

BACKGROUND

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The U.S. Needs an Integrated Approach to Counter China's Anti-Access/Area Denial Strategy

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Abstract

As the Chinese military has been comprehensively modernizing its air, naval, and ground forces, it has been incorporating a variety of anti-access/area denial (A2/AD) systems and capabilities. These include not only weapons, such as anti-ship ballistic and cruise missiles, but also political warfare methods, including legal, public opinion, and psychological warfare techniques. To counter these A2/AD capabilities, the United States needs to adopt a comparably holistic approach, incorporating political measures, operational military deployments, as well as technical counters to Chinese military capabilities. Washington has one major advantage over Beijing—almost all of the countries on China's littoral are U.S. friends and allies. Leveraging these relationships, and in the process underscoring American credibility and commitment, is key.

Over the past decade, China's neighbors, as well as the United States, have paid increasing attention to the Chinese People's Liberation Army (PLA) and its developing anti-access/area denial (A2/AD) capabilities. Much of the public discussion in the U.S. has been focused on such new weapons as anti-ship ballistic missiles (ASBMs), which have been cited in the U.S. Department of Defense annual report to Congress on Chinese military capabilities.¹ These complement a modernizing navy (with a substantial submarine arm) and air force in presenting a multi-vector set of threats. The U.S. Defense Department, in turn, has created the Joint Operational Access Concept, with such component parts as the Air-Sea Battle (ASB) Office, to counter China's A2/AD developments—which the U.S. sees as being directed primarily toward it.

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KEY POINTS

- Over the past decade, China's neighbors, as well as the United States, have paid increasing attention to the Chinese People's Liberation Army and its developing anti-access/area denial (A2/AD) capabilities.
- Current Chinese attempts at forestalling attacks on China are holistic, encompassing all of the instruments of national power, including military force as well as political warfare.
- While some of the measures that have garnered the most attention seem aimed at naval assets, they are ultimately aimed at countering aerial power.
- To counter Chinese plans for A2/AD capabilities, the United States needs to field a comparably holistic approach, incorporating political measures, operational military deployments, as well as technical counters to Chinese military capabilities.
- Washington has one major advantage over Beijing—nearly all countries on China's littoral are U.S. friends and allies. Leveraging these relationships, and in the process underscoring American credibility and commitment, is key.

While Chinese weapons and force developments are important, it would be a mistake to equate them with the totality of Chinese measures to keep foreign militaries away from China's shores. Rather, Chinese attempts to engage in "counterintervention" (*fan jieru*; 反介入) go beyond developing new weapons to span the range from strategic and operational measures. Countering China's A2/AD measures therefore requires an equally comprehensive approach.

Evolution of PLA Requirements: Shifting Context

Over the past 30 years, the security situation confronting China has fundamentally evolved. As China has moved from expecting imminent war, under Mao Zedong, to assuming a more peaceful world, under Mao's successors, China's economic center of gravity has also shifted. Under Mao, China's economic development was focused on the "Third Front," or "Third Line," of defense industries, deep within the Chinese interior.² Developed far from extant infrastructure and urban centers, the Third Front would support the protracted guerrilla war that Mao envisioned in the wake of the expected global nuclear war.

With the rise of Deng Xiaoping, however, the People's Republic of China (PRC) was no longer compelled to devote its primary energies to preparing for imminent war. This strategic reassessment allowed the PRC to shift its focus to national economic modernization, marked by the Four Modernizations program, which remains in effect. In this revised environment, the main threat to the PRC would come from more limited conflicts, and the PLA therefore prepared for "local wars," that is, conflicts not involving the mass mobilization of the nation and the economy, involving lower levels of violence than nuclear exchanges, and which were more likely to occur on its periphery. At the same time, the focus of economic development was also adjusted. Rather than maintaining the Third Front approach of dispersed industries and factories uneconomically strewn across the Chinese interior, Beijing proceeded to re-concentrate much of its physical plant to the coast. Coupled with the industries already located

there, the focus of Chinese development was fundamentally redirected. China's coast became, and remains, the powerhouse driving China's economic development; it is, in a very real sense, China's economic center of gravity.

This has altered China's vulnerabilities. While the Third Front was terribly inefficient economically, its location in the Chinese hinterlands meant that it could not be easily reached by American or Soviet forces, while its dispersed nature meant that only sustained attacks could really diminish its output. By contrast, China's current economic centers are all accessible by sea; the very factors that have made cities such as Shanghai and Ningbo economically attractive also make them militarily vulnerable.

Evolution of PLA Requirements: Changing Character of Modern Warfare

This vulnerability has been exacerbated by the evolution in how wars are fought. Beginning in the 1980s, the PLA began to see a growing emphasis on the role of technology. Based on the Fourth Middle East War (the 1973 Yom Kippur War), the American war in Vietnam, and the Falklands, it appeared that technology, rather than manpower, was becoming the central factor, exerting a significant and growing influence upon the shape of modern warfare. Weapons had greater reach, and significantly improved lethality. Equally important, surveillance and reconnaissance systems had improved capabilities, making them more important in the calculus of effectiveness.

By the early 1990s, it was clear that high technology was affecting not only weapons, but tactics and even strategic outcomes. Modern weapons, as seen in the first Gulf War (1990–1991), shifted the emphasis from the destruction of opponents to paralyzing them, in the course of defeating them. Moreover, the new technologies also expanded the operating areas, so that land, sea, and air arenas were no longer the complete set of potential battlefields. The same information technologies and improved sensor systems that made modern weapons that much more destructive effectively made information space and outer space key battlegrounds as well.

1. U.S. Department of Defense, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2014," April 24, 2014, http://www.defense.gov/pubs/2014_DoD_China_Report.pdf (accessed July 1, 2014).

2. Barry Naughton, "The Third Front: Defence Industrialization in the Chinese Interior," *The China Quarterly* (September 1988).

