when one power reigns supreme—by direct bureaucratic of the Sinic geographical core and by at least tributary relationships with all other participants in the world system. This monist model of world order is not merely a by-product of China's ancient history. Its central assumptions—about the need for political unity, the natural order of all politics as a pyramidal hierarchy, and the fundamental illegitimacy of truly separate and independent sovereign states—are reflected in many aspects of China's classical canon: in Confucian literature, Taoist works, the manuals of war and statecraft known as the *bungjia*. Sinic monism, therefore, enjoys powerful roots in China's intellectual tradition that amplify its centrality as a prism through which all subsequent Chinese leaders have viewed the world and China's place in it.³⁴

Intertwined with China's decidedly non-Western view of a stable world order is a distinctly Chinese understanding of the dialectic process by which reality unfolds over time. As with Chinese propensities in international relations, the Chinese dialectic goes back to the Warring States period and bears little resemblance to the thesis-antithesis-synthesis model of Georg Wilhelm Friedrich Hegel and Karl Marx. Kaiping Peng and Richard Nisbett have argued that the Chinese see reality as a process of constant change or flux from one state of being to another. Reality, therefore, is full of contradictions and “exists in the mystical integration of yin and yang, entities that are opposed to one another and yet are also connected in time and space as a whole.”³⁵ Thus, the Chinese cultural response to contradictions is to think that contradictory perspectives may each contain an element of truth, even at the risk of tolerating outright contradiction.³⁶

The resulting cultural mode of thought is very different from Western approaches to contradictory statements. Rooted in the Aristotelian principle of the excluded middle (symbolically **P** or **not-P**), the Western propensity is to try to decide whether **P** or **not-P** is true and reject the other. Whereas the Chinese pro-

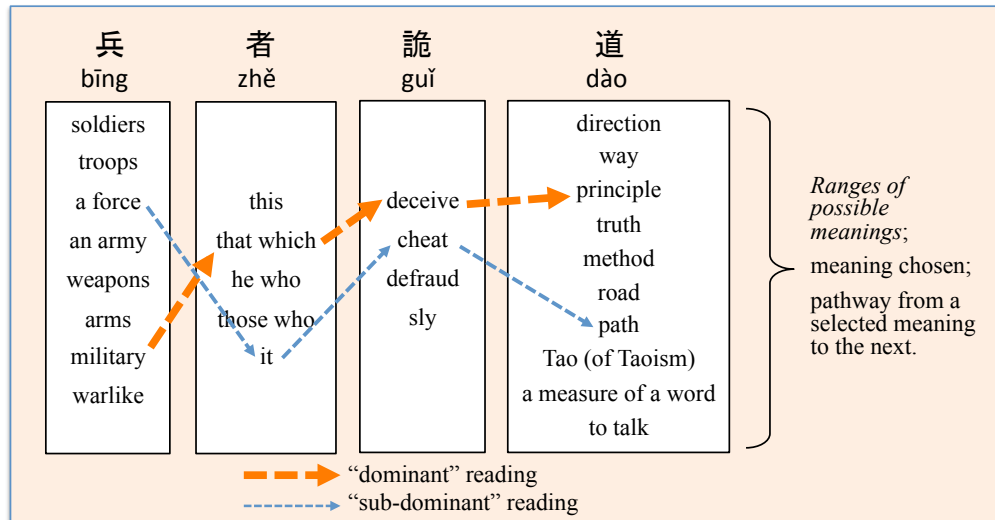
³⁴ Christopher A. Ford, *The Mind of Empire: China's History and Modern Foreign Relations* (Lexington: University Press of Kentucky, 2010), p. 4.

³⁵ Kaiping Peng and Richard Nisbett, “Culture, Dialectics, and Reasoning about Contradiction,” *American Psychologist*, September 1999, p. 743.

³⁶ Peng and Nisbett, “Culture, Dialectics, and Reasoning about Contradiction,” p. 741.

propensity is to embrace contradictions as being fundamental to reality, the Western propensity is to avoid and eliminate contradictions.

Figure 1: Murawiec's Interpretation of 兵者詭道



The ambiguity inherent in embracing contradictions has echoes in the Chinese language. In 2004 Laurent Murawiec set out to explain the following “double puzzlement.” On the one hand, from its first encounter with the West in 1842, when British troops pushed opium down the throats of a prostrate nation in the Treaty of Nanjing, China has lost all its wars; on the other hand, “an aura of invincibility” still seems to adorn China’s strategic reputation.³⁷ Early in his report Murawiec suggested that part of the reason for China’s strategic reputation stems from the inherent ambiguity of the Chinese language, which has encouraged Western observers to give rather grandiose translations of the military wisdom found in the writings of ancient Chinese strategists such as Sun Tzu (or, in Pinyin, Sun Zi). For example, the opening chapter of Sun Zi’s *The Art of War* contains the famous aphorism “兵者詭道也.” These characters are usually rendered into English as “All warfare is based on deception.”³⁸ But the inherent ambiguity of Mandarin allows Chinese speakers to interpret it in a number of different ways. Dropping the final character 也, which simply reflects strong affirmation, Murawiec diagrammed the multiple meanings of Sun Zi’s famous aphorism.³⁹

³⁷ Laurent Murawiec, *Vulnerabilities in the Chinese Way of War* (Washington, DC: Hudson Institute, 2004), p. 3. This study was done for ONA.

³⁸ For a concise overview of Sun Zi’s teachings in *The Art of War*, see Blasko, *The Chinese Army Today*, pp. 116-119.

³⁹ Murawiec, *Vulnerabilities in the Chinese Way of War*, p. 13.

Not only is “兵者詭道也” open to a far wider range of meanings than are most statements in English (or other Western languages), but a literal translation of the ancient Chinese is far less impressive than the usual rendering by Western scholars such as Samuel B. Griffith.⁴⁰ As Murawiec emphasizes, the Chinese reader does not literally read “兵者詭道也” as “All warfare is based on deception.”⁴¹ Neither “all” nor “is based on” is in the Mandarin. A more literal rendering of the dominant path in Murawiec’s diagram would be: The way of a soldier is deception.⁴² This reading implies that warfare is based on deception but does not explicitly say that.

Moreover, the Chinese infatuation with deception appears to be uniquely Chinese. As Pye and Leites observed in 1970:

Chinese deception is oriented toward inducing the enemy to act inexpediently and less toward protecting the integrity of one’s own plans. In other cultures, particularly Western, deception is used primarily with the intention of ensuring that one’s own forces can realize their maximum striking potential; one masks one’s intentions so as to make them more effective, but the payoff continues to depend upon one’s own capabilities. On the other hand, the prevalent payoff of deception for the Chinese is that one does not have to use one’s own forces. . . . Chinese deception is oriented to the failure of the enemy; Western deception is oriented to the success of the self.⁴³

To draw the clear implication of Pye and Leites’ observations, Chinese strategic culture is deeply alien from an American or European perspective. Despite the modernizations that have produced China’s astonishing economic rise over the last three decades, elements of Confucian emphasis on family over the state, on morality over materialism, and on ritual over reward persist in Chinese strategic culture. Shame stemming from China’s humiliations at the hands of Western power also persists as a significant strand in China’s view of its place in the world. The persistence of these strands in Chinese culture, in turn, lead to distinctly non-Western strategies.

⁴⁰ Samuel B. Griffith (trans. and intro.), *The Art of War* (New York and Oxford: Oxford University Press, 1963), p. 66.

⁴¹ Murawiec, *Vulnerabilities in the Chinese Way of War*, p. 16.

⁴² Kamilla Gunzinger, email to Barry Watts, August 7, 2013.

⁴³ Pye and Leites, “Nuances in Chinese Political Culture,” p. 2.

Chinese Security Strategy

Today, Beijing appears to be pursuing an overall grand strategy that has two main tiers. The upper-tier, peacetime component is a contemporary “Warring States” strategy that seeks “to prevent encirclement of China while encircling prospective enemies, with the aim of creating a disposition of power so favorable to the PRC that it will not actually have to use military force to secure its interests.”⁴⁴ The PLA’s build-up of DongFeng-15 (CSS-6) and DongFeng-11 (CSS-7) short-range ballistic missiles (SRBMs) opposite Taiwan offers a concrete manifestation of this approach. In 1995 and 1996, China fired DF-15 missiles that landed in the seas near Taiwan to convey displeasure with Taiwan’s president and, more broadly, to deter the Taiwanese from pursuing independence. These demonstration firings are now judged to have been “a largely successful instance of coercive diplomacy by Beijing.”⁴⁵ Their success also illustrates the upper-tier of China’s grand strategy: winning without fighting.

