Tianlian I–01 data relay and tracking satellite mounted on newly developed Long March 3C carrier rocket at China Xichang Satellite Center

ASSESSING CHINESE INTENTIONS FOR THE MILITARY USE OF THE SPACE DOMAIN

By PAUL OH

The continuing rise of Chinese political and military power has made Americans increasingly suspicious of China's intentions in the space domain. For many, the 2007 antisatellite (ASAT) test was the smoking gun that proved China's ultimate desire to challenge American space dominance.[1] Other experts, however, have cautioned against jumping to such conclusions and have proposed that a more benign intent lies behind China's actions in space.[2] This article argues that understanding Chinese intentions requires examining the current schools of military thought vying for influence within China's policymaking apparatus. The dominant school should yield the most influence in decisions regarding the development of Chinese space capabilities, and hence the direction of their military space policy. Such an examination suggests that the Local War school of thought has most influenced formulation of a military space policy with the primary intention of reinforcing China's regional hegemony.

This examination consists of two parts. First, the article categorizes China's military schools of thought into the People's War school, Local War school, and Revolution in Military Affairs school, and examines the development of distinctive technology, doctrine, and organization that each school may theoretically support. Each school and its developments are then associated with a particular strategic military posture vis-à-vis its potential adversaries. The Local War school, for example, will theoretically champion a "globally defensive" posture vis-à-vis the United States, but a "locally offensive" posture vis-à-vis its neighboring countries. In the second part, two case studies depicting China's increased activities in space are examined: the Antisatellite Program and the Manned Space Program. Each case study will highlight that these programs are producing capabilities that support a "locally offensive" posture. The article therefore posits that the dominant influence in the formulation of China's military space policy is the Local War school, which is concerned primarily with China's regional status and does not directly challenge American

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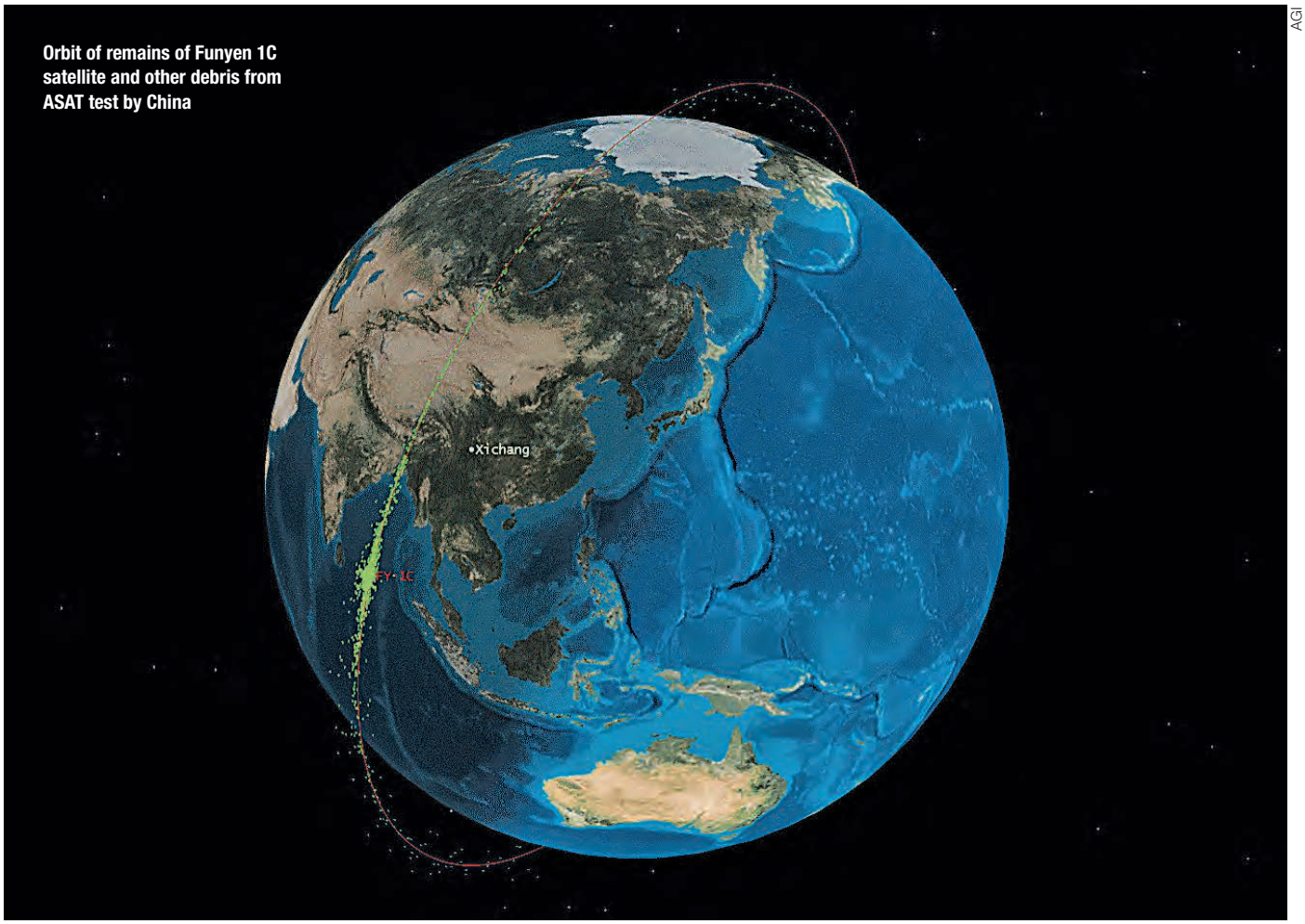