Meanwhile, the pace and destructiveness of modern wars was such that even local wars nonetheless could affect the entire country.³ Warfare was much more non-linear in nature, shifting from being primarily ground/sea centered, to one exploiting all three dimensions. Of particular importance, airpower was now much more destructive and decisive. At the same time, warfare was much more intense, involving round-the-clock operations. This also meant that the sheer material expenditure of warfare was even more substantial, further increasing the importance of logistics and sustainability. All of these elements, marking what the Chinese considered to be a global military transformation, were encompassed in the idea of “Local War Under Modern, High-Tech Conditions.” Preparing for such wars became the basis for PLA operational planning in a Jiang Zemin-issued directive to the Chinese Central Military Commission (CMC) in 1993.

In 1999, the PLA issued a new series of thoroughly revised manuals and regulations that constituted the “New Generation Operations Regulations.” This constituted a wholesale revision of operational doctrine, affecting every aspect of the PLA, from its conception of future wars to training and organization. It addressed the major changes in the way warfare would be conducted in “local wars under modern, high-technology conditions.”

PLA analysis of more recent subsequent conflicts has concluded that modern technology has made warfare even more complicated. NATO operations in the Balkans, the toppling of the Taliban in Afghanistan, and the second Gulf War have led PLA analysts to conclude that “Local Wars under Modern, High Tech Conditions” have now transitioned to “Local Wars under Informationized Conditions.” In particular, the heavy reliance by the United States on airpower, whether land-based or sea-based, whether strategic bombers, tactical bombers, or cruise missiles, has underscored the growing importance of the aerial threat.

In this light, Chinese A2/AD developments are not simply intended to defend the PRC as a whole, but as primarily oriented toward forestalling enemy *air* attacks, which includes attacks by land-based aviation and by cruise missiles launched from any source. To do so, in turn, requires not only physi-

cally keeping enemy aerial and missile forces at bay, but denying an opponent the ability to construct a coherent situational picture with which to effectively target those aerial systems.

From this perspective, Chinese A2/AD programs are not simply a matter of ASBMs, even though they are what have often garnered the most attention. Indeed, ASBMs are only a single element in a far larger, much more integrated, approach to denying an opponent aerial access, one which extends beyond the purely military realm, and the physical confines of the “first island chain” (which extends from Japan through Okinawa and Taiwan to the Philippines onward to the Strait of Malacca). Instead, it involves a layered approach encompassing strategic, operational, and tactical elements, employing all the instruments of comprehensive national power to prevent an opponent from bringing airpower to bear against the PRC.

Strategic A2/AD: Political Warfare

At the strategic level, Chinese A2/AD endeavors to deny an opponent the justifications for intervening at all, and to forestall any kind of political support from friends and allies that might be cited for intervention. By politically preventing an opponent from intervening, or imposing sufficient delays that any such intervention is ineffective, the effect can be as great, or even greater, than destroying an opponent’s weapons. In effect, political measures can produce a “mission kill” on American aerial assets without shedding any blood, achieving the goal of winning without fighting.

Such political warfare measures would begin long before the actual outbreak of hostilities, and fall into the realm of what the Chinese term “military political work,” an element of “military combat preparations”—those activities undertaken in peacetime to provide the necessary wherewithal to engage in actual warfare.⁴ Military combat preparations include steps for political warfare, which is seen as a form of combat, indeed, a vital complement for more traditional forms of military operations, especially in the Information Age. While they may not be decisive in their own right, political warfare tactics nonetheless may allow their practitioner to seize the initiative and otherwise multiply the effects of military power.

3. Gao Yubiao, ed., *Joint Campaign Course Materials* (Beijing: AMS Publishing House, August 2001), p. 45.

4. Yang Chunchang and Shen Hetai, eds., *Political Warfare/Operations Under Informationalized Conditions* (Beijing: Long March Press, 2005), p. i.

Political warfare recognizes that the proliferation of modern information technology has fundamentally altered the relationship between people and conflict. There is a great deal more transparency of world events, and therefore people's awareness; consequently, "people's thought" (*renmen de sixiang*; 人们的思想) is more and more closely linked to the course of conflict (*zhanzheng de fazhan*; 战争的发展).⁵

Under the broad concept of "political warfare" are the "three warfares" of legal warfare, public opinion/media warfare, and psychological warfare. Chinese analysts almost always link these three types of combat together, as they are seen as interrelated and mutually reinforcing. Specifically, the "three warfares" seek to influence the public's understanding and perceptions of a conflict by retaining support from one's own population, degrading it in an opponent, and influencing third parties.

- **Legal warfare** seeks to legally justify a nation's own actions while portraying an opponent's activities as illegal, thereby creating doubts among adversary and neutral military and civilian authorities, and in the broader population, about the wisdom and justification of an opponent's actions.
- **Public opinion/media warfare** is the struggle to gain dominance over the venue for implementing psychological and legal warfare. It is seen as a form of warfare independent of armed confrontation or physical hostilities. Indeed, it is perhaps most accurately understood as a constant, ongoing activity, aimed at long-term influence of perceptions and attitudes. One of the main tools of public opinion/media warfare is the news media, including both domestic and foreign entities. The focus of public opinion/media warfare is not limited to the press, however; it involves all the instruments that inform and influence public opinion, including movies, television programs, and books.
- **Psychological warfare** seeks to disrupt an opponent's decision-making capacity by creating doubts, fomenting anti-leadership senti-

ments, and generally sapping an opponent's will. It also seeks to influence the cognitive processes, through such measures as inducing confusion or uncertainty.

