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Space

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> Cold War in Space? Theresa Hitchens

ASAT Test Strategic Response Eric Hagt









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Deterrence Revisited: Outer Space^{*}

Bao Shixiu

Emerging Threat

The latest U.S. National Space Policy (NSP) poses a serious threat to the national security of China. This new policy, released in October of 2006, sets out the George W. Bush administration's vision for defending America's security in space.¹ It reinforces a unilateral U.S. approach to space security which is compounded by the U.S. opposition to any international treaties that limit its access to or use of space.² Aggregately, Bush's space policy pursues hegemony in space and poses a significant security risk to China that cannot be left unaddressed.

The NSP presents a number of challenges to China's security environment. First, it grants the United States with exclusive rights to space: the right to use any and all necessary means to ensure American security while at the

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China Security, Winter 2007, pp.2 - 11 ©2007 World Security Institute same time denying adversaries access to space for "hostile purposes." This sets up an inequitable environment of "haves" and "have-nots" in space, raising suspicion amongst nations. For instance, the NSP declares that U.S. space systems should be guaranteed safe passage over all countries without exception (such as "interference" by other countries, even when done for the purpose of safeguarding their sovereignty and their space integrity). With its significant space assets and military space capabilities, this situation gives the United States an obvious and unfair strategic advantage in space. Second, it refutes international restrictions and undercuts potential international agree-

ments that seek to constrain America's use of space. This effectively undermines any potential initiatives put forth by the international community to control space weaponization-initiatives that China supports. This U.S. position leads the global community to suspect U.S. unilateralist

China cannot accept the monopolization of outer space by another country.

intentions in space. Lastly, while the policy may not state it explicitly, a critical examination of its contents suggest its intention to "dissuade and deter" other countries, including China, from possessing space capabilities that can challenge the United States in any way– a parameter that would effectively disallow China to possess even a minimum means of national defense in space. The resultant security environment in space is one with one set of rules for the United States and another set of rules for other nations. In such a context, only U.S. security concerns are taken into account with a result of the reinforcement of a zero-sum dynamic to which space is already prone and threatens to pressure others into a military space race.

The United States denies that its position on space, as represented by the NSP, will inevitably lead to conflict in space. First, officials in the defense establishment argue that the United States is not opposed to others exploiting space commercially.³ Rather, it only opposes the utilization of space in a way that puts at risk U.S. dominance in space and its military capabilities. In this context, it is argued that if China has purely civilian and commercial interests in space, it should have no problem with U.S. policy in space. Put another way, implicit in much of American thinking regarding China's intentions in space is a view that if China has no plan to militarize space or has no intention to develop space weapons, U.S. ambitions in space shouldn't be considered inimical to China's interests.

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This position operates on several faulty premises. The first is that the United States is the only country that has national interests at stake in space, implying that China does not have deep national security interests in space or that China's space assets do not need to be protected. The Chinese gov-

Under American strategic dominance, a deterrent in space will decrease the possibility of the United States attacking Chinese space assets. ernment has expressed its desire to develop space peacefully on many occasions, and has pursued treaties to ban weapons and weapon-testing in space. But China also has deep interests, both now and in the future, to exploit space, which are vital to its comprehensive national power and its economic and scientific development and therefore its greater national security. Leaving aside the issue of using space for military purposes, China cannot entrust the protection of its interests in space to another country, no matter

their rhetoric or intentions. If the security of the United States requires the absence of that same security for China, then the logic is inherently imbalanced, unfair and one that China cannot accept. The peaceful use of space should not be confused with a lack of national security interests or the deep underlying need to protect them.

As a sovereign state, China has an equal right to access space. As the *1967 Outer Space Treaty* clearly articulates:

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.⁴

China cannot accept the monopolization of outer space by another country. For that reason, the U.S. administration's penchant for "exceptionalism" in space policy poses a serious threat to China both in terms of jeopardizing its national defense as well as obstructing its justified right to exploit space for civilian and commercial purposes.