Orbit of remains of Funyen 1C satellite and other debris from ASAT test by China

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space dominance through weaponization of that domain.

Chinese Schools of Thought

People's War. Like in other militaries, various schools of thought within the People's Liberation Army (PLA) vie for influence on how to equip, train, and organize its military formations. The first school of thought, the People's War (*renmin zhanzheng*), has been the foundation of China's military thinking since its formulation in the 1930s and 1940s by Mao Zedong.[3] The basic concept revolves around defending the mainland from a more advanced, invading enemy by taking advantage of China's inherent strengths of a large population and vast land mass. Operationally, People's War is translated into the strategy of "active defense."[4] While trading space for time, Chinese forces would employ their traditional fighting skills of speed, surprise, deception, and stratagem.[5] Although this school does not shun technological advancement, the focus remains on the role of the population and the ability to mobilize the people and industry to support the People's Army.[6]

The space domain has limited value in the type of war envisioned by the People's War school of thought. Followers of this school are not hostile to the use of space, but believe that committing China's limited resources to space weaponization would be a costly mistake. They are against the idea of challenging American space hegemony. Not only would challenging the Americans not be aligned with the core of the military strategy of "active defense,"[7] but also other priorities such as economic development would suffer in a potential space arms race.

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This is not to say that People's War adherents would not welcome technological advances stemming from space programs that improve China's strategic defense. They may promote, for example, the development of the *Long March V* rocket, which is essential for the Chinese to enter the next phase of the manned space program.[8] Research into these launch vehicles may aid the development of air defense and ballistic missile defense. In terms of doctrine and organization, the People's War school would yield few developments regarding space. Because space is not fully integrated into fighting People's War, there would be little need to revamp the warfighting doctrine of the PLA. Changes would also likely be minor in the reorganization of the PLA structure.

Local War. The Local War school of thought has been heavily influenced by Deng Xiaoping and the lessons Chinese learned from their experience in Vietnam and later the American experience in the Persian Gulf. The Local War school envisions the People's Liberation Army transforming