In essence, psychological warfare and legal warfare—in order to have greatest effect—both require the use of public opinion warfare. Public opinion warfare and legal warfare require psychological warfare guidance, so that their targets and methods can be refined. Public opinion warfare and psychological warfare require legal warfare information in order to be most effective.⁶

In the context of anti-access/area denial capabilities, Chinese political warfare is intended to raise doubts among adversary decision makers both about whether the United States can, and should, intervene. By raising such doubts in the local states, it makes them more likely to concede early on, rather than seek out external, i.e., American, assistance (which is somewhat unnatural, from the Chinese perception, in the first place). Hesitation among local decision makers, in turn, is likely to affect American perceptions, both politically—the staunchness of these allies—and militarily—how delay will affect force deployment time lines.

Like more conventional forms of warfare, all aspects of political warfare are conducted under a unified command organization to ensure that all elements are coordinated and mutually supporting. Political warfare includes offensive actions aimed at an opponent, defensive actions to neutralize adversary attempts at political warfare, counter-attacking actions, and other forms of combat, such as deterrence.

Legal Warfare

One new tool that is likely to be applied to keep the U.S. politically out of the area would be legal warfare, or "lawfare," to call into question the legality and legitimacy of American intervention. This is likely to be applied against both the United States and its allies, in order to at least delay the deployment of reinforcements.

The concept of legal warfare (*falu zhanzheng*; 法律战争, or *falu zhan*; 法律战) has sparked a great deal of discussion in the PLA and the PRC gener-

5. Ibid.

6. Liu Xexin, *Study Volume on Legal Warfare* (Beijing, PRC: National Defense University Press, 2006), pp. 18 and 34–37.

ally. Legal warfare, at its most basic, involves “arguing that one’s own side is obeying the law, criticizing the other side for violating the law (*weifa*; 违法), and making arguments for one’s own side in cases where there are also violations of the law.”⁷ The instruments of legal warfare include national laws, as well as the full range of legal instruments—legislation, judicial law, legal pronouncements, law enforcement, and legal education.

In order to influence domestic and foreign populations and leaders, legal warfare is most commonly employed prior to the outbreak of physical hostilities. Furthermore, such a preemptive legal strike can weaken opposing coalitions while building support for one’s own side. In wartime:

The aim is to psychologically dissipate the other sides’ fighting will in both the military and the civilian realms, while exciting one’s own military and civilian passions and obtaining international sympathy and support.⁸

Legal warfare, in this context, is aimed at providing support for military, rather than strictly legal, ends. That is, “legal warfare” is not necessarily about what is legally correct, but about supporting military operations through legal means. The legal reasoning is secondary to the possible effects (for instance, delaying military operations or removing military officers from service).

Legal warfare measures may occur prior to the onset of formal, physical hostilities, encompassing pre-war “preparation of the battlefield,” as well as after the close of combat operations, in support of larger strategic goals. They should therefore be seen as complementing physical measures, and will be coordinated with developments on the physical battlefield.

Such coordinated legal warfare operations would most likely be offensive in nature. Unlike the United States, where “offensive” legal warfare is often the responsibility of diplomats, the Chinese view of legal

warfare, and their incorporation into the realm of “political warfare,” suggests that it will be pursued by the General Political Department (GPD), that is, part of the uniformed Chinese military. The GPD’s legal warfare attacks would likely target not only the United States, but also key allies such as Australia, the Philippines, and Japan that might provide the U.S. with forward basing facilities. Japan, with its pacifist constitution, appears especially vulnerable to legal warfare. The goal would be to prevent or retard American intervention, especially the ability to deploy air assets into theater. While this would not necessarily prevent American air operations, it might well impose sufficient delays to fundamentally affect the ability of American forces to intervene effectively. Given the importance of joint operations, for example, reduced Air Force assets might make U.S. Navy operations less effective.

Public Opinion/Media Warfare

Chinese legal warfare measures would almost certainly occur in conjunction with public opinion warfare measures (sometimes also termed media warfare). Public opinion warfare (*yulun zhan*; 舆论战) refers to the use of various mass information channels, including the Internet, television, radio, newspapers, movies, and other forms of media, in accordance with an overall plan and with set objectives in mind, to transmit selected news and other materials to the intended audience. It is primarily, but not solely, directed at an opponent’s military forces, but also targets the broader political leadership and the masses. Public opinion warfare is intended to complement national political, diplomatic, and military operations in time of conflict.

Public opinion warfare is more than highly focused public relations. It tries to guide public perceptions and opinion in order to effect shifts in the overall balance of strength between oneself and one’s opponent.⁹ By employing public opinion warfare methods, the PRC might be able to cause one or more states to refuse to cooperate with the United

7. Han Yanrong, “Legal Warfare: Military Legal Work’s High Ground: An Interview with Chinese Politics and Law University Military Legal Research Center Special Researcher Xun Dandong,” *Legal Daily* (PRC), February 12, 2006.

8. MG Liu Jiaxin, “General’s Views: Legal Warfare—Modern Warfare’s Second Battlefield,” *Guangming Ribao*, November 3, 2004. At the time, MG Liu was the commandant of the Xian Political Academy of the PLA General Political Department.

9. Academy of Military Sciences Operations Theory and Regulations Research Department and Informationalized Operations Theory Research Office, *Informationalized Operations Theory Study Guide* (Beijing, PRC: AMS Press, November, 2005), p. 405, and Liu Gaoping, *Study Volume on Public Opinion Warfare* (Beijing, PRC: NDU Press, 2005), pp. 16–17.

States, whether for fear of Chinese retaliation or due to uncertainty over who was creating regional instability. It might also strengthen anti-war elements and exacerbate war weariness. Coupled with other measures (such as economic pressure), it might also lead foreign governments and populations to conclude that antagonizing the PRC would ultimately generate more long-term harm than assisting the United States.