The U.S. position makes another faulty assumption that national space programs and space assets can be effectively dissected into commercial and civilian uses versus military uses and capabilities. This is out of tune with technological developments and military inevitabilities. China's space program is not transparent in many respects, but neither is that of the United States. The reality is that many space technologies are inherently dual-use and it is therefore very difficult to distinguish sufficiently and effectively the intentions and capabilities in space. Without some kind of mutual understanding on controlling arms in space, suspicion will dominate relations between China and the United States.

U.S. actions seem to support the notion that China's space program is a threat even if China only develops commercial space assets. On the one hand, the United States has rejected Russian and Chinese proposals to negotiate a treaty banning space weapons and their testing.⁵ According to official U.S. statements, such a treaty is not necessary as there is no military race in space. In reality, the United States rejects such proposals because it would constrain its freedom of action in space. In effect, this provides the United States with

the opportunity to weaponize space at a time of its choosing or at a time of its perceived need. Coupled with the fact that a series of American space reports in recent years have argued vehemently for the development of military capabilities to control and dominate space, from a Chinese perspective it appears that the United States aims to deploy space weapons regardless of China's developments and intentions in space.⁶

In this context, the only conclusion that can be drawn is that the United States unilaterally seeks to monopolize the military use of space in order to gain strategic advantage over others and afford it the ability to protect U.S. interests. While China is committed to upholding international treaties and norms, it also has its own national interests and cannot subsume them to the interests of another country. China may consider the security problems of the United States, but cannot change

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China Security Editor China Program World Security Institute 1779 Massachusetts Ave. NW Washington, D.C. 20036 its national security considerations at their whim. Hence, China must be prepared to avoid being at the mercy of others in space. China must seek countermeasures to deal with this problem accordingly.

Principles of Deterrence in Space

How will China address these profound security concerns? Currently, China does not have a clear space deterrence theory to guide its actions for countermeasures. Still, the fundamental principles can be found by looking at the philosophy that Chinese leaders have long looked to when dealing with aggressive threats: "We will not attack unless we are attacked. If we are attacked, we will certainly counterattack."⁷ To launch any effective counterattack requires by definition a powerful military capability. But what such a capability and its strategy mean specifically for space is not clear. What is clear is that China is threatened by U.S. policies in space, a reality that is compelling China to make the decision to have its own space systems capabilities.

Many western analysts have inquired what means China will employ to meet this threat. China's nuclear deterrence theory and its perspective on the use of nuclear weapons offer important and relevant guidelines. During the nuclear era, being under threat of nuclear attack by the superpowers, China made the strategic decision to develop its own nuclear energy and nuclear weapons. In 1956, Mao Zedong stated, "In today's world, in order to prevent being bullied by others, we must posses these things [nuclear weapons]."⁸ In deciding the extent of China's nuclear weapon arsenal, Mao raised three principles: "youdian," or "to have;" "shaodian," or "to have a few;" and "haodian," or "of good quality." Deng Xiaoping also emphasized the deterrent factor of nuclear weapons. In other words, the Chinese approach emphasized the need for few (but reliable) nuclear weapons to act as a deterrent against other nuclear powers.⁹ The basic necessity to preserve stability through the development of deterrent forces as propounded by Mao and Deng remains valid in the context of space.

It is a well-known phenomenon that the use of nuclear weapons is considered taboo. Along with the doctrine of mutual assured destruction, the use of nuclear weapons in war is almost unimaginable. The utilitization of nuclear weapons is therefore almost entirely limited to a role of deterrence. What about the taboo of space weapons? More and more specialists are looking at the impact of space debris that results from the use of space weapons.¹⁰ Large amounts of space debris caused by space weapons will invariably threaten space assets of all space-faring countries, not just intended target countries. Any attack by one country against another using space weapons will result in many losers. With so much of commercial, scientific and military activity increasingly reliant on space, there exists a considerable and growing taboo against using space weapons in a situation of conflict. Thus, under the conditions of American strategic dominance in space, reliable deterrents in space will decrease the possibility of the United States attacking Chinese space assets.