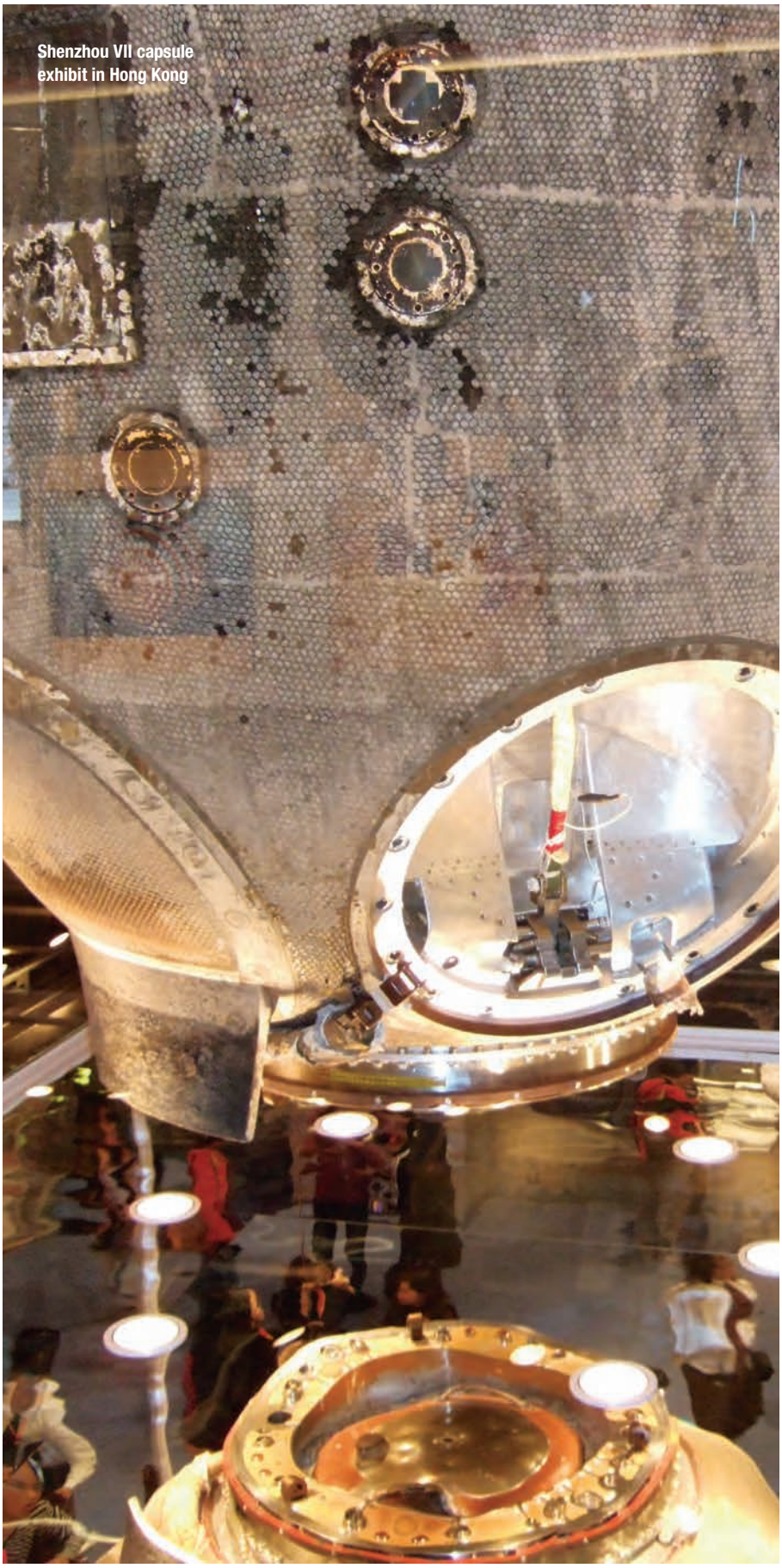
from a "manpower-intensive, technologically backward force into a quantitatively smaller, qualitatively better, technologically advanced force" able to compete against regional adversaries.[9] This school of thought has evolved since its inception and remains in the mainstream discourse. In the Military Strategic Guidance of 1993, Jiang Zemin stated that the Chinese military should be ready to fight "local, limited war . . . under high technology conditions." Impressed by *Desert Storm*, Jiang Zemin modified the guidance in 2002 to state that the Chinese army should now be prepared to fight a limited war "under conditions of informatization."[10]

In the Local War scenario, the adversary is not necessarily a superpower. The war is on China's periphery and not a defense against a deep invasion. There is no time to mobilize, and China seeks a quick military decision by committing rapid reaction forces to defeat its adversaries.[11] The war is limited, short, and intense, and units fight jointly using combined arms that integrate advanced technology, to include space technology. Regional force protection may be required to defend Chinese islands or western China or protect Beijing's interests in the South China Sea.

The technology that this school may promote includes space assets that enhance intelligence, surveillance, navigation, and communications, as well as network technology to link this information.[12] Satellites and the information they provide will help to achieve the goal of fighting regional adversaries under conditions of informatization.

The doctrine for space operations will emphasize the symbiosis between space systems and information systems. The need for achieving information dominance (*zhi xinxi quan*) is linked to achieving space dominance (*zhi tian quan*).[13] Doctrine will highlight the need to fully leverage the capabilities of modern command and control, surveillance, and reconnaissance systems to integrate operations (*zhengti zuozhan*) in all domains of warfare.[14] Organization-wise, this school will not advocate any change in structure regarding space operations, but it may seek ways to better integrate the different services to work more effectively together.

Revolution in Military Affairs. The Revolution in Military Affairs school of thought is the newest among the three schools. The Chinese interest in the Revolution in Military Affairs dates back to 1994 as they saw potential adversaries capitalizing on technological advances.