The lower-tier component addresses the possibility that China might one day have to use force to secure its interests. The desired approach seems to concentrate increasingly on strikes against the “vital points” or weaknesses of the enemy’s information and support systems in hopes of paralyzing and collapsing the opponent in a single, stunning blow. The underlying goal is to develop plans, stratagems, and tactics that will enable the PLA to “win victory before the first battle.”⁴⁶ One manifestation of this strategy is the ongoing interest of the PLA theorists in developing “secret weapons that strike the enemy’s most vulnerable point (called an acupuncture point), at precisely the decisive moment.”⁴⁷ But the PLA appears increasingly inclined to see winning before the first battle as hinging on information.

The upper tier of Chinese grand strategy, as Jacqueline Newmyer has argued, is served directly by arms transfers and entangling commercial agreements aimed at constructing a network of friendly or dependent states that help to render Beijing’s interests unassailable because its opponents will be hard-pressed to envision a successful military campaign against China that they could win at an

⁴⁴ Newmyer, “Oil, Arms, and Influence,” p. 207.

⁴⁵ Andrew Sobell, “Show of Force: The PLA and the 1995-1996 Taiwan Strait Crisis,” January 1999, p. 15, available at <http://iis-db.stanford.edu/pubs/10091/scobell.pdf>, accessed August 20, 2013. Six DF-15s were fired in 1995 and four more in 1996.

⁴⁶ Thomas, *Three Faces of the Cyber Dragon*, pp. xiv, 66, 73, 89, 117, 119.

⁴⁷ Pillsbury, *China Debates the Future Security Environment*, pp. xviii, 297, 299; and Thomas, *Three Faces of the Cyber Dragon*, pp. 223-235.

acceptable cost.⁴⁸ In peacetime, China's upper-tier priorities are to develop science, technology, the economy, and Comprehensive National Power (CNP) in order to gain a superior strategic position.⁴⁹ Both tiers are served by developing counter-intervention capabilities that include A2/AD systems such as the DongFeng DF-21D anti-ship ballistic missile (ASBM), survivable nuclear forces, and, above all else, the wherewithal to dominate the information confrontation that would occur should China have to fight a high-tech local war under informationized conditions.⁵⁰

In 2004, Murawiec was highly skeptical about the lower-tier of the PRC's strategy:

For the PLA, "American . . . [weapon systems] are sheer science fiction." When the PLA talks of "limited war under modern conditions of high-technology," it is conjuring up a name and sticking a label on one empty bag: it is an exercise in exorcism. "Confronted with an avalanche of [American military] technology, the PLA brings up rhetoric" and permanently seeks silver bullets—"silver bullets with Chinese colors, under modern high-tech conditions," whether it is some fancy and imaginary version of information warfare or "unrestricted warfare" or others. The reality of China's strategy is not there. ". . . [T]he PRC tries to 'win without fighting,' . . . Just as in Sun Zi's times, the aim of war—or the aim of China's regional strategy—is not to 'destroy the enemy' but to 'convince' him."

China will play to its own strengths, of which its psycho-political manipulation, mind games, and actions at a distance are the most honed. She will inevitably overestimate their efficacy, and overextend . . . [herself] on that count. She will believe in the "silver bullet" and expend considerable energy at finding it and deploying it, elusive though it may be. She will try to avoid the terrain of her weakness, technology and actual warfighting.⁵¹

From the standpoint of military theory, the Chinese are surely right to focus on the growing role of information in modern warfare. Like the Soviets during the Cold War, they may be better theorists than Americans. But Murawiec's critique is about practical application, and the PRC's lack of either battlefield success against Western nations or recent combat experience against a major adversary cannot help but raise the kinds of doubts Murawiec articulated. The upper tier of China's strategy—the peacetime component—logically demands that China

⁴⁸ Newmyer, "Oil, Arms, and Influence," p. 205.

⁴⁹ Michael Pillsbury (ed.), *Chinese Views of Future War* (Washington, DC: National Defense University Press, 1997), p. 402.

⁵⁰ Pillsbury, *Chinese Views of Future War*, pp. 341-371, 389, 406.

⁵¹ Murawiec, *Vulnerabilities in the Chinese Way of War*, pp. 187-188.

demonstrate its growing military capabilities. Instances include the firings of DongFeng-15 (CSS-6) SRBMs from the 2nd Artillery Force (formerly known as the 2nd Artillery Corps) bases in Fujian into the seas near Taiwan in 1995 and 1996 and the 2007 demonstration of a direct-ascent, kinetic-kill antisatellite capability. Though both instances were unsettling to many Western observers, they made imminent sense in terms of Beijing's overall strategy. On the other hand, China has yet to conduct an end-to-end test of its DongFeng-21D Anti-ship Ballistic Missile (ASBM) against a moving target at sea. Granted, with the world's second largest economy, the PRC is in a much better position to develop real military capabilities than the Soviets were in the 1970s and 1980s. But the last time the PRC attempted a surprising blow against Western forces was Beijing's intervention in the Korean War in late 1950. Based on surprise and deception, that intervention initially succeeded in driving United Nations (UN) forces back to roughly the 38th Parallel.⁵² But even with additional forces, the PLA's offensive of May 15, 1951, failed to achieve Mao Tse-tung's goal of evicting UN forces from Korea altogether. The U.S. Eighth Army's ensuing counteroffensive turned into a PLA rout, and a balance of forces between the two sides did not occur until well after the pursuit phase of the UN counteroffensive had ended due to the political decision in Washington to seek a negotiated end to the fighting.⁵³ Thus, Mao's strategy in Korea ultimately failed despite the initial success of China's unexpected intervention.

Whether the PRC's contemporary, two-tier "Warring States" strategy will prove more successful in the decades ahead remains to be seen. As a manifestation of ancient Chinese statecraft tailored to the conditions of the early 21st century, it is deeply attractive to China's rulers. Unquestionably its prospects for success are bolstered by such factors as the PLA's prowess in the cyber domain as well as the likelihood that China's gross domestic product (GDP) will surpass the United States' by 2020 or 2021.⁵⁴ Furthermore, PLA theorists are surely right to stress the growing importance of information in both peacetime competition and future high-tech conflicts. But Murawiec is also right to point out that Sun Zi and his intellectual heirs tended to ignore the "unquantifiable and unpredictable" factors that Carl von Clausewitz recognized as the fog, friction, and chaos of war.⁵⁵

⁵² George, *The Chinese Communist Army in Action*, p. 3.

⁵³ George, *The Chinese Communist Army in Action*, pp. 9-11; Matthew B. Ridgeway, *The Korean War* (Garden City, NJ: Doubleday & Company, 1967), pp. 179-183.

⁵⁴ See "How To Gracefully Step Aside," *The Economist*, January 10, 2011, available at <http://www.economist.com/blogs/freeexchange/2011/01/china>, accessed August 9, 2013. This online tool allows one to project U.S. and PRC GDP out to 2026 based on choices of growth rates, inflation, and Yuan appreciation.

⁵⁵ Murawiec, *Vulnerabilities in the Chinese Way of War*, p. 183.

Contrary to the inclination of ancient Chinese statecraft, it is not possible to predict strategic outcomes, either of peacetime military competitions or of actual conflicts. To cite two historical cases, consider the strategic outcomes of the U.S.-Soviet Cold War and the American endeavor in Iraq from 2003 to 2011. The thrust and direction of China's two-tier "Warring States" strategy seems relatively clear. How it will pan out in the long run will depend on many factors and contingencies, starting with how the United States chooses to respond to the challenges of PRC strategy and military modernization.

Given the alien nature of Chinese strategic culture to Western observers, the possibility of actual war between China and the United States occurring through misunderstanding or miscalculation cannot be dismissed. As Michael Pillsbury pointed out in 1996, for Beijing there are many potential ways in which Chinese leaders could misjudge U.S. intentions and actions in a crisis. Chinese leaders might overestimate U.S. hostility to China, U.S. military weakness, or the future rate of U.S. decline; they might also underestimate the costs and risks of a future war or the reactions of third countries to China's use of force.⁵⁶ Nor are American leaders immune from similar misjudgments. Chinese sensitivity over Taiwan and its past humiliations at the hands of Western colonial powers are difficult for Westphalian states to fully appreciate, and the demarcation between peace and war seems to be sharper in American than in Chinese minds. Again, the Chinese see security as arising from exploiting the propensities of the international security environment over time whereas the American use of words like "crisis" and even "war" are tacitly understood to "refer to bounded incidents that tend to be separated analytically from the complex of factors that precede and follow."⁵⁷

Should the peacetime competition between the United States and China one day lead to actual fighting, the outcome is likely to hinge on which side achieves the control over information. Starting in 2011 the U.S. Air Force and Navy signed a memorandum of understanding to begin exploring the joint concept of AirSea Battle as a way of dealing with the PLA's growing A2/AD capabilities in the western Pacific.⁵⁸

⁵⁶ Michael Pillsbury, "Dangerous Chinese Misperceptions: Implications for DoD," paper for ONA, 1996, pp. 6-7.