At a fundamental level, space weapons – like nuclear weapons – will not alter the essential nature of war. Throughout history, there has been much ink spilled over new weapons that have the unique power and ability to change the underlying quality of war. For example, military theorists once exaggerated the tank's role in deciding the war's outcome during World War I.¹¹ The

atom bomb itself is probably the most salient example, as many analysts and politicians described the weapon as the unique ultimate weapon.¹² But this was a fundamental misunderstanding of war and its implements. Nuclear weapons crossed a threshold in terms of their immense capacity for destruction. But deterrence,

Chinese deterrent policy in space will vigorously maintain the "active defense" strategy.

mutual assured destruction and the nuclear taboo evolved to consign the use of nuclear weapons to a near impossibility, negating its utility as a tool of war-fighting. Weapons to change the nature of war have not emerged in the past and will not emerge in the future. As such, space weapons will not be the ultimate weapon nor will they be able to decide the outcome of war, even if they are used as a first strike.

Space weapons and their use are unique from other types of weapons, whether nuclear or terrestrial conventional weapons. Although there will be a taboo on the use of space weapons, the threshold of their use will be lower than that of nuclear weapons because of their conventional characteristics. Space debris may threaten the space assets of other "third party" countries, but the level of destruction, especially in terms of human life, could be far less than nuclear weapons or potentially even conventional weapons. Therefore, the threshold of force capability required to launch an effective deterrent will inevitably be higher than for that of nuclear weapons. This unique nature of

Holistic Deterrence

It is not sufficient to solely use physical counterattack mechanisms for deterrence in space. Capabilities must be paired with a wise strategy that includes important political and economic elements. Utilizing the full range of deterrent factors is the only way to maximize security advantage while minimizing the possibility of conflict.

War is never purely a military action – it is also a political "event"the two are indivisible. A successful national security strategy must be comprehensive and therefore cannot underestimate political and policy considerations. In basic terms, the initiator of a war must first find a favorable political position or a justified reason to instigate conflict. China has a strong political will to defend its national security. Political will is a type of 'soft power', which represents an important invisible force that can deter potential adversaries from initiating hostile actions. Other 'soft power' elements that China possesses: a reliable defense capability suited to its comprehensive national strength and which is sufficient to answer any challenge by its adversaries; and the deeply patriotic and unquestionable determination of the Chinese to use comprehensive national strength to safeguard national security – at any cost. China will live up to its reputation as a sovereign country with a rich history that holds an important and respected place in the global community.

China's national security strategy must also be based upon a precise calculation of economic benefit. The United States and China share economic benefits and interests: with the United States as the world's most developed country and China as the largest developing country, the two economies are highly complimentary. The United States and China are each other's second largest trading partners. Meanwhile, investments between the two economies have been equally impressive.

Politics and economics play an important role in the determination of war. However, the reality of capabilities and physical power cannot be ignored. Thus, China's national strategy must include the precise calculation of these factors and seek holistic deterrence. space weapons will affect the determination of the quantity and technical level of a "deterrent capability" in space.

Doctrine and Capability

First and foremost, a deterrent in space will vigorously maintain "active defense" as its central strategy as it has for all other areas of national defense. Active defense is "defensive" but also "active." It is defensive in that China will never conduct a first strike or take on offensive stance and will make every effort to prevent others from attacking China in space. That is, China will maintain a stance of second strike. But the Chinese strategy must also be active– and require China to possess the ability to launch "effective" counter-attacks. In other words, an active defense will entail a robust deterrent force that has the ability to inflict unacceptable damage on an adversary.