Shenzhou VII capsule exhibit in Hong Kong

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Although this school did not have much influence in the policymaking realm prior to 1999, it seemed to have gained greater influence with the new millennium. The Revolution in Military Affairs school of thought advocates a more drastic departure from the other schools, calling for development of offensive capabilities that can challenge American supremacy.

The scenarios for war envisaged by the Revolution in Military Affairs school involve conflict with a superpower.[15] This school seeks to defeat an adversary that is far superior militarily. The People's Liberation Army can try to close the military gap, but Revolution in Military Affairs advocates warn that trying to match American technology will only result in China falling further behind.[16] Instead, the People's Liberation Army should concentrate its efforts on developing leap-ahead technology and asymmetric capabilities to execute preemptive operations or asymmetrical warfare that can paralyze a superior force. In August 1999, then-President Jiang Zemin called for an accelerated development of an "Assassin's Mace" weapon, which is representative of the type of investment that this school advocates.[17]

Given this logic, it is not surprising that this school of thought views space as essential to achieving its goals. Some American hawks have repeatedly cited Chinese analyst Wang Hucheng, who stated, "Attacking an American space system may be an irresistible and most tempting choice."[18] This school sees warfare in space as unavoidable. As the *Science of Military Strategy*, a core defense document, states, "It seems that space warfare will be inevitable in future wars and that [the] space offensive is likely to be a new strategic offensive pattern in the future."[19]

The technology that the Revolution in Military Affairs school may promote is the development of counterspace assets. The 2007 testing of the direct ascent ASAT missile may be an indicator that the PLA is serious about the development of such weapons. Other technologies may also be developed for this purpose, to include kinetic and directed energy weapons. Certain Chinese analysts have promoted development of killer satellites, space-based antiballistic missiles, and space landmines.[20] The doctrine that this school of thought may advocate would center on using space capabilities for asymmetrical attacks or preemptive warfare. A body of Chinese literature promotes a possible offensive mission of "attacking an adversary's space assets in order to diminish its regional warfighting capability."[21] The Revolution in Military Affairs school may support the development of a whole new organization to conduct space warfare; *Hong Kong Journal* stated that China has been secretly preparing a "space war experimental team" that could lead to the formation of a new service.[22]

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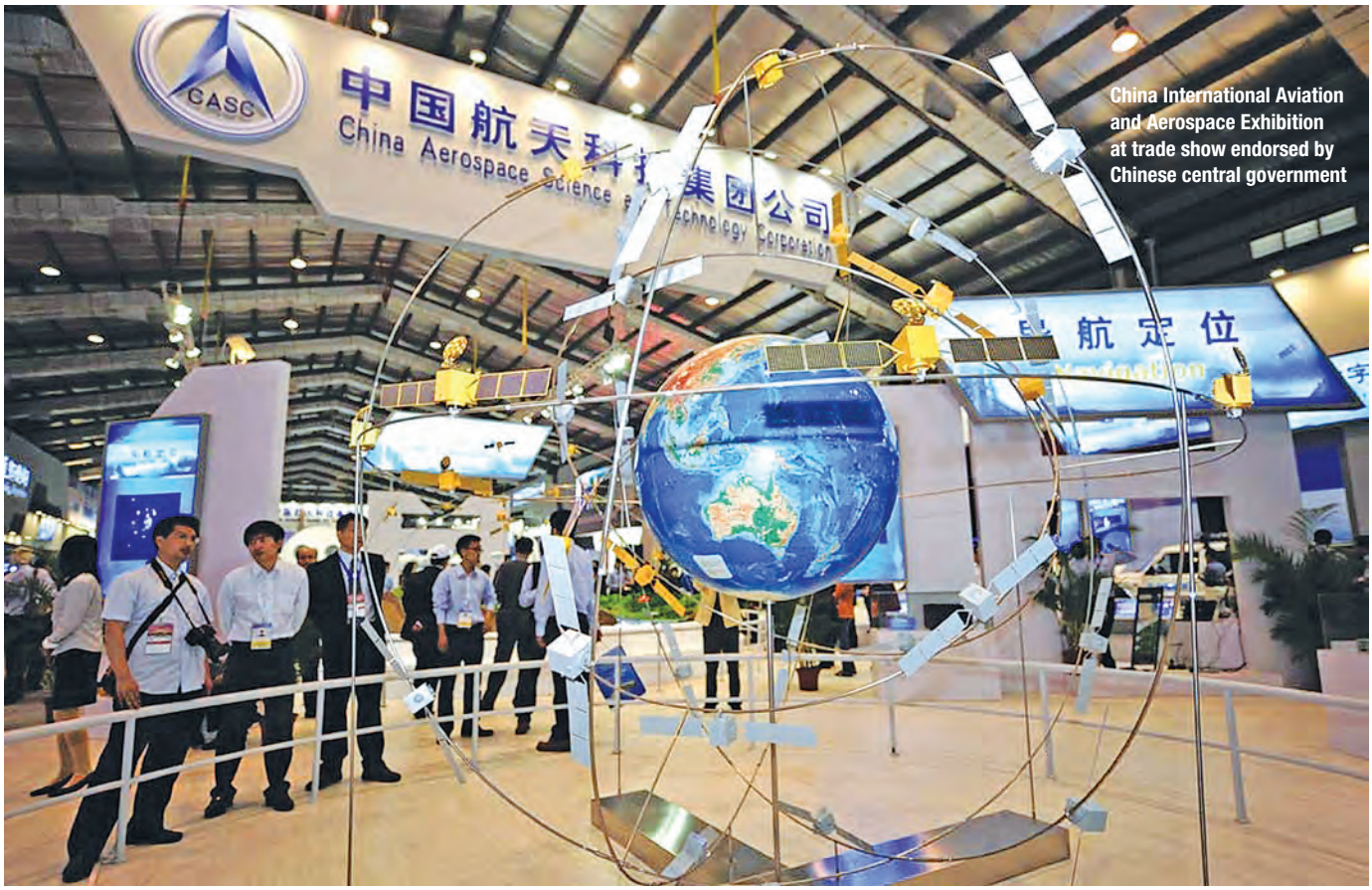
Strategic Military Posture. Each of these schools is associated with distinctive "strategic military postures," defined as how the PLA seeks to strategically array its military against potential adversaries given the capabilities that the developments in technology, doctrine, and organization produce. The People's War school champions a globally defensive posture.[23] The