⁵⁷ Newmyer, "Oil, Arms, and Influence," p. 213.

⁵⁸ See Jan van Tol with Mark Gunzinger, Andrew Krepinevich and Jim Thomas, *AirSea Battle: A Point-of-Departure Operational Concept* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010); "Military Strategy: The China Syndrome," *The Economist*, June 9th 2012, pp. 34, 36; and Air-Sea Battle Office, "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges," May 2013, available at <http://navylive.dodlive.mil/files/2013/06/ASB-ConceptImplementation-Summary-May-2013.pdf>, accessed August 9, 2013.

[REDACTED]

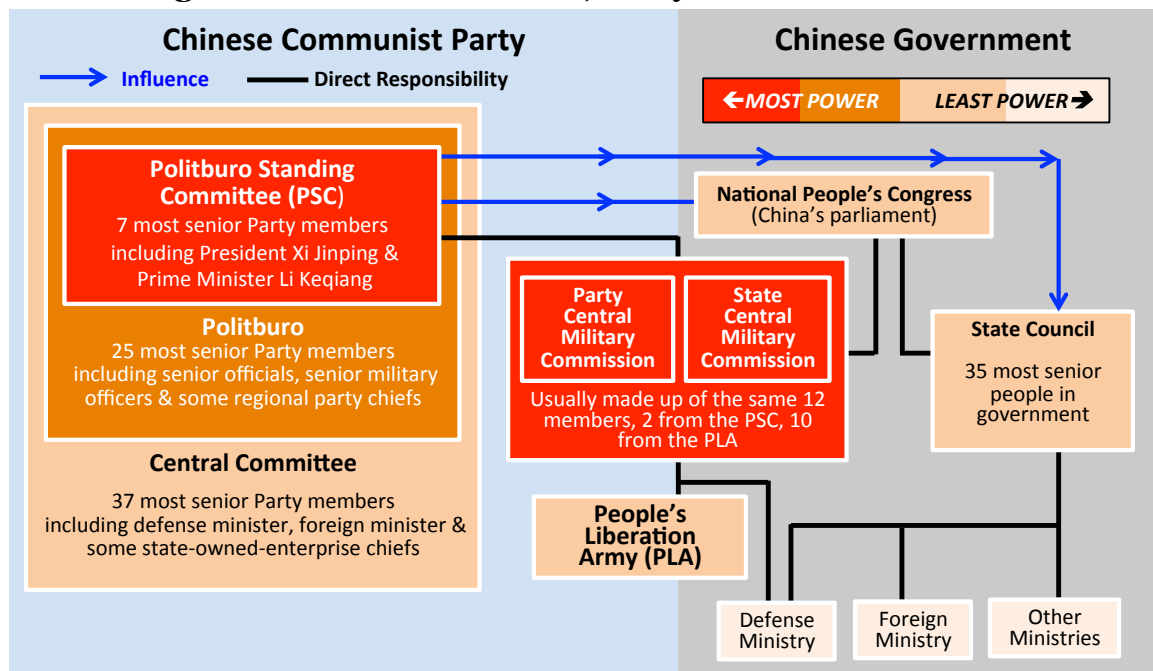
PLA strategists also see the information confrontation as the key to the outcomes of future conflicts. But PLA success will require a degree of jointness, battle readiness, and real-world operational capabilities that the PLA has yet to demonstrate against a major adversary.

[REDACTED]

4. CHINESE ORGANIZATION FOR INTEGRATED NETWORK ELECTRONIC WARFARE (INEW)

What organizations within the PRC’s military establishment appear to be most directly involved in PLA efforts to win high-tech local wars under informationized conditions? This question often leads to discussion of organizations such as the 3rd and 4th Departments within the PLA’s General Staff Department. Exactly where these entities may fit in China’s overall political and military structure and the roles they may play in information warfare are rarely explained in much detail. This section provides an overview of Chinese organizational arrangements pertinent to the PLA’s efforts to master informationized operations.

Figure 2: PRC Government, Party and PLA Relations⁶⁰



In the early 1950s the Soviets convinced the Chinese to establish a ministry of defense. The Chinese did so in 1954, but it never acquired the same authority over the military as defense ministries or departments in Russia, the United States or most other countries.⁶¹ Rather than being under the PRC’s Ministry of Defense, command authority over the PLA is the purview of the Party/State Central Military Commission (CMC), ten of whose 12 members are senior PLA officers. Moreover, the PLA itself “enjoys the same rank as China’s State Council, or

⁶⁰ “The Nomenklatura: Vertical Meets Horizontal,” *The Economist*, December 1, 2012, p. 50.

⁶¹ Mulvenon and Yang (eds.), *The People’s Liberation Army as Organization: Reference Volume v1.0*, p. 38.

cabinet,” which means that the executive branch of the government cannot issue orders to the PLA.⁶² The same is true of the PRC’s Ministry of Defense. These relationships, which are rooted in the PLA’s history, are shown in Figure 2.

Figure 3: PLA Structure⁶³

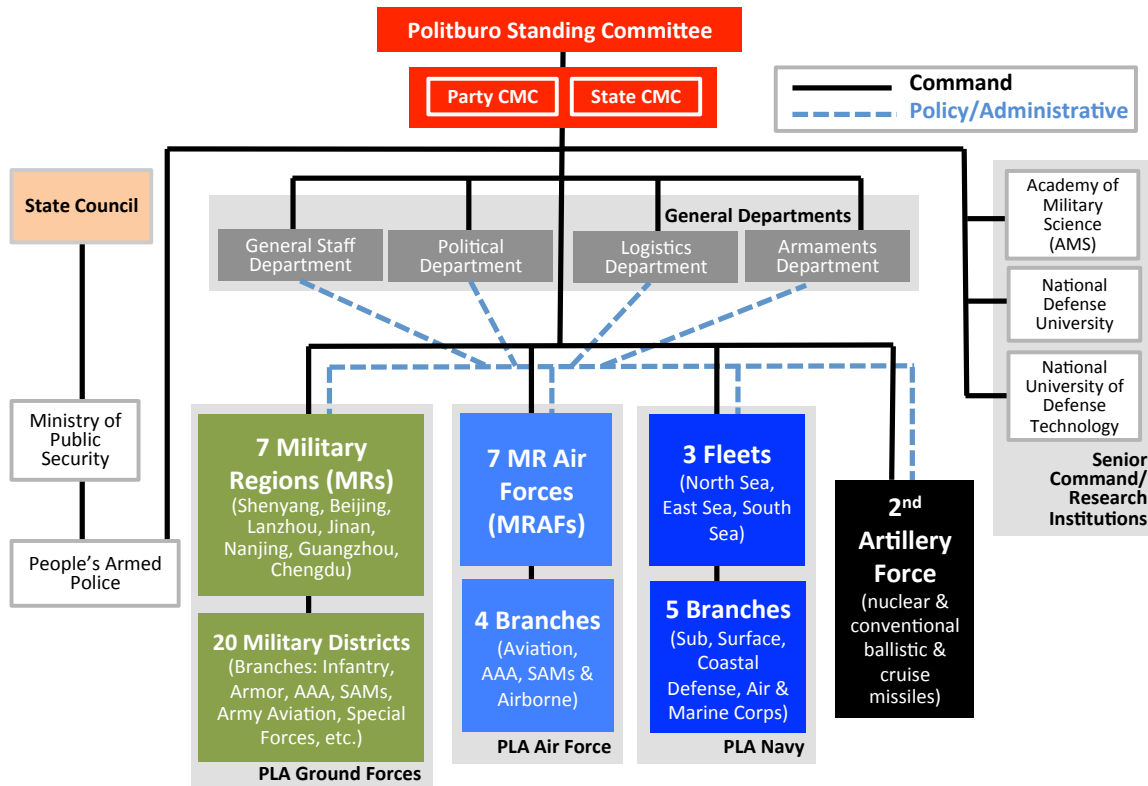


Figure 3 depicts the PLA’s structure in relation to the Politburo Standing Committee and the Central Military Commission. The command relationships shown are those depicted in the Defense Department’s 2011 report to Congress on the PRC’s military and security developments. The 2nd Artillery Force, which operates the PRC’s nuclear and conventional missile forces, is not considered a military service, as are the PLA Navy (PLAN) and the PLA Air Force (PLAAF). Instead 2nd Artillery is considered an “independent force.”⁶⁴

⁶² “The Nomenklatura: Vertical Meets Horizontal,” *The Economist*, p. 50.