An effective active defense against a formidable power in space may require China to have an asymmetric capability against the powerful United States. Some have wondered whether a defensive policy applied to space suggests that China's possession of a robust reconnaissance, tracking, and monitoring space system would be sufficient for China to prevent an attack in space and would be in line with China's "doctrinal" position of "defensive" capabilities. An effective active defense strategy would include the development of these systems but would also include anti-satellite capabilities and space attack weapon systems if necessary. In essence, China will follow the same principles for space militarization and space weapons as it did with nuclear weapons. That is, it will develop anti-satellite and space weapons capable of effectively taking out an enemy's space system, in order to constitute a reliable and credible defense strategy.

An active defense strategy will also include an intensification of civilian defense preparations against possible space attack if and when that possibility becomes apparent.¹³ China will need to use the vast expanse of its territory and its high-tech achievements to keep its second-strike capabilities in secrecy.

In short, while China resolutely opposes the weaponization of space, it will develop its own space weapons if the United States does so first. The guiding principle for the development of new weapon systems is the following: if an adversary has developed a new weapon and is prepared to use it in the future battlefield, China will attempt to develop the same kind of weapon. This holds true regardless of whether the battlefield is on land, sea, air or space.

Hedging for Peace in Space

In basic terms, strategic deterrence theory demands three basic conditions be met to be effective. They are 1) the possession of an adequate deterrent force; 2) the will to use deterrent force; and 3) clear communication of both the possession and the determination to use a deterrent force against an adversary. Neither the United States nor any other nation should be led into thinking that China does not have the ability to acquire a fully effective deterrent in space or the determination to use it in its own defense. This article attempts to serve to communicate those realities.

Despite the need for an effective deterrent to meet security challenges that China may confront in space, it will not initiate a space weapons race with the United States or any other country. First, China does not have the ambition to enter a space weapons race. During the Cold War period, faced with a threat of nuclear war, China did not join in the nuclear weapons race between the United States and the Soviet Union. Today, China's space program is pointed in the direction of peaceful development. The new political and diplomatic doctrines - a harmonious society and world - also curb China's entrance to a space weapons race.¹⁴ Second, China does not have the ability to enter a space weapons race. Although China has ambitious plans in space, the technical gap, especially in the military area vis-à-vis the United States, is difficult if not impossible to fill. China will not and cannot expend significant budgetary resources pursuing space weapons, but will instead focus on civilian and commercial space assets.¹⁵ So, if China owns space weapons, their number and quality will be limited in their capacity to act as an effective defense mechanism and will not be a threat to other countries.

China has every interest to avoid triggering a confrontation in outer space and it will never be a deliberate choice for China. Equally important, however, is that China will not shrink from defending its core national interests.

Notes

^{*} The author wishes to emphasize that the views expressed in this paper are entirely his own. They do not necessarily represent those of any other individuals or any organizations in China. ¹ White House Office of Science and Technology Policy (OSTP), U.S. National Space Policy,

October 6, 2006. See: http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf ² Terence Hunt, "Bush Seeks to Block Enemies From Space," *Guardian Unlimited*, October 18,

2006.

³ White House Office of Science and Technology Policy (OSTP), U.S. National Space Policy, October 6, 2006. See: http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf

⁴ "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Article I," Signed at Washington, London, Moscow, January 27, 1967

See: http://www.state.gov/t/ac/trt/5181.htm

⁵ "Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects," *Joint Working Paper by the Delegations of China and the Russian Federation at Conference on Disarmament in Geneva*, September, 26, 2002

See: http://www.fmprc.gov.cn/eng/wjb/zzjg/jks/cjjk/2622/t15442.htm

⁶ Teng Jianqun, "No Weaponlization in Space," *People's Daily*, November 4th, 2006, See: http://opinion.people.com.cn/GB/40604/4997964.html

⁷ Mao Zedong, "Interview with Three Correspondents from the Central News Agency, the Sao Tang Pao and the Hsin Min Pao," *Selected Works of Mao Tse-tung*, volume II, Foreign Language Press, Peking, 1975, p. 2724

⁸ Mao Zedong, "On Ten Great Relations", Writings of Mao Zedong, Volume VII, p.27.