China International Aviation and Aerospace Exhibition at trade show endorsed by Chinese central government

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developments in technology, doctrine, and organization produce space capabilities that lag behind both the United States and its regional neighbors because this school envisions a war that is fought with "active defense." The Local War school champions a globally defensive posture vis-à-vis the United States, but a locally offensive posture vis-à-vis neighboring countries. The development of space capabilities matches or exceeds those of China's regional neighbors, but does not seek to match those of the United States. The Revolution in Military Affairs school champions a globally offensive posture. The development of space capabilities matches or exceeds those of the United States because members of this school envision a future war with the Americans.[24]

Case Studies

The following case studies—the antisatellite program and the manned space program—show that the developments in space capabilities have been for a locally offensive posture and hence highlight the dominant influence of the Local War school.

The Antisatellite Program. On January 11, 2007, the People's Liberation Army destroyed a Chinese weather satellite with a direct ascent ASAT missile. The missile was a two-stage, solid fuel SC–19 *Fengyun–1C* fired from a mobile transporter-erector-launcher.[25] Impressively, the missile intercepted the satellite during the ascent trajectory instead of on its descent, revealing the increased sophistication of the overall guidance and control systems. With this test, China became the other country besides the United States and Russia with tested antisatellite capabilities.[26]

The success of the test sent shockwaves through the American defense establishment. The Chinese satellite was orbiting at 500 miles altitude, the same altitude as many U.S. spy satellites.[27] China's regional neighbors, notably India, also took notice. The Indian Army Chief of Staff, General Deepak Kapoor, concluded that his country must also "optimize space applications for military purposes."[28] As impressive as this event was, however, analyzing the test within the context of the overall Chinese antisatellite effort provides a better picture of what Chinese intentions for space may be.

Though research on such weapons started earlier, Chinese interest in antisatellite capabilities gained momentum in the 1990s with the increased influence of the Revolution in Military Affairs school of thought.[29] It seemed a perfect Assassin's Mace weapon, a relatively cheap capability within the reach of Chinese technological development that could strike at a vital support mechanism used by superior military forces. Technology-wise, nonnuclear kinetic-energy weapons are relatively cheap and easy to employ. China could use a small, ground-launched kinetic kill vehicle that could reach satellites in low Earth orbit. China has also researched options for high-energy laser weapons. Other ideas investigated included high powered microwave weapons, microsatellites that attack other satellites, and use of a spacecraft.[30]

Many analysts have pointed out that China's antisatellite program decisions have not been made in a vacuum. These activities coincided with a more aggressive American stance on the use of space and the failure of Chinese diplomats to make any headway on ensuring the nonmilitarization of space.[31] From the Chinese perspective, the American intentions to dominate this domain had been clear. The George W. Bush administration supported a robust military program and conducted several space wargames to ensure American preeminence in space. Concurrently, China and Russia have sought a comprehensive arms control approach to space security for a number of years.[32] Some analysts have concluded that the 2007 launch was diplomatic in nature, intended to put pressure on the United States to negotiate a treaty.[33]

the technology that the Chinese have used for disrupting space systems from the ground is easily acquirable and relatively inexpensive