⁶³ Office of the Secretary of Defense (OSD), *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China, 2011* (Washington, DC: Department of Defense, 2011), p. 11. Larry Wortzel and Roger Cliff provided comments and insights that refined Figure 3.

⁶⁴ Roger Cliff, John Fei, Jeff Hagen, Elizabeth Hague, Eric Heginbotham and John Stillion, *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century* (Santa Monica, CA: RAND, 2011), p. 14.

Figure 3 indicates that while the four general departments do not have command authority over the seven Military Regions (MRs), the PLAN, PLAAF and the 2nd Artillery Force, they can and do set policies that affect China’s military forces. Note too that the PLAAF, PLAN and the 2nd Artillery Force have headquarters. In the case of the PLA’s ground forces, the four general departments “act as the national-level headquarters for the army, and function as a joint staff for all the Chinese armed forces.”⁶⁵ Also obscured in Figure 3 is the complication that “most” PLA Army units are under the direct command of the Military Region headquarters; those that are under the military districts are mainly garrison or reserve units, not active duty maneuver units.⁶⁶

Figure 4: The PLA’s General Staff Department⁶⁷

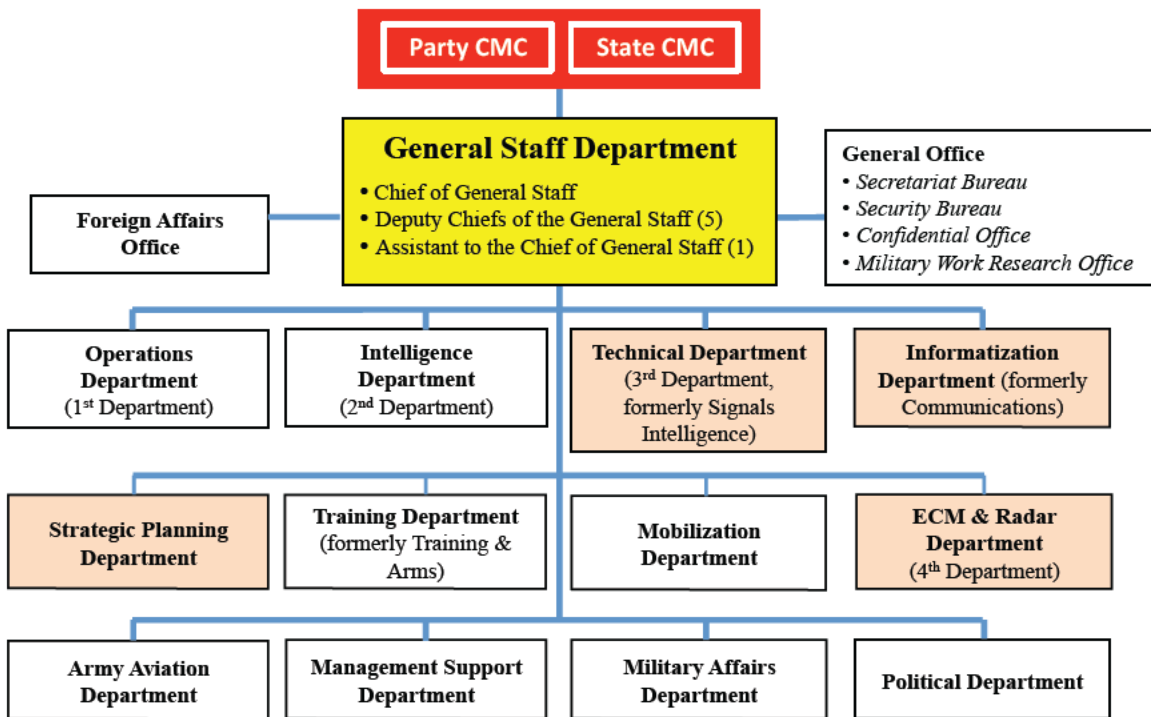


Figure 4 reveals that the General Staff Department (GSD) is an especially powerful organization within the PLA. "The General Staff Department is responsible for operations, intelligence, electronic warfare, communications/informationization, military affairs, training, professional education, mobilization, meteorological and cartographic functions, and foreign affairs for the en-

⁶⁵ Blasko, *The Chinese Army Today*, p. 33.

⁶⁶ Roger Cliff, email, August 18, 2013.

⁶⁷ Mark A. Stokes and Ian Easton, “The Chinese People’s Liberation Army General Staff: Evolving Organization and Missions,” unpublished draft as of November 26, 2012, p. 6.

ture PLA.”⁶⁸ However, insight into the structure and functioning of GSD is limited. The Chinese defense establishment has not been as transparent about the command relationships and functions of its military organizations as the Department of Defense has been. In particular, the Chinese do not consider detailed information about the General Staff Department “suitable for public consumption.”⁶⁹

With this caveat in mind, the GSD’s current structure appears to confirm the PLA’s stated emphasis on building a modern, informationized military. Among other recent organizational changes, the former Communications Department has become the Informatization Department and the former Signals Intelligence Department is now the Technical Department. According to Mark Stokes and Ian Easton, the Informatization Department “is responsible for developing, constructing, operating, and maintaining the PLA’s nation-wide command, control, communications, computers, and intelligence (C4ISR) system.”⁷⁰ The Technical Department (also known as the 3rd Department) “oversees a vast infrastructure for monitoring communications traffic from collection sites inside China, possibly from embassies and other facilities abroad, and perhaps from space based assets in the future.”⁷¹ Stokes and Easton suggest that it is roughly comparable to the United States’ National Security Agency. The GSD’s Electronic Countermeasures and Radar Department (also known as the 4th Department) “is responsible for radar-related joint operational requirements development and electronic countermeasures (ECM).”⁷² Its priorities appear to include satellite jamming, counter-stealth radar systems and disrupting adversary communications, navigation, synthetic aperture radar, and other satellites. The Strategic Planning Department is also a new addition to the GSD, having been created in 2011. Timothy Thomas believes that it “signifies a serious PLA effort to envelop traditional and cyber-related war fighting capabilities, plans, and policies into a unified effort.”⁷³ A unified PLA effort to win the information confrontation in any future high-tech local war under informationized conditions against a superior foe would involve integrating the activities of the GSD’s Strategic Planning Department, the 3rd and 4th Departments, and the Informatization Department.

⁶⁸ Blasko, *The Chinese Army Today*, pp. 33-34.

⁶⁹ David Finklestein in Mulvenon and Andrew Yang (eds.), *The People’s Liberation Army as Organization: Reference Volume v1.0*, p. 122.

⁷⁰ Stokes and Easton, “The Chinese People’s Liberation Army General Staff,” p. 19.

⁷¹ Stokes and Easton, “The Chinese People’s Liberation Army General Staff,” p. 15.

⁷² Stokes and Easton, “The Chinese People’s Liberation Army General Staff,” p. 26.

⁷³ Thomas, *Three Faces of the Cyber Dragon*, p. 73.

How much progress the PLA has made toward achieving such integration is difficult to assess because there is so little detailed information on these organizations. But the recent changes in the GSD's structure certainly suggest that the PLA is making organizational adjustments aimed at integrating C4, ISR, ELINT, SIGINT, ECM, cyber, etc. into an organic whole. An unmistakable goal of the PLA's ongoing modernization is to develop a robust capability for "integrated network electronic warfare (INEW)" tailored to exploiting U.S. weaknesses and vulnerabilities.

Presumably the wartime use of the GSD elements most directly involved in INEW would be orchestrated by the GSD's Operations Department (also known as the 1st Department in terms of protocol order). This department "is responsible for current military operations, including management of the PLA's Joint Operations Command Center [in the Xishan suburb of western Beijing], airspace surveillance and air traffic control (ATC), border defense, and survey and mapping, hydrological, and meteorological support to current operations."⁷⁴ Its American counterpart is usually considered to be the U.S. Joint Staff J-3, and is manned by officers from all the PLA's services.

These, then, are some of the key PLA organizations that would be involved in any Chinese effort to defeat a major adversary in the information confrontation of a future conflict. Again, the Chinese currently assess themselves to be technically inferior to the United States in the information realm. But the PLA is working hard to catch up and, in the long run, appears to have the resources to narrow the gap over the next decade—particularly if the U.S. military fails to take a more integrated, operational-level approach to INEW.

⁷⁴ Stokes and Easton, "The Chinese People's Liberation Army General Staff," p. 9.