The purpose of public opinion warfare is more than just getting one's own point of view expressed, or to air certain facts, however. Rather, the goals include preserving friendly morale, generating public support at home and abroad for oneself, weakening the enemy's will to fight, and altering the enemy's situational assessment. Public opinion warfare is both a military and a broader, whole of government, responsibility. Consequently, it will employ all the assets of China's state-run media, including Xinhua, China Central Television (CCTV), CRIENGLISH (formerly Radio Peking), and Chinese newspapers such as *People's Daily*, *People's Liberation Army Daily*, and *Global Times*.

Successful public opinion warfare requires careful preparation of both domestic and foreign audiences beforehand. For this reason, PLA writings consistently invoke the saying, "Before the troops and horses move, public opinion is already underway" (*bingma weidong, yulun xianxing*; 兵马未动, 舆论先行), emphasizing that the preparation for public opinion warfare must begin far in advance of the actual outbreak of hostilities.¹⁰ Offensive public opinion warfare strives to undermine the enemy's will and weaken any external support, while garnering friends and allies in support of oneself. Defensive public opinion warfare is intended to limit the impact of enemy public opinion warfare efforts on friendly audiences.

In support of Chinese A2/AD objectives, Chinese offensive public opinion warfare would likely highlight China's military modernization, including both nuclear and conventional capabilities, China's economic power, and the dangers of threatening China's "core interests." Defensive public opinion warfare would undoubtedly invoke references to the "Cen-

tury of Humiliation" (the period 1839–1949, when the Western powers regularly intervened in China). Meanwhile, the PLA would be portrayed in the most heroic (and capable) terms, as reflected in the available footage of China's new *Liaoning* aircraft carrier, official press coverage of recent Chinese military exercises, and the recent Chinese movies *Sky Fighters* (2011) and *Target Locked* (2013).

Psychological Warfare

Psychological warfare is, in some ways, the most far-reaching of the "three warfares." It involves the application of specialized information and media, in accordance with a strategic goal and in support of operational missions, against an opponent's psychology and cognitive capacities, in support of political and military goals.¹¹ It is not only an aspect of political warfare, but also the larger struggle to secure information dominance, by influencing the human agents that interact with data and make decisions. As such, psychological warfare targets the users of information, both high-level decision makers and lower-level policy implementers (such as individual soldiers and clerks), both military and civilian. Indeed, the interconnected nature of modern technology, informationized societies, and information itself blurs the lines between peacetime and wartime, between military and civilian, and among strategy, operations, and tactics.¹²

Consequently, psychological warfare also occurs without such distinctions. Information is an integrated whole, and securing information dominance, including psychological warfare, will correspondingly be directed at the full range of information creators, transmitters, and consumers. For this reason, psychological operations are seen as an essential part of future conflicts, affecting the very perceptions that inform decision making, from the context to the biases. Successful psychological operations will therefore have repercussions at every level of operations, influencing the course of the conflict.

In the context of A2/AD, Chinese psychological warfare would aim to persuade military and civilian decision makers in the United States, allied nations in Asia, and third-party states that the United States

10. Nanjing Political Academy Military News Department Study Group, "Study of the Journalistic Media Warfare in the Iraq War," *China Military Science*, No. 4 (2003), p. 28.

11. Guo Yanhua, *Psychological Warfare Knowledge* (Beijing: National Defense University Press, 2005), p. 1.

12. Yuan Wenxian, *The Science of Military Information* (Beijing: National Defense University Press, 2008), pp. 77–79.

would be unlikely to win a conflict and therefore all of these actors would be better off not trying. One means would be to highlight the capabilities of the PLA, in conjunction with public opinion warfare. The goal would be to portray it as highly capable and therefore not a force that would be easily defeated. The extensive discussion of the Chinese Dong Feng 21D ASBM, for example, might be influenced, even now, by Chinese psychological warfare efforts as an effective counter to American aircraft carriers. Similarly, recent press coverage of the PLA's "Mission Action-2013" specifically included reference to Taiwan in some of the associated images—a clear attempt to highlight Chinese resolve and intimidate Taiwan authorities and populace.

Operational A2/AD: Information and Space Dominance

At the operational level, it is important to recognize that the PLA's thinking about future warfare since the 1999 promulgation of new "gangyao" (a term that encompasses Western concepts of "doctrine" and "regulations") has been oriented toward waging informationized war (*xinxi zhanzheng*; 信息战争). Based on a review of Chinese literature, it is unclear whether the PLA has developed a specific "anti-access/area denial" campaign. However, given the emphasis on establishing "information dominance" (*zhi xinxi quan*; 制信息权) as part of informationized warfare, the PLA is likely to deploy a substantial command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) network to support its own forces, while striving to deny an opponent the ability to operate his C4ISR networks with impunity. Given the importance of space-based assets and systems for information collection, transmission, management, and exploitation, the ability to establish space dominance (*zhitian quan*; 制天权) is a fundamental component of establishing information dominance.

Chinese Concepts of Military Space Operations. The PLA defines "space dominance" (*zhitian*

quan, 制天权; also translated as "command of space" or "space superiority"), or "space control" (*taikong kongzhi*; 太空控制) as: the use of space capabilities to exert control or to maintain the initiative (*kongzhi quan huo zhudao quan*; 控制权或主导权), during a certain time, over a certain area of outer space (*zai yiding de shijian nei dui mou yi kongjian lingyu*; 在一定的时间内对某一空间领域).¹³ It incorporates both military space operations and what American theory would term offensive and defensive space control, as it involves measures aimed at limiting, reducing, or disrupting the enemy's aerospace systems and his combat effectiveness, as well as ensuring one's own aerospace systems can operate normally and at full effectiveness.