On January 11, 2010, the Chinese news agency *Xinhua* announced a successful test of a land-based missile defense system. This time, a HQ–19 surface-to-air missile equipped with a new exo-atmospheric kinetic kill vehicle destroyed another missile in outer space. The public announcement of this test was carefully choreographed. The Chinese seemed to be sending a nuanced message. On one hand, the test coincided with the American arms sales to Taiwan[34] and the 3-year anniversary of the 2007 antisatellite test. The technology used for this procedure surpassed that needed to attack a satellite and could easily be applied for that purpose. On the other hand, the test was not officially and technically an antisatellite test and did not directly provoke the Americans or the international community.

Technology, Doctrine, Organization. The technology that the Chinese employed in both the ASAT and missile defense events was hardly state of the art. The improvements in Chinese antisatellite capabilities have shown gradual but steady progress since the 1980s. But the overall technology that the Chinese have used for disrupting space systems from the ground is both easily acquirable and relatively inexpensive.[35] Any nation with missile technology could theoretically develop such capabilities. The technology used in 2007 only marginally surpassed that of the American air-launched miniature vehicle system test in 1985 and the Soviet co-orbital system tests from 1963 to the 1980s.[36]

The advances in technology have also not noticeably changed doctrine and organization. There is increasing interest in space within the People's Liberation Army, but the doctrine governing military space operations remains unclear and unset.[37] Much has been written about the use of asymmetric capabilities in space, but these writings have remained outside of the mainstream discourse. There has also been no corresponding buildup of antisatellite weapons in PLA organizations. If China chooses to do so, it could build a substantial number of antisatellite weapons.[38] Similarly, China has yet to establish a space force to oversee such a development and deployment. China has not followed the Soviet model of building organizations with the arsenal to challenge American dominance.

Though the antisatellite problem is a cause for concern, the capabilities that the Chinese are seeking in their technological, doctrinal, and organizational developments lag behind those of the United States. The type of technology employed may be associated with those advanced by the Revolution in Military Affairs school, but the organizational and doctrinal developments necessary to challenge American hegemony have not followed. Though the success of

the 2007 test may have signaled the rise of the Revolution in Military Affairs school, in reality China has been content with simply demonstrating its technology. Even in the 2010 antiballistic missile test, the Chinese were careful not to send an overly hostile signal by targeting another satellite.

To its neighbors, however, China demonstrated capabilities that match or exceed those of every country in the region except Russia. The technology demonstrated, even if not accompanied by doctrinal and organizational developments, was enough to rival the space capabilities of the surrounding nations. The message of these demonstrations may have been for the region. The capabilities developed by the Chinese are not enough to signal a globally offensive posture vis-à-vis the United States, but are more than enough to signal a locally offensive posture vis-à-vis its regional neighbors. This is a clear indicator of the influence of the Local War school.

Manned Space Program. September 27, 2008, was a historic day in China as Zhai Zhigang performed his country's first spacewalk. The People's Liberation Army taikonaut used handholds to maneuver along the exterior of the *Shenzhou VII* spacecraft during China's first extravehicular activity in space.[39] This spacewalk was another crucial step in China's manned space program designed to spearhead the country's effort to reach great power status. Many in the United States have framed these efforts as a Trojan Horse to instill military capabilities behind the façade of civilian technological endeavors.[40] China, however, has defended its program by likening it to the American *Apollo* program. It has framed these efforts as a route to gain national prestige as well as to signal wealth, commitment, and technological prowess.[41]

Chinese analysts do not understand the American reaction to their comparatively smaller manned space program

Chinese efforts to send their taikonauts to outer space began in 1992. Then-President Jiang Zemin initiated and championed a program labeled *Project 921*. Chinese leaders recognized that a manned space program could greatly benefit a nation. China had studied the benefits of the American *Apollo* program, which included the rise of domestic pride, international prestige, development of technology for both civilian and military use, expansion of science and engineering programs in universities, and ultimately industrial and economic development.[42]