⁹ The Creation and Development of Mao Zedong's Military thought in our Time, Military Science Publishing House, Beijing, 2004, p.45.

¹⁰ Richard Stenger, 'Scientist: Space weapons pose debris threat", CNN, May 3, 2002.

See: http://archives.cnn.com/2002/TECH/space/05/03/orbit.debris/index.html.

¹¹ One of proponents of mechanized warfare was British strategist, tactician, and military historian, J. F. C. Fuller. In his writings in 1920s, Fuller, who commanded the British tank corps in the war of 1914, made an enormous effort to convince the British military establishment that the industrial revolution had completely altered the shape of war.

¹² Bernard Brodie, "War in the Atomic Age," Bernard Brodie edit, "*The Absolute Weapon: Atomic Power and World Order,*" New York: Harcourt, Brace and Co., 1946.

¹³ China has built the civilian defense system against air-strikes. In this system, so-called modern air defense is emphasized. The modern air defense means preventing and responding to attacks from the atmosphere and space weapons.

¹⁴ "Hu Makes 4-point Proposal for Building Harmonious World," *Xinhua News Agency*, September 16, 2005. See: http://www.china.org.cn/english/features/UN/142408.htm

¹⁵ Information Office of the State Council of the People's Republic of China, "*China's Space Activities in 2006*," October 2006, Beijing.

See: http://www.cnsa.gov.cn/n615709/n620681/n771967/79970.html

U.S.-Sino Relations in Space: From "War of Words" to Cold War in Space?

Theresa Hitchens

China's spectacular test of an anti-satellite (ASAT) capability on Jan. 11, 2007, has altered the U.S.-Sino dynamic in military space, raising a host of questions for U.S. strategic and military planners as well as for space stake-holders around the world. The Chinese test unfortunately threatens to move the United States and China from a "war of words" in space to Cold War-style military competition that would threaten global security in space for decades to come.

Predicting the fall-out from the provocative Chinese ASAT test is not yet possible, as the impact on U.S.-Sino relations in space, as well as the future of space security for all, rests on the answers to a number of different questions.

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China Security, Winter 2007, pp. 12 - 30 ©2007 World Security Institute • What was the motivation behind the Chinese action? Is Beijing willing or able to clearly articulate that motivation?

• What might be, or should be, the U.S. response – both with regard to policy and military posture?

• What might be, or should be, the response of the rest of the international community?

• What, if any, actions can be taken (bilateral and multilateral) to stop what looks to be a precipitous slide toward space weaponization by both the United States and China as part of an overarching military face-off?

It is obviously too soon to discern likely answers to these questions, but there are a number of indicators to be considered.

First Reactions

The deliberate destruction of a satellite in a highly used orbit - creating mass quantities of space debris that will remain a global danger for decades - has deservedly been met with U.S. and international opprobrium. U.S. Air Force satellite tracking data is already showing that debris from the impact has spread from the FY-1C's original orbit of about 850 kilometers in altitude to as high as 3,500 kilometers and as low as about 200 kilometers¹ – an area of space that includes hundreds of satellites owned by numerous nations and commercial companies, particularly Earth-observation and weather satellites important in day-to-day civil life as well as the International Space Station.² As of Jan. 29, some 517 pieces of debris have been publicly identified by the U.S. Air Force's Space Surveillance Network (SSN), according to Dr. T.S. Kelso, technical program manager at Analytical Graphics, Inc.'s (AGI) Center for Space Standards and Innovation in Colorado Springs.³ David Wright, a physicist at the Union of Concerned Scientists in Cambridge, Mass., has estimated (based on NASA models) that the impact will create at least 800 pieces of debris larger than 10 centimeters in diameter (the size of a baseball) and some 40,000 other pieces of smaller debris, between 1 centimeter and 10 centimeters). ⁴