Despite clear PLA interest in space and a substantial space infrastructure, as well as demonstrated space weaponry, as of 2014 there is no publicly available evidence that the PLA has promulgated a specific doctrine governing military space operations, unlike for joint operations (covered in the 1999 regulations). What appears clear, however, is the importance accorded the securing of space dominance. One book published by the PLA's Academy of Military Sciences Press notes, for example, that "in conflicts under informationized conditions, space has become the vital 'strategic space' for maintaining national security and interests."¹⁴ Another observes that "in future informationized conflicts, controlling outer space will have vital meaning, and the struggle to secure space dominance will be a principal combat activity."¹⁵ Another PLA article observes that space capabilities are strategic in nature, and that China must continue to invest in this strategic arena, in order to preserve its strategic interests.¹⁶

One seeks space dominance as a means of obtaining information dominance or information superiority (*zhi xinxi quan*; 制信息权). Thus, military space operations are often discussed in the context of the need to obtain information or deny it to an opponent.¹⁷ Similarly, the establishment of space dominance is often described in holistic terms, involving

13. Hong Bin and Liang Xiaoqiu, "The Basics of Space Strategic Theory," *China Military Science*, Vol. 1 (2002), and Li Daguang, "On Space Supremacy," *China Military Science*, Vol. 2 (2003).

14. Wu Renhe, *Theory of Informationized Warfare* (Beijing: Academy of Military Sciences Press, 2004), p. 102.

15. Yuan, *The Science of Military Information*, p. 320.

16. Zhang Xiaotian, "On the Development of National Interests and Development of Military Strategy," *China Military Science*, Vol. 3 (2010), p. 7.

17. See, for example, Zhang Yuliang, ed., *The Science of Campaigns* (Beijing: National Defense University Publishing House, 2006), pp. 299, 334, and 340.

disparate forces, both space-based and non-space-based, and involving not only operations in space, but also operations on the ground, in the air, and at sea, as forces act not only against space platforms, but also against terrestrial support facilities and the data-links that tie the two together.¹⁸

Insofar as “strategic concepts are translated to doctrine through the development of campaign guidelines, and these guidelines [then] drive capabilities development,” Chinese writings which discuss campaign guidelines, and relate them to space operations, may reflect potential aspects of any nascent Chinese military space doctrine.¹⁹

In this regard, Chinese Major General Chang Xianqi’s writings may provide significant insight. Chang was formerly commander of the General Armaments Department’s Academy of Equipment Command and Technology (*zhuangbei zhihui jishu xueyuan*; 装备指挥技术学院), which, according to PLA writings, is the main institution responsible for training the personnel that staffs China’s space-related facilities, including launch sites and mission control centers.²⁰ In 2002, Chang wrote the PLA textbook *Military Astronautics*, which was re-issued in 2005 in a second edition.

In his book, Chang emphasizes the need to establish space dominance or space superiority (*zhitian quan*; 制天权): the ability to exploit space for one’s purposes, at times and places of one’s choosing, while denying an opponent that same freedom of action. In order to obtain space dominance, one needs to sustain the uninterrupted operation of space information collection and transmission systems. Establishing space dominance would allow the PLA to degrade an opponent’s overall military capabilities, as well as potentially deterring his intervention. This, in turn, would require operations against an opponent’s space systems, including terrestrial elements and the data-links binding

them together, through unified forces, techniques, and operational activities.

Unified forces involve two aspects. One is the integration of civilian and military space systems, both in prewar planning and wartime application. This integration provides a more robust capability, at a lowered cost. The other is unifying space forces with land, sea, air, and electromagnetic forces in joint operations. Terrestrial forces benefit from space support, while terrestrial forces can both degrade opponents’ space forces (such as through attacks against ground stations) and preserve one’s own space capabilities (by preventing or countering comparable attacks).²¹

Unified techniques refer to combining soft-kill and hard-kill methods. It should be noted that both methods serve the same ends, which is to reduce an opponent’s advantage in space while preserving one’s own, in order to secure space dominance. Soft-kill techniques are less likely to incur international repercussions, but may allow an opponent to recover.²² They include not only measures aimed at space hardware, such as “dazzling,” but also cyber attacks aimed at either satellite systems or their terrestrial control elements. Hard-kill techniques may also be aimed at destroying not only satellites (such as in the 2007 anti-satellite [ASAT] test), but also includes attacks on telemetry, tracking, and control (TT&C) facilities and launch sites. Such measures will permanently remove a facility or a system, but can create significant political repercussions and may be seen as escalatory.²³ PLA authors, such as Chang, seem to support an approach that balances disruption (soft-kill) and destruction (hard-kill) of an opponent’s space systems.

Unified operational activities involve coordinating offensive and defensive operations. Offensive activities, which may include both soft-kill and hard-kill methods are likely to be undertaken at the earli-

18. See, for example, Hong and Liang, “The Basics of Space Strategic Theory,” and Li Dong, Zhao Xinguo, and Huang Chenglin, “Research on Concepts of Space Operations and Its Command,” *Journal of the Academy of Equipment Command and Technology*, Vol. 14, No. 5 (2003).

19. Cortez A. Cooper, “Joint Anti-Access Operations: China’s ‘System-of-Systems’ Approach,” testimony before the U.S. China Economic and Security Review Commission, January 27, 2011, p. 4. http://www.rand.org/content/dam/rand/pubs/testimonies/2011/RAND_CT356.pdf (accessed May 29, 2014).

20. “Academy of Command Equipment and Technology,” in *An Overview of Chinese Military Academies and Schools*, ed. by Jin Peng and Dong Ming (Beijing: Academy of Military Science Publishing House, 2002), p. 163.

21. Chang Xianqi, *Military Astronautics*, 2nd ed. (Beijing: Defense Industries Press, 2005), pp. 275–276.

22. *Ibid.*, p. 290.