5. Chinese Writings on Informationized Operations

Over the years, the PLA has been proactively and steadily pushing forward its reforms in line with the requirements of performing its missions and tasks, and building an informationized military. The PLA has intensified the strategic administration of the Central Military Commission (CMC). It established the PLA Department of Strategic Planning, reorganized the GSH (Headquarters of the General Staff) Communications Department as the GSH Informationization Department, and the GSH Training and Arms Department as the GSH Training Department. The PLA is engaged in the building of new types of combat forces. It optimizes the size and structure of the various services and arms, reforms the organization of the troops so as to make operational forces lean, joint, multi-functional and efficient. The PLA works to improve the training mechanism for military personnel of a new type, adjust policies and rules regarding military human resources and logistics, and strengthen the development of new- and high-technology weaponry and equipment to build a modern military force structure with Chinese characteristics.

— PRC White Paper, 2013⁷⁵

The Chinese literature on high-tech local wars under informationized conditions against a major opponent is voluminous. The material presented in this section is intended to convey the evolution of PLA thinking about this dimension of warfare since the late 1990s.

Doctrinal Debates and Prescriptive Planning

From the mid-1980s until the 1995-1996 Taiwan Crisis, the school of PLA theorists Pillsbury has labeled “Local War Advocates” argued that the PRC only needed military capabilities sufficient to defend itself in conflicts near China’s borders against lesser powers; Local War proponents did not envision taking on a superpower.⁷⁶ By the time PLA Senior Colonels Qiao Liang and Wang Xiansui published *Unrestricted Warfare* in February 1999, doctrinal debate over the proper direction for PLA modernization involved two other schools of thought: People’s War Advocates, who endorsed “active defense” and opposed troops cuts or purchasing foreign weapons systems; and RMA Advocates, who wanted to

⁷⁵ Information Office of the State Council, PRC, “The Diversified Employment of China’s Armed Forces,” April 2013, Section II, available at <http://eng.mod.gov.cn/Database/WhitePapers/index.htm>, accessed August 13, 2013.

⁷⁶ Michael Pillsbury, “China’s Military Strategy toward the U.S.: A View from Open Sources,” November 2, 2001, p. 5, available at <http://e-asia.uoregon.edu/node/2871>, accessed August 18, 2013.

leapfrog the United States over the next two decades by investing in exotic military technologies (“Assassin’s Mace⁷⁷” or “trump card” weapons), new doctrines and new organizations.⁷⁸ Qiao and Wang unquestionably fell into the RMA camp, and the recent organizational changes in the General Staff Department, coupled with concepts such as “The Inferior Defeats the Superior” and “Win the War before the First Battle,” argue that the debate in the late 1990s and early 2000s about the proper course for PLA modernization has been largely won by the RMA advocates. In hindsight, the contingency that may have tipped the scale in favor of the RMA advocates was the possibility of needing to use force to prevent Taiwan, backed by the American military, from moving toward independence from Beijing.

PLA open-source writings since the late 1990s have increasingly suggested that the top-level, overarching goal of China’s military modernization is to win the information confrontation against a major power. In this regard, Assassin’s Mace weapons now appear to be merely one possibility among many that the PLA could pursue in order to prevail in the information dimension of future conflicts. Even more important may be the continuing refinement of detailed plans that integrate all the means available to the PRC including deception and stratagems. A major task of the General Staff Department is to refine plans for a wide range of contingencies. Like the Soviets, who believed that there was an optimal solution to any situation, Chinese prescriptive war planning assumes there is a “perfect” plan for any situation.⁷⁹ Hence planning is a constant, ongoing enterprise for the GSD. The continuing search for plans and capabilities so optimal that, if war could not be deterred, they would enable the PRC to win the war before the first battle constitutes an important element of the strategic culture and context with-

⁷⁷ Alastair Iain Johnston contends that Assassin’s Mace and trump card weapons “don’t necessarily literally mean a secret, high-tech piece of weaponry,” but is a metaphor for “everything that gives China advantage at a critical time and place in wartime, and that gives China credible deterrence in peacetime” (cited in Blasko, *The Chinese Army Today*, p. 129).

⁷⁸ Michael Pillsbury, “China’s Military Strategy toward the U.S.,” pp. 4-5. For more on the PLA’s doctrinal debate after NATO’s air campaign against Serbia, see June Teufel Dreyer, *The PLA and the Kosovo Conflict* (Carlisle, PA: U.S. Army Strategic Studies Institute, 2000), pp. 5-17.

⁷⁹ [REDACTED] Striving for such perfection is especially critical when opposing a technically superior enemy such as the United States. This view, which arguably goes back to Sun Zi, flies in the face of the Western belief that even the best plans rarely survive first contact with the enemy. Nonetheless, PLA theorists insist that there are discernible rules to victory. A good example of the Chinese capacity to adhere simultaneously to contradictory positions can be seen in Qiao Liang and Wang Xiansui’s *Unrestricted Warfare*. On the one hand, the book argues that there is no formula or perfect method for achieving victory in war; at the same time, however, it insists that the “side-principle” is a rule for victory. Qiao Liang and Wang Xiansui, Foreign Broadcast Information Service translation, *Unrestricted Warfare* (Beijing: PLA Literature and Arts Publishing House, February 1999), pp. 170-173, 216.

in which evolving PLA views on informationized operations and warfare should be understood.

Unrestricted Warfare

The thrust of Qiao and Wang's *Unrestricted Warfare* is that "war itself has . . . changed."⁸⁰ The "new principles of war are no longer 'using armed force to compel the enemy to submit to one's will,' but rather are 'using all means, including armed force or non-armed force, military and non-military, and lethal and non-lethal means to compel the enemy to accept one's interests.'"⁸¹ What are some of the non-armed force, non-military, non-lethal means Qiao and Wang have in mind?

Supposing a war broke out between two developed nations already possessing full information technology, and relying upon traditional methods of operation, the attacking side would generally employ the modes of great depth, wide front, high strength, and three-dimensionality to launch a campaign assault against the enemy. Their method does not go beyond satellite reconnaissance, electronic countermeasures, large-scale air attacks plus precision attacks, ground outflanking, amphibious landings, air drops behind enemy lines[, etc.] . . . [T]he result is not that the enemy nation proclaims defeat, but rather one returns with one's own spears and feathers. However, by using the combination method, a completely different scenario and game can occur: if the attacking side secretly musters large amounts of capital without the enemy nation being aware of this at all and launches a sneak attack against its financial markets, then after causing a financial crisis, buries a computer virus and hacker detachment in the opponent's computer system in advance, while at the same time carrying out a network attack against the enemy so that the civilian electricity network, traffic dispatching network, financial transaction network, telephone communications network, and mass media network are completely paralyzed, this will cause the enemy nation to fall into social panic, street riots, and a political crisis. There is finally the forceful bearing down by the army, and military means are utilized in gradual stages until the enemy is forced to sign a dishonorable peace treaty. This admittedly does not attain to the domain spoken of by Sun Zi, wherein "the other army is subdued without fighting." However, it can be considered to be "subduing the other army through clever operations." It is very clear who was superior and who inferior when comparing these two methods of operation.⁸²

⁸⁰ Qiao and Wang, *Unrestricted Warfare*, p. 4.

⁸¹ Qiao and Wang, *Unrestricted Warfare*, p. 7.

⁸² Qiao and Wang, *Unrestricted Warfare*, pp. 145-146.

Obviously the alternative approach described by Qiao and Wang speaks to how an inferior power could exploit information to defeat a superior power.

As Qiao and Wang went on to emphasize, any combination of traditional military methods and the vast panoply of non-traditional ones expands warfare beyond the domains and categories previously embraced by most nations. Terrorism, among other non-traditional means, even expands the prospective belligerents to non-state actors. The same is true of the battlefield itself:

In terms of beyond-limits warfare, there is no longer any distinction between what is or is not the battlefield. Spaces in nature including the ground, the seas, the air, and outer space are battlefields, but social spaces such as the military, politics, economics, culture, and the psyche are also battlefields. And the technological space linking these two great spaces is even more so the battlefield over which all antagonists spare no effort in contending. Warfare can be military, or it can be quasi-military, or it can be non-military. It can use violence, or it can be nonviolent. It can be a confrontation between professional soldiers, or one between newly emerging forces consisting primarily of ordinary people or experts. These characteristics of beyond-limits war are the watershed between it and traditional warfare, as well as the starting line for new types of warfare.⁸³

For Qiao and Wang in 1999, information is simply one technology among many that expands the boundaries of traditional war, thereby opening the door to a far less restricted conception of warfare than has prevailed in the past.⁸⁴ Other PLA theorists, however, would soon be according information a far more central role in high-tech local conflicts. In the meantime, the venue that published *Unrestricted Warfare* and the laudatory reviews it received in official publications suggested that the book enjoyed the support of at least some elements in the PLA's leadership.⁸⁵ Unquestionably *Unrestricted Warfare*'s emphasis on attacking an enemy country's strategic infrastructure using non-kinetic means spoke to the upper tier of the PRC's grand strategy: being able to achieve Chinese interests without fighting by rendering the consequences for the enemy's homeland and society of using military force against China so onerous.