Officially, the Chinese have divided their manned space program into three phases.[43] The first phase, which the Chinese have completed, was the launching of taikonauts into space. The Chinese began experimenting with unmanned *Shenzhou* flights in 1999, and launched *Shenzhou II* in 2001 and *Shenzhou III* and *IV* in 2002. On October 14, 2003, they launched *Shenzhou V,* carrying China's first spaceman. The launch of *Shenzhou VI* followed on October 12, 2005.[44] Phases Two and Three are still unfinished. Phase Two consists of establishing a space laboratory. The challenges associated with this phase include mastering of new skills such as extravehicular activities as well as rendezvous and docking procedures between space lab and spacecraft.[45] Finally, Phase Three will consist of constructing a permanent 20-metric-ton space station orbiting Earth by 2020. This stage is contingent on the development of a new heavy-lift launch vehicle, *Long March V*.[46]

One cause for America's concern with the Chinese manned space program is the heavy involvement of the People's Liberation Army. Initially, China did not separate the military and civilian aspects of the space programs, thinking that a single program would be more efficient. China has separated the two in recent years, but the extent of PLA control over the civilian aspects of the program is unknown. A civilian body called the State Council is the ultimate authority guiding space policy. Under it, the 2d Artillery is responsible for functions like security, logistics, and facilities, and the taikonauts come from the ranks of the PLA Air Force. Military commanders have overseen the manned space program and also have gone on to sit on the Chinese Military Commission, which oversees the State Council.[47]

Because of the heavy involvement by the People's Liberation Army and China's relative opacity, the United States has been concerned about the application of technological developments for military use. The first big area of concern is the development of rocket technology. The *Long March* rocket history is similar to that of the U.S. *Delta*, *Atlas*, and *Titan* commercial launchers, which were originally intended for use as intercontinental ballistic missiles.[48] Advances in navigation and tracking, in-orbit maneuvering, and computational analysis resulting from the manned space program can all be used to increase offensive capabilities, to include evading antiballistic defenses.

The second big area is the use of spacecraft to increase surveillance and reconnaissance capabilities. *Shenzhou V* reportedly carried military equipment, causing some analysts to conclude that this mission was primarily used for military surveillance.[49] *Shenzhou VII*, according to the annual Pentagon report to Congress, deployed *Banxing–1*, a small imaging satellite with application for counterspace.[50] Some analysts emphasize this potential for the manned space flights and the future manned space station to be used for both defensive and offensive military space missions.

Some Chinese analysts do not understand the American reaction to their comparatively smaller manned space program. They point out that the United States and the Soviet Union both used military launch pads and servicemen for their manned programs.[51] The worry about the advances in ballistic missile capabilities also seems misplaced. The *Shenzhou* launch vehicle is the liquid-fueled *Long March 2F* carrier rocket that requires 20 hours to fuel. Hence, they provide neither the flexibility nor the mobility of American missiles. In regard to the orbital maneuvering technology, the Chinese point out that this capability was developed in the 1970s. The concern about surveillance, reconnaissance, and navigation capabilities also seems misplaced. American observers have pointed out that the instruments in orbital modules of the *Shenzhou* spacecraft could be converted for use in military reconnaissance. The Chinese argue that it is illogical to assume that China would spend its limited resources on military functions that can be achieved through unmanned satellites.[52]

Technology, Doctrine, Organization. As impressive as the Chinese accomplishments have been, the technology used for China's manned flights remains decades behind that of other modern nations. The Chinese are simply using a modified version of the 1960s Soviet *Soyuz* technology for

their manned missions.[53] To put their accomplishments in perspective, the United States and the Soviet Union conducted their spacewalks in 1965. Granted, the Chinese are making headway. The development of space hardware and software will increase Chinese know-how in everything from materials to computing powers to systems engineering, as the *Apollo* program did for the United States.[54] Much of the technology will have dual-use applications in areas such as surveillance, navigation, and positioning, increasing the efficiency and effectiveness of China's weapons systems.[55] But these advances do not constitute scientific breakthroughs.

the American military's propensity to view China as the "enemy" may lead to a self-fulfilling prophecy

Like the antisatellite program, there is little observable change in doctrine or organization resulting from the manned space program. The official Chinese plans for their manned space program are phased, incremental, cautious, and ambitious.[56] But these plans have not been translated into warfighting doctrine. Instead, most of the discussion and writings about the manned space program remains in the realm of Chinese grand strategy. Chinese leaders view the space program as a tool for technological modernization.[57]

Organizationally, the Chinese seem content with the increasing diversification of responsibility, not centralization. The China National Space Administration, China's equivalent of the National Aeronautics and Space Administration, was established in 1993 and is responsible directly to the Premier. In addition, multiple government-owned "corporations" have been set up to handle different aspects of the space program.[58] This structure seems to be aimed at reducing the corruption within the government and military as well as increasing linkages to private enterprises to benefit Chinese industry. The aim does not seem to be for increasing military effectiveness. The trend of diffusion of power away from the People's Liberation Army has not changed.