23. *Ibid.*, p. 275.

est possible moment, in order to seize the initiative and force the enemy into a reactive mode.²⁴ Defensive activities, meanwhile, will also be implemented from the onset of operations, so as to limit the ability of the enemy to interfere with, seize, destroy, or disrupt one's own space systems.²⁵ These will include active and passive measures. Active defenses include the provision of air defenses and security forces. Passive measures include camouflage and concealment of space-related facilities, including launch and TT&C facilities, deception measures, as well as redundancy and mobility. Mobile TT&C facilities, for example, should be developed and deployed to concealed locations, ready to replace fixed sites should the latter be attacked.²⁶

In the context of A2/AD operations, such unified operations would serve to deprive an opponent of space-based information systems research (ISR) by employing a range of forces and techniques to blind his ISR systems, jam his data and TT&C links, and physically destroy certain key systems (both those in orbit and those on earth). If conducted at the outset of a campaign, a successful series of such attacks would, at a minimum, reduce an opponent's ability to obtain timely information to plan aerial attacks, guide weapons precisely, and conduct battle damage assessment. At the same time, one would be able to defend one's own space and terrestrial space infrastructure, and thereby obtain information to facilitate defenses and even counterattacks against the enemy's airpower assets.

A successful PLA offensive against such key space targets would strongly affect the ability of the U.S. military to operate in the manner to which it has become accustomed. The loss of space-based communications assets, for example, would severely degrade the ability to coordinate forces across a theater as vast as the Pacific. The ability to challenge U.S. dominance of space, which the U.S. has enjoyed in all of the post-Cold War conflicts, may be sufficient, in the Chinese estimation, to deter U.S. intervention.

Tactical A2/AD: Countering Adversary Airpower

As noted, the central focus of Chinese "counter-intervention" is to limit the impact of adversary air attacks, whether by preventing those attacks or neutralizing the attacking assets. Chinese assessments of recent wars accord airpower the ability to have a strategic impact. In particular, the NATO air offensive against the Serbians during the 1990s Balkan conflicts impressed PLA analysts. Through the use of airpower alone, concludes one Chinese analysis, NATO was able to compel Belgrade to accede to its terms. The volume goes on to observe that imperialist, hegemonic powers have often relied on aerial attacks to achieve their strategic objectives.²⁷

In response, PLA analysts have concluded that expanding and improving China's aerial striking power is essential—which is the core of Chinese counter-intervention capability. While attacking and neutralizing an enemy's information systems and denying him space dominance can weaken his aerial striking power, it is also important that the enemy's airpower itself be defeated. "As recent local wars have made clear, the side that can first use and maintain the use of aerial strength is the side that will win the initiative in the conflict, a strategic activity that will determine the winners and losers in the conflict."²⁸

Such a victory cannot be achieved by remaining on the defensive. Although implementing the air defense of targets is important, simply intercepting enemy aerial attack forces is likely to be insufficient, due to both the range and destructiveness of modern weaponry. The extended range and high accuracy of weapons means that if the attackers are not destroyed at the source, it is difficult to intercept (too many potential lines of attack) and those weapons that do penetrate will have a devastating effect.

Consequently, forestalling and countering an opponent's air attacks will be an essential element of any A2/AD campaign. Many of the key tasks are

24. Li Daguang, "The Characteristics and Rules of Law of Space Strategy," *China Military Science*, Vol. 1 (2002).

25. Fan Xuejun, "Militarily Strong Nations Are Steadily Developing 'Space Information Warfare,'" *People's Liberation Army Daily*, April 13, 2005.

26. Guan Weiqiang, Qin Daguo, and Xiao Lianggang, "Research on Requirements for Aerospace TT&C Systems for Integrated-Style Joint Operations," *Journal of the Academy of Equipment Command and Technology*, Vol. 17, No. 6, 2006.

27. Tan Rukun, *Operational Strength Construction Teaching Materials* (Beijing: Academy of Military Science Publishing House, 2012), p. 130.

28. Zhang, ed., *The Science of Campaigns*, p. 331.

embodied within the Chinese focus on conducting a “joint campaign countering air attacks.” Such a campaign is centered on striking the enemy’s air bases, missile bases, and major naval forces, that is, the origination sites for aerial attacks against the PRC. Such attacks are intended to not only neutralize the enemy’s air attack capabilities, but also to seize the initiative (or at least deny it to the enemy), and force the enemy into a more reactive stance.

PLA writings suggest that, while offensive and defensive capabilities are both essential to countering an opponent’s aerial power, offensive capacity is of paramount importance. These capabilities entail both the ability to undertake air strikes (*kongzhong jingong*; 空中进攻), as well as aerial ambushes (*kongzhong xiji*; 空中袭击). The former is aimed at annihilating and suppressing the enemy’s combat strength in order to establish air dominance (*zhi kong quan*; 制空权). The latter is aimed at disrupting the enemy’s strategic political, economic, and military targets to create the conditions for air superiority.²⁹ Integral to both air strikes and aerial ambushes is the simultaneous effort to establish information dominance, including through attacks (as noted earlier) on the enemy’s space architecture, but also his airborne early warning aircraft, electronic warfare aircraft, stealth aircraft, and cruise missile systems.³⁰

Given China’s long-standing reliance on ballistic missiles to perform long-range strikes, it should not be surprising that the missiles play a central role in the PLA’s goal of establishing air dominance. The U.S. Department of Defense’s annual report on Chinese military capabilities has for several years highlighted the development of anti-ship ballistic missiles, complete with maneuvering warheads. Such systems place American aircraft carrier battle groups at risk, which are not only the centerpiece of America’s naval posture, but also provide aerial striking platforms, even when U.S. friends and allies deny the U.S. access to land bases.

More recently, China has also unveiled a hypersonic glide vehicle (HGV) program.³¹ Unlike tradi-

tional warheads, hypersonic vehicles are designed to fly for extended periods in the Mach 5 to Mach 25 range, providing greater range and better ability to out-maneuver missile defenses. The Chinese system was observed operating at Mach 10.³² The role of Chinese HGVs is unclear at this time, but they may be employed in conjunction with ASBMs to further extend China’s A2/AD denial buffer.