⁸³ Qiao and Wang, *Unrestricted Warfare*, pp. 206-207.

⁸⁴ Qiao and Wang do suggest, however, that with information welding the entire world together into a network, "the loss of control over any one link can be like the proverbial loss of a horseshoe nail which led to the loss of an entire war." Qiao and Wang, *Unrestricted Warfare*, p. 215.

⁸⁵ James D. Perry, "Operation Allied Force: The View from Beijing," *Aerospace Power Journal*, Summer 2000, available at <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj00/sum00/perry.htm>, accessed August 20, 2013.

The Science of Military Strategy

Peng Guangqian and Yao Youzhi are both retired major generals from the Academy of Military Science (AMS), which is the PLA's highest research institute. Western assessments of the two English translations of their strategy text (*Science of Strategy* in 2001 and *The Science of Military Strategy* in 2005) is that it is an authoritative analysis of PLA strategic thought. Dennis Blasko, for instance, judges the 2005 English translation to be probably “China’s most important contribution to increased transparency about its military intentions in the past decade.”⁸⁶ Similarly, Thomas assesses the 2001 version to be the “best single work on Chinese strategy.”⁸⁷

Figure 5: Peng Guangqian and Yao Youzhi



The following summary of Peng and Yao’s views on information’s role in future combat have been drawn mainly from the 2001 *Science of Strategy*. References to the corresponding passages in the 2005 *The Science of Military Strategy* have been included in the footnotes. Comparison of the two editions reveals that the differences between them are almost entirely rewording of the English by Chinese translators.

Early in *Science of Strategy*, Peng and Yao endorse the same point about the RMA that Soviet Marshal N. V. Ogarkov made in 1984⁸⁸: new non-nuclear military technologies—space systems, computer technologies, precision guidance, lasers, long-range strike, etc.—can enable what the Soviets’ termed “reconnais-

⁸⁶ Blasko, *The Chinese Army Today*, p. 124.

⁸⁷ Timothy L. Thomas, *Geothinking Like the Chinese: A Potential Explanation of China’s Geostrategy* (Fort Leavenworth, KS: U.S. Army Foreign Military Studies Office, 2011) p. 4.

⁸⁸ Marshal N. V. Ogarkov, “The Defense of Socialism: Experience of History and the Present Day,” *Red Star*, May 9, 1984, trans. FBIS, *Daily Report: Soviet Union*, Vol. III, No. 091, Annex No. 054, May 9, 1984, p. R19.

sance-strike complexes” to have strategic effects “similar to nuclear weapons while avoiding the huge political risk of stepping over the nuclear threshold.”⁸⁹ This is an important point. It implies that high-tech local (or regional) wars in East Asia can generally be fought below the nuclear threshold. If so, then conventional high-tech war increases in importance and, with the development of the Worldwide Web, so does informational war and informational war strategy. “The core of informational war strategy,” they maintain,

is to seize and maintain strategic information superiority and information superiority on the battlefield. One seeks to achieve strategic goals through information control and information attack, including conducting soft sabotage or hard destruction of the infrastructure, basic information sources or battlefield information systems, the armed forces of a country relies on for survival through information network in order to achieve its strategic goals. This is an all-new strategic concept and strategic model.⁹⁰

As for information’s importance in modern war against a major adversary, Peng and Yao argue that information superiority has not only “become a prerequisite of supremacy in the air, on the ground and at sea, “ but has “become the priority mission of modern warfare.”⁹¹

Consequently, degrading the opponent’s information resources becomes “a decisive factor in the fighting power of modern weapons and equipment”:

Under the conditions of advanced technology, the defeat or victory of war is not only determined by the resources, manpower, and technologies, which are invested in the battlefield, it is also determined by the extent of the control over the information on the battlefield. Information exists everywhere, is ever present, and has penetrated through the entire war process. . . . Modern warfare, to a large extent, is to use information attack and counter-attack in paralyzing the information systems of the enemy, destroying its war efficiency in controlling the progress of the war and achieving the objectives of the war.⁹²

⁸⁹ Peng Guangqian and Yao Youzhi (chief eds.), *Science of Strategy* (Beijing: Department of Strategic Research, Military Science Press, 2001), p. 21; Peng Guangqian and Yao Youzhi (eds.), *The Science of Military Strategy* (Beijing: Military Science Publishing House, 2005), p. 17.

⁹⁰ Peng and Yao, *Science of Strategy*, pp. 21-22; Peng and Yao, *The Science of Military Strategy*, p. 18.

⁹¹ Peng and Yao, *Science of Strategy*, pp. 302, 303; *The Science of Military Strategy*, pp. 338, 339.

⁹² Peng and Yao, *Science of Strategy*, pp. 302; *The Science of Military Strategy*, p. 338.

In sum, high-tech local war “is a brand-new war pattern as well as a new stage of war development history,”⁹³ and information dominance, with C4ISR at its core, is increasingly war’s center of gravity and focus.

The Joint INEW Campaign

Yuan Wenxian’s *Lectures on Joint Campaign Information Operations* appeared in 2009. As of 2010, Yuan was a major general, professor, and head of the information warfare, command, and training section of the PLA’s National Defense University. At the outset, Yuan’s book notes that in 1999 the Chinese military issued guidelines signifying that joint campaign information operations “had entered a new stage of development.”⁹⁴ This statement seems to imply that the “information resource” was growing more important in the PLA’s judgment, and the recent upgrading of a Strategic Planning Bureau in the GSD to a Strategic Planning Department along with converting the former Communications Department into the Informatization Department appear to support this implication.

Figure 6: The Teaching Building of the PLA’s National Defense University



By and large, Yuan’s 2009 portrayal of informational operations does not differ greatly from those in Peng and Yao’s *The Science of Military Strategy*. What Yuan’s lecture notes do convey, though, is a sense that the PLA is starting to

⁹³ Peng and Yao, *The Science of Military Strategy*, p. 394.

⁹⁴ Yuan, *Lectures on Joint Campaign Information Operations*, p. 1.

accord information an ever more central role in high-tech local wars under informationized conditions:

[S]eizing the control of information power is the direct purpose of information operations. In the modern military, each combat unit and each weapon system are coagulated to become one operational body through the bonding action of the military information system and if it loses this bonding action, then the military becomes a plate of loose sand.⁹⁵

Dennis Blasko has made the point that for the PLA, controlling information power is not an end in itself; rather it is more akin to the U.S. concept of a “force multiplier.”⁹⁶ This reading is not wrong. However, it does appear to downplay just how vital it is for the PLA to be able to “integrate informationized systems-of-systems of forces and capabilities” if it is to defeat a hegemon with technically superior forces and capabilities.⁹⁷ The following passage suggests that, for the PLA, information’s role is considerably more central than merely being a force multiplier as the U.S. military understands the term. Rather it is the first priority for a successful outcome.

On the mechanism of getting the upper hand, the informationized operation has changed the mechanized operation’s mechanism of getting an upper hand in using superior numbers of military strength and overwhelming strength in firepower, instead, it uses information superiority and superior control of information power to get an upper hand in the battlefield. A superior information system has become the “binder” in bonding each operational system, each operation force and various types of weapons and equipment in the battlefield and also is the “multiplier” in leading and manipulating operational forces in the battlefield; therefore, whoever gains information superiority in the battlefield would also gain the initiatives in the battlefield such as air dominance, sea dominance, and electromagnetic dominance.⁹⁸

Thus, joint campaign operational activities to seize control of information power on the battlefield will assume “a profound position”; it will be a major operational activity in the joint campaign, and “will be on the stage,” “in a leading position,” in any regional war under informationized conditions.⁹⁹

⁹⁵ Yuan, *Lectures on Joint Campaign Information Operations*, p. 2.

⁹⁶ Blasko, *The Chinese Army Today*, p. 128.

⁹⁷ Blasko, *The Chinese Army Today*, p. 126.

⁹⁸ Yuan, *Lectures on Joint Campaign Information Operations*, p. 6.

⁹⁹ Yuan, *Lectures on Joint Campaign Information Operations*, p. 8.