Much like the antisatellite program, the capabilities that the Chinese are seeking in their technological, doctrinal, and organizational developments lag behind those of the United States. The technological advances that the Chinese have made are not noticeably reducing the gap, much less leapfrogging American capabilities. These technological developments have not been accompanied by any doctrinal or organizational changes that signal the intent to transform the manned space program into a military project to challenge American hegemony. There seems to be no intention of matching or exceeding American capabilities.

China's manned space program, however, has awed its regional neighbors. Except for Russia, no regional country has been able to follow through on the development of a manned space program.[59] Other nations may possess greater technological capabilities, but only China has been able to apply its technology to plan and execute manned space flights. This organizational development at a national policy level has allowed China to become the only Asian country that has been able to focus its resources to build this capability. Like the antisatellite program, China's capabilities indicate a globally defensive posture vis-à-vis the United States, but possibly a locally offensive posture vis-à-vis its regional neighbors. This again indicates the influence of the Local War school.

In both of these case studies, the school with the most dominant influence seems to be the Local War school of thought. The Chinese are pursuing developments in technology, doctrine, and organization that give them capabilities that lag behind those of the United States, but match or exceed those of its regional neighbors. China's posture is globally defensive vis-à-vis the United States but locally offensive vis-à-vis its regional neighbors, indicating the dominance of the Local War school of thought.

The pervasive view of American analysts seems to be that China is a monolithic actor that has little constraint on its military spending and will use its newfound wealth to challenge American hegemony. This article challenges that proposition on two counts. First, China is not a monolithic actor; under its opaque façade, China has many competing views that vie for influence in the pursuit of military space policy. Second, China's challenge to American hegemony may one day come, but has not arisen yet. The present capabilities demonstrated in the developments in technology, doctrine, and organization do not support the notion that China is challenging the United States. Instead, the intent behind China's space policy seems to be pursuing and strengthening its regional hegemony. Understanding this intent has several ramifications for the American military.

First, understanding that the Local War school of thought has the dominant influence provides clues to how the People's Liberation Army views its threat. In space, the purpose has not been to challenge American hegemony, but to reinforce its growing regional hegemony. In tracking Chinese space capabilities, American analysts should be cognizant of strengths and weaknesses compared not only to the United States, but also to countries like Japan and India with whom China has had traditional disagreements.[60] As Chinese power grows, China may be inclined to act more aggressively in the region and use space to help it pursue resources or protect territorial claims. The American military should be prepared and plan for conflict not only between itself and the People's Liberation Army, but between China and a regional adversary.

Second, the United States should be aware that its actions or strategic communications may increase or decrease the influence of a certain school of thought. The American military's propensity to view China as the "enemy" may lead to a self-fulfilling prophecy. American strategic communications that contain poorly veiled portraits of China as its enemy may empower those in China who see space conflict with the United States as inevitable. A time may come when the dominant school in China is one that sees no other choice but to challenge America in space. But thoughtful actions and words may delay this day and strengthen the hand of more moderate governmental and military elites.

Lastly, the Chinese have identified one of the American military's critical vulnerabilities. The overreliance on space systems and the relative ease with which low Earth orbit satellites can be attacked warrant study on how to mitigate these risks. With the proliferation of missile technology, other nations may learn from Chinese efforts to attack America's Achilles' heel. Protecting the relatively vulnerable space platforms and increasing American ability to operate with degraded space support

may be essential to future warfare. Research should continue to minimize American vulnerabilities, as well as to increase the capacity to ensure American predominance in space.

Assessing China's intentions for space will remain a difficult endeavor. But planning with the assumption that China's streamlined decisionmaking process will soon challenge American hegemony in space may bring about conflict sooner rather than defusing misunderstandings. The competition and tensions inside China's opaque policymaking apparatus will continue as different schools vie for influence. For the time being, the dominance of the Local War school of thought has meant that China's military use of space has been focused on reinforcing its regional hegemony. America should continue to strive for better understanding of China's inner working to produce prudent policies to minimize the conflicts in the region as well as conflicts between the United States and China. **JFQ**

NOTES

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[15] Pillsbury, "PLA Capabilities in the 21st Century," 125.

[16] Michael Pillsbury, *China's Military Strategy Toward the U.S.: A View from Open Sources* (November 2, 2001), 4.

[17] The "Assassin's Mace" is a reference to any exotic and advanced secret military weaponry that allows the inferior to defeat the superior. See Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009*, 20.

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