Layered defenses will complement offensive power. These should include both fending off attacks (*kangji*; 抗击) efforts, as well as counter-attacks (*fanji*; 反击). Fending off attacks will focus on intercepting enemy attacking forces, especially stealth aircraft and cruise missiles, while also attacking the enemy’s airborne early warning and electronic warfare forces. By employing layered defenses that combine air interception and ground-based defenses (both surface-to-air missiles and anti-aircraft artillery), the fending-off forces can, ideally, inflict significant attrition on enemy forces. The priorities for fending off echoes that of the PLA’s priorities of the new “three attacks, three defends.” This mnemonic notes the key elements of the modern battlefield that must be engaged or prevented; thus, the PLA should pay special attention to attacking stealth aircraft, long-range cruise missiles, and attack helicopters, while preventing or countering precision strike, electronic warfare, and reconnaissance and surveillance systems.

Counterattacks are aimed at the enemy’s air bases, whether airfields or aircraft carriers and cruise missile shooters. Counterattacks are aimed, ideally, at eliminating the enemy’s aerial striking power before it can be employed. Counterattacks should lead with missiles to clear the way for other attacking forces, and should incorporate many different weapons and attack methods, coming from many directions, so as to overwhelm the enemy’s air defenses.³³

In this regard, further complicating American defense is the growth in Chinese air-launched and sea-launched cruise missiles. Of particular note are submarine-launched cruise missiles, which

29. Tan, *Operational Strength Construction Teaching Materials*, p. 133.

30. Zhang, ed., *The Science of Campaigns*, pp. 346–347.

31. Bradley Perrett, Bill Sweetman, and Michael Fabey, “U.S. Navy Sees Chinese HGV as Part of Wider Threat,” *Aviation Week & Space Technology* (January 27, 2014), http://www.aviationweek.com/Article.aspx?id=/article-xml/AW_01_27_2014_p18-657278.xml (accessed May 29, 2014).

32. “China Confirms Hypersonic Missile Carrier Test,” Reuters, January 15, 2014, <http://www.reuters.com/article/2014/01/15/us-china-missile-idUSBREA0E0Z020140115> (accessed May 29, 2014).

33. Zhang, ed., *The Science of Campaigns*, pp. 347–348.

could attack aircraft carriers or land bases with little warning. Over half of China's submarine force and virtually all of its surface combatants are currently capable of firing anti-ship cruise missiles; it is expected that a land-attack cruise-missile capability will be fielded soon as well.³⁴ The combination of cruise missiles and ballistic missiles could hold at risk not only current American and allied main operating bases but also possible future dispersal sites.

Another element of the A2/AD measures will be passive air defenses, including "people's air defense" units. These measures are aimed at minimizing the impact of those enemy air strikes that survive the Chinese offensive as well as fending off attacks and launching counter attacks. This includes rescue missions, repair measures, as well as camouflage, concealment, and deception steps, both to cause the enemy to attack the wrong targets and to mislead him regarding the impact of his own air attacks.³⁵

Steps for the United States

Much of the discussion on countering China's A2/AD plans has focused on Air-Sea Battle and other elements of the Joint Operational Access Concept. These American counters tend to focus on the tactical, and sometimes operational, level; as such, they are centered on countering Chinese weapons systems. But assuring access in the face of Chinese counter-intervention will require more extensive responses than direct counters—just as China is pursuing a broader, more holistic anti-access strategy, the U.S. response should also encompass a broader set of elements. The U.S. should:

- **Strengthen alliance structures and key security partner relationships.** At the strategic level, an essential move for countering Chinese strategic A2/AD measures is to strengthen American relationships with key regional players. Some key steps, such as supporting additional equipment sales and financing for the Philippines, securing increased joint access to Philippine facilities, and deploying additional ships to Singapore to main-

tain a more active presence in the South China Sea, are already underway. Other measures are obvious, such as bolstering Taiwan's ability to defend itself, which would allow the United States more time to organize additional reinforcements and support in the face of upgraded Chinese capabilities.

- **Pursue Vietnam as a security partner.** One potentially effective move would be to establish closer military-to-military relations with Vietnam. Long-standing tensions between China and Vietnam, as well as outstanding territorial disputes over maritime claims, the Spratlys, and the Paracels, have led to ongoing security tensions between Beijing and Hanoi. The Vietnamese leadership has very carefully welcomed more extensive interactions with the United States. Some Vietnamese officers receive limited training in the United States, and since 2007, the United States has permitted sales of non-lethal defense items. U.S. Navy ships now call on Vietnamese ports. At the same time, however, Vietnam's human rights record and strategic indecision remain obstacles to maximizing defense cooperation. Even so, the basis for future cooperation should be prepared through "enhanced education and training for senior Vietnamese military staff and as much operational contact between the militaries as the traffic will bear."³⁶
- **Embrace political warfare—offensive and defensive.** Insofar as the Chinese are likely to employ political warfare methods to deny the U.S. access to ports and other facilities in the western Pacific (such as in the Philippines or Japan) by portraying the U.S. enhancement of its presence as destabilizing, the United States, in turn, needs to incorporate political warfare in its Asian policies and grand strategy to assure that same access. Part of these efforts should include preparing responses to likely Chinese legal and public opinion warfare. This is not to suggest that

34. Jesse L. Karotkin, "Trends in China's Naval Modernization," testimony before the U.S. China Economic and Security Review Commission, January 30, 2014, http://www.uscc.gov/sites/default/files/Karotkin_Testimony1.30.14.pdf (accessed May 29, 2014).

35. Zhang, ed., *The Science of Campaigns*, pp. 348–350.

36. Colonel William Jordan, Lewis M. Stern, and Walter Lohman, "U.S.–Vietnam Defense Relations: Investing in Strategic Alignment," Heritage Foundation *Background* No. 2707, July 18, 2012, <http://www.heritage.org/research/reports/2012/07/us-vietnam-defense-relations-investing-in-strategic-alignment>.

the U.S. should alter its laws for fear of Chinese exploitation, but to recognize that the PRC will almost certainly employ such measures perhaps even through American lawyers and law firms.