Larry Wortzel has commented that the PLA is pursuing “radio-electronic warfare on steroids.”¹⁰⁰ This brief review of PLA theorizing on the “information confrontation” that would occur in any regional war involving the American military, together with China’s ongoing efforts to build an informationized military, supports Wortzel’s assessment. The fact that “information warfare” has been purged from the lexicon of the U.S. Joint Staff, together with difficulties understanding what the PLA is doing regarding information, raises the prospect that the American military could lose its current advantages in ISR and C4 in coming decades. [REDACTED]

¹⁰⁰ See Appendix 1. [REDACTED]

6. TRENDS, ASYMMETRIES AND UNCERTAINTIES

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We are moving from a world in which most cyber problems are mainly about stealing your data to a world in which cyber is being used to deliberately create direct kinetic consequences: effects on your information, effects on your networks, and other adverse physical effects on assets that are valuable to you. As surely as night follows day, these cyber security risks are going to expand over time.

— Michael Hayden, 2013¹⁰³

The Dominant Trend and Asymmetry

Again, the most consequential trend in 21st century warfare is the growing importance of information—information understood as a critical, if not increasingly dominant, resource in determining the outcome of deterrent threats, crises and actual conflicts. Today, the most consequential asymmetry between the American military and the PLA involves their very different approaches to the information dimension of future warfare. The Chinese, convinced of information’s growing importance in both peacetime competition and war, are pursuing a broad, holistic, top-down, strategic approach to mastering this resource. By contrast, the U.S. military, with the very recent exception of elements in the U.S. Navy, takes a predominantly tactical, bottom-up and fragmented approach to information’s role, much as the American defense establishment did during the Cold War.

Two Uncertainties

The major uncertainties affecting how the information competition may play out in the years ahead can be summarized by two questions. First, will the American military undertake the hard intellectual effort to develop the comprehensive analytic framework needed to appreciate, assess, and master the likely impact of the informational competition on future combat outcomes? Second, will the PLA develop the organizational competence and combat skills to conduct

[REDACTED]

¹⁰³ Christopher Jove, “Transcript: Interview with Former CIA, NSA Chief Michael Hayden,” *Financial Review*, July 19, 2013, available at http://www.afr.com/p/national/transcript_interview_with_former_KnS7JDIrw73GWIjxA7vdK, accessed August 21, 2013.

integrated network electronic warfare that can achieve the ambitious goals of their INEW theory and doctrine—even against a superior power?

On the uncertainty about how seriously the U.S. military will take the growing challenge of Chinese informationized operations, Chief of Naval Operations (CNO) Admiral Jonathan Greenert and the CNO Strategic Studies Group XXXI are clearly trying to move the Pentagon in this direction. One of the recurring criticisms of the prevailing American approach to the informational confrontation is that it is fragmented and stove-piped. Greenert’s basic contention is that in the past two decades the electromagnetic spectrum “has also become an integral part of cyber space, creating a single EM-cyber environment.” Hence there is a need to integrate these two domains into a coherent whole, which is a major part of what the PLA is attempting to do. The task, as Greenert rightly contends, is essentially an intellectual one. To repeat Greenert’s injunction front Section 1: “To seize the high ground in this new domain, we need to fundamentally change our approach to operations and warfare.”¹⁰⁴ Whether the U.S. military services and the Joint Staff will follow the Navy’s lead and fundamentally rethink their current approaches to operations and warfare remains to be seen. Suffice it say that this is a major uncertainty regarding how U.S.-PRC military competition will unfold in the decades ahead.

The second uncertainty concerns how much operational competence the PLA may develop in the information domain. Starting with the founding of the Navy’s “Topgun” Fighter Weapons School in 1968, all the U.S. military services eventually embraced realistic training. The Air Force’s Red Flag exercises and the Army’s National Training Center (NTC) were all parts of what later came to be described as the “revolution in training affairs.”¹⁰⁵ The primary result of sustained investments in realistic training was that, starting with Operation Desert Storm in 1991, U.S. military forces exhibited high levels of tactical competence in first battles. Particularly in the U.S. Army’s case, this ended a pattern of defeats in early battles that went back to the Continental Army’s loss to the British at the Battle of Long Island in August 1776.¹⁰⁶ A key element in the American “revolution in training affairs” was fielding opposing forces (OPFORs) skilled in enemy doctrine and tactics. These units included the Air Force’s “Aggressor” squadrons

¹⁰⁴ Greenert, “Imminent Domain,” *Proceedings*, December 2012, p. 17.

¹⁰⁵ See Drs. Joe Braddock and Ralph Chatham, *Training Superiority and Training Surprise* (Washington, DC: Defense Science Board, 2001), available at <http://www.acq.osd.mil/dsb/reports/ADA386579.pdf>.

¹⁰⁶ Barry D. Watts, *U.S. Combat Training, Operational Art, and Strategic Competence: Problems and Opportunities* (Washington, DC: Center for Strategic and Budgetary Assessments, 2008), pp. 7-8.

at Nellis Air Force Base in Nevada and the Army's 11th Armored Cavalry Regiment at the NTC in California.¹⁰⁷

Given the fact that the PLA has not engaged in major combat operations against a high-tech Western opponent in decades—indeed since the Korean war—a major uncertainty is how tactically proficient Chinese forces might be in a future conflict in East Asia or the western Pacific. Here the most that can be said is that the PLA has been developing “Blue” opposing forces, including an “Informatized Blue Army,” against which to train.¹⁰⁸ As Tim Thomas summarized the situation in 2012:

The construction of a Blue Force ensures that the PLA is becoming more and more familiar with Western doctrine and equipment. More importantly, the Blue Force allows the PLA to finally, after years of scripted fighting, work against a realistic OPFOR on potential future battlefields. . . . The PLA's focus on the development of an expert “informatized” Blue Force presents a capable, credible advanced OPFOR for the PLA to confront, similar to what the Chinese expect to see on a future battlefield. A study of a Blue Force also tells Westerners what the PLA thinks about our strengths and weaknesses are as well.¹⁰⁹

Thomas' comments raise three other issues bearing on this uncertainty. First, the cognitive basis of tactical competence appears to be quite different from that of operational—much less strategic—competence, and the PLA's efforts to master joint information operations focus on operational and strategic competence.¹¹⁰ Second, one of the most important underpinnings of realistic training's success at Topgun, Red Flag or the NTC was the no-holds-barred debriefings in which the most junior participant in the room could openly criticize the performance of the most senior officers present without fear of retribution. Historically, the culture of most Arab armies has tended to make no-holds-barred debriefings socially unacceptable, which is one reason why they have generally fared so poorly against Western armies.¹¹¹ The PLA, however, has a culture of mutual- and self-criticism that goes back to its beginnings as the Red Army of Workers and Peasants in 1927.¹¹² Consequently, the Chinese may be more able culturally than Arab

¹⁰⁷ Watts, *U.S. Combat Training, Operational Art, and Strategic Competence*, pp. 11-12.

¹⁰⁸ Thomas, *Three Faces of the Cyber Dragon*, p. 167.

¹⁰⁹ Thomas, *Three Faces of the Cyber Dragon*, p. 185.

¹¹⁰ Watts, *U.S. Combat Training, Operational Art, and Strategic Competence*, pp. 35-38.

¹¹¹ Norville de Atkine, “Why Arabs Lose Wars,” *Middle East Review of International Affairs*, Vol. 6, No. 4, March 2000, pp. 16-25.

¹¹² George, *The Chinese Communist Army in Action*, pp. 35, 86-111.

societies to develop warfighting competence comparable to that of Western military forces that have invested in realistic training.

Last but not least, there is the issue of Clausewitzian friction. It almost inevitably intrudes at the tactical level of war. But its intrusions tend to be even more consequential at the operational and strategic levels because operational-strategic problems are usually “wicked” ones, meaning that they are ill-structured, open-ended, and not amenable to closed, engineering solutions.¹¹³ Witness some of the frictions the Allies and the Germans encountered during the Normandy invasion in June 1944.¹¹⁴ The problem with friction, of course, is that no conceivable advances in weaponry or technology are capable of eliminating it despite recurring hopes to the contrary. This is because general friction arises from (1) human physical and cognitive limitations, (2) the inherent uncertainties in the information on which actions in war are based, and (3) the structural non-linearity of combat processes and interactions.¹¹⁵ The deepest uncertainty affecting U.S.-PRC military competition in the information aspects of war, then, is whether the PLA will be able to do a better job of coping with the frictions of high-tech local wars under informationized conditions than U.S. forces. It may be that the PLA’s prescriptive, top-down planning approach and quest for “trump-card” stratagems will prove to be impediments to the PLA’s capacity to deal with friction. But, except for the U.S. Navy, there is little evidence that the American military is inclined to embrace as holistic and comprehensive an approach to the growing role of information in modern warfare as the Chinese. Insofar as information’s future role in war is concerned, it is difficult to avoid the conclusions that the Chinese and American militaries are operating on very different frequencies.

The INEW Challenge

In sum, the American approach to information operations and warfare is largely tactical, bottom-up and stove-piped into a series of disparate communities and organizations: EW, SIGINT, ELINT, C4, ISR, information operations, cyber, DoD, NSA, etc. The U.S. defense establishment lacks the concepts, lexicon and, above all, the analytic metrics to assess how it is doing relative to the PLA in IN-

¹¹³ Watts, *U.S. Combat Training, Operational Art, and Strategic Competence*, pp. 37-38. Tame problems are just the opposite: well-structured, closed, and amenable to engineering solutions.

¹¹⁴ For a litany of ways in which friction reared its ugly head during Operation Overlord, see Atkinson, *The Guns at Last Light*, pp. 50, 68-69, 93, 97, 101, 111-112, 114-115, 137, 142-143, 144, 152, 155, 160 and 163.

¹¹⁵ Barry D. Watts, *Clausewitzian Friction and Future War* (Washington, DC: National Defense University, 2004), pp. 76-77.

EW. The PLA, by contrast, is pursuing a broad, holistic, top-down, strategic approach to mastering information as an increasingly critical, if not dominant, resource in both peacetime competition and war. The PLA may lack the recent combat experience and realistic training of the U.S. military, but it is undertaking plausible steps to make up for these deficiencies. On the evidence, then, Admiral Greenert appears to be right: the American military needs to fundamentally rethink its approach to the role of information in long-term strategic competition and 21st-century warfare.

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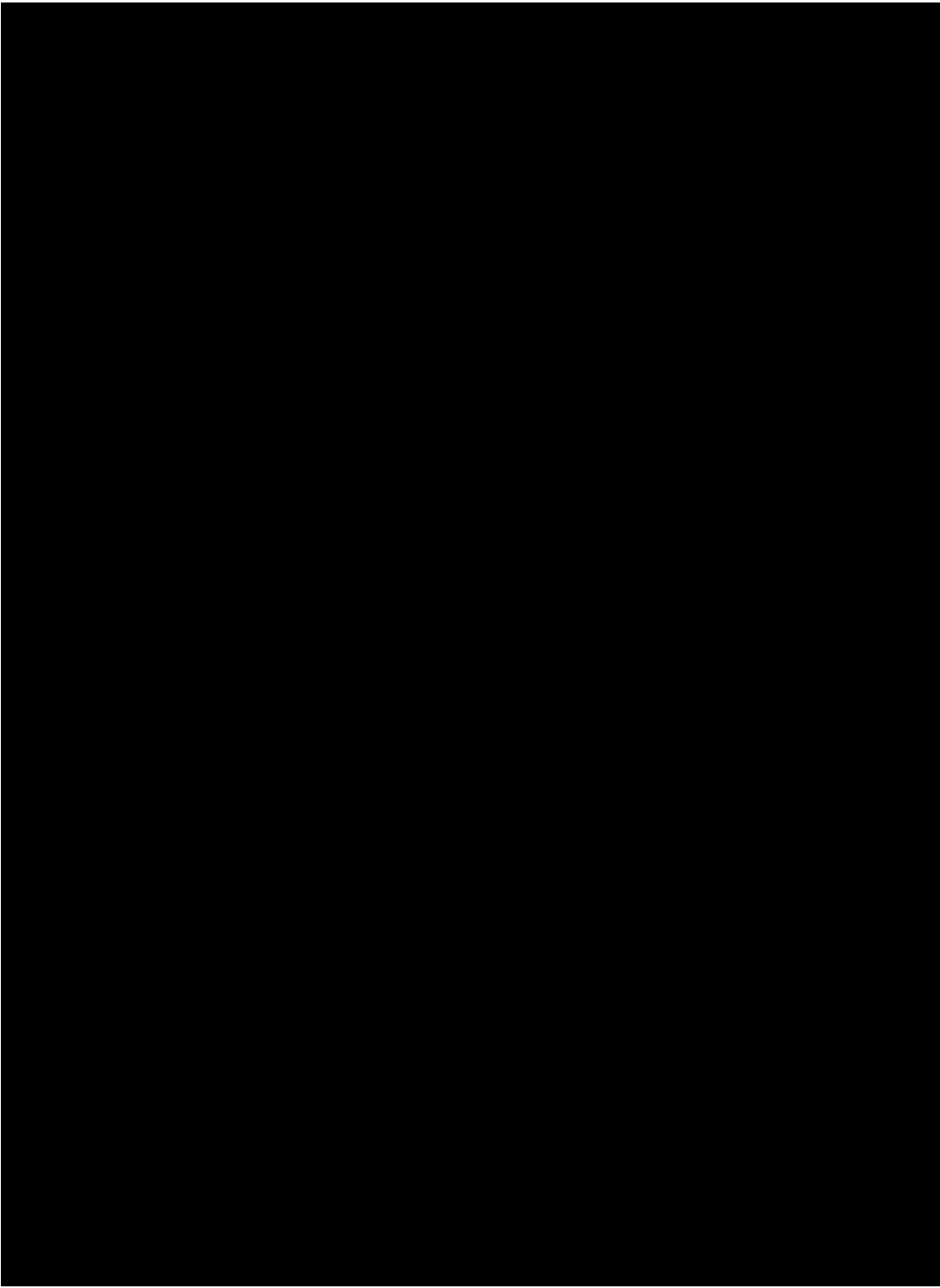
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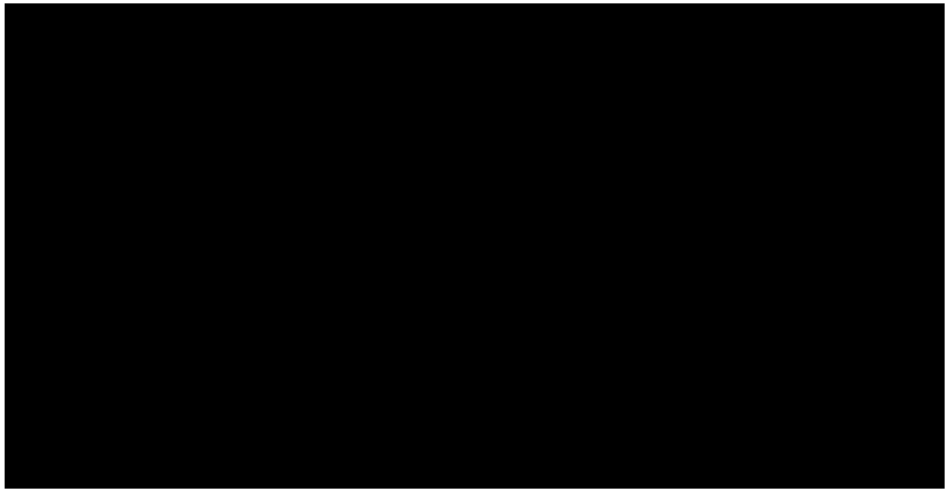
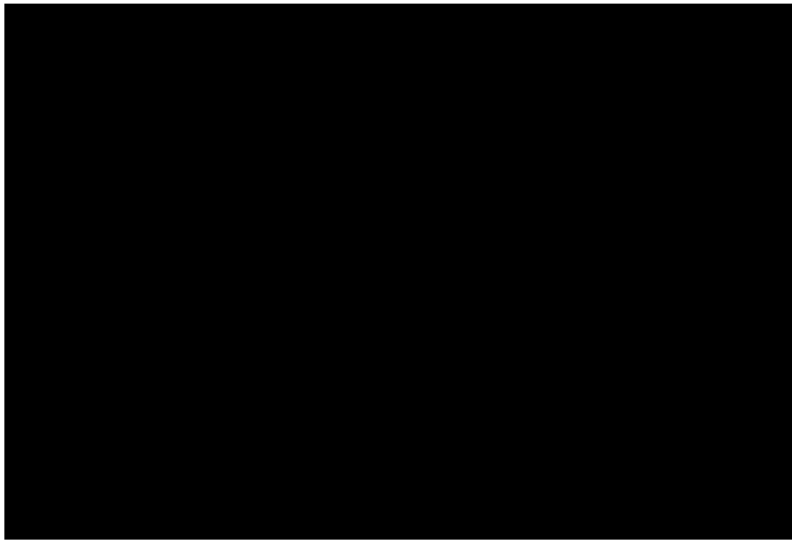
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