American political warfare should not be solely focused on defensive, reactive moves, however, but should also seize the initiative and force Beijing to respond. One essential method is to ensure that accurate information is made available to the Chinese public, not only through traditional news media, but through the Internet and social media as well. Promoting freedom of the press and diversity is a worthy goal in its own right, especially in peacetime, but American officials should understand the degree to which it complicates China's broader political and legal strategies—especially in the event of a crisis or conflict. In particular, the ability to provide the Chinese people with an alternative point of view and better access to accurate news would be an important potential deterrent, as reflected in Chinese concerns about public opinion warfare.³⁷ Moreover, it would constitute an asymmetric approach that would strike at a key Chinese vulnerability. The Chinese already expend enormous effort on policing the Internet and maintaining the “Great Firewall of China.” Developing and distributing software that could circumvent those controls, strengthening broadcast (television and radio) news and information sources, developing social media and online applications that would facilitate access to global news sources would not only be consistent with the American values of open access to information, but would also exploit a fundamental Chinese weakness.

Another important step is to not assume a reactive or defensive stance in political warfare terms. The United States should not wait to be criticized on legal warfare or public opinion warfare grounds, but should make clear that it will hold the Chinese to the same standards of behavior. For example, not only should the United States make clear that it will not accept Chi-

nese attempts to circumvent the boundaries of customary maritime law in limiting freedom of navigation activities (which are much more than merely rights of transit), the U.S. should also publicize and highlight Chinese maritime activities, such as the PLA navy surface group transits of the Miyako Strait or deployments near disputed territories—not to suggest that these actions are illegal, but to point out that China performs the very actions for which it criticizes others.

- **Develop asymmetric responses to China's A2/AD measures.** At the operational level, the United States should explore asymmetric responses to Chinese A2/AD efforts. At the present time, the entire first island chain is a barrier to the PLA navy, as it is entirely in the hands of U.S. allies or states that are wary of the PRC. Even if Beijing succeeds in keeping the U.S. from intervening within the first island chain, it will still have to secure access to the broader Pacific—something which may require expeditionary capabilities. While the Asia-Pacific region is primarily a sea and air theater, there remain essential roles for ground forces—not to fight a land war in Asia, but to provide support to allies in such key areas as missile defense, air defense, and precision strikes against enemy forced-entry capabilities.
- **Invest in regionally aligned, mission-focused units.** One possibility already being explored is “regionally aligned forces.” Active duty and National Guard brigades that are likely to have Asia-Pacific roles will familiarize themselves through additional rotations of units and leaders throughout the region. To enhance the effectiveness of this new approach, the U.S. Army should consider creating units that specifically emphasize those mission areas where the U.S. military is likely to have the greatest competitive advantage. Prior to World War II, the U.S. Marine Corps developed the Marine defense battalion (comprising anti-aircraft and coastal defense batteries, and a large complement of machine guns) to defend islands from enemy air and

37. Dean Cheng, “Winning Without Fighting: Chinese Public Opinion Warfare and the Need for a Robust American Response,” Heritage Foundation *Background* No. 2745, November 26, 2012, <http://www.heritage.org/research/reports/2012/11/winning-without-fighting-chinese-public-opinion-warfare-and-the-need-for-a-robust-american-response>.

naval attack. The Army might consider creating a comparable entity, perhaps modeled after the armored cavalry regiment to the same effect—a largely self-contained force capable of providing certain advanced defensive capabilities to allies in time of crisis, without the large footprint associated with larger forces. Such a defense brigade might include one or more Patriot and Terminal High Altitude Aerial Defense batteries for air and missile defense, attack helicopters for more distant operations, an armored cavalry squadron or Stryker battalion for self-protection, and combat engineers to prepare fortifications and obstacles. It should also incorporate containerized anti-ship missiles, which in conjunction with the attack helicopters, can potentially challenge an enemy landing force, or at least require substantially more enemy preparation before attempting a landing.

- **Expand the role of the U.S. Coast Guard.** Another measure is to expand the role of the United States Coast Guard. A key Chinese tool in expanding its maritime claims (and pressuring its neighbors) is to employ maritime law enforcement elements. The deployment of “grey hulls” (warships) is seen by many as escalatory; consequently, many states, including the PRC, employ “white hulls” (civilian law enforcement vessels) to underscore their claims. To counter such moves, the United States should increase U.S. Coast Guard assets, with the intent of deploying the Coast Guard to signal American political commitment without necessarily deploying combat formations.

Conclusion

Chinese attempts at forestalling enemy attacks on the Chinese homeland constitute a holistic, integrated effort encompassing all of the instruments of national power, rather than relying solely on the military. Although some of the measures that have garnered the most attention are apparently aimed at naval assets, the aim of these measures is ultimately to counter aerial power.

Such efforts will also not necessarily be constrained by the categories of “wartime” and “peacetime.” While kinetic military activities are likely to be limited to “wartime,” especially if the PLA is placed in the position of the “second firer” (*houfa*; 后发), even then, political warfare measures are likely to already be underway—unless the PRC is caught by strategic surprise. In situations where the PLA is able to engage in preemptive action (*xianfa zhi ren*; 先发制人), however, there will likely be not only political warfare but also space, cyber, and electromagnetic activities to degrade an opponent’s situational awareness and information capabilities while improving those of the PRC.

To counter Chinese plans for A2/AD capabilities, the United States needs to field a comparably holistic approach, incorporating political measures, operational military deployments, as well as technical counters to Chinese military capabilities. Washington has one major advantage over Beijing—almost all of the countries on China’s littoral are U.S. friends and allies. Leveraging these relationships, and in the process underscoring American credibility and commitment, is key.

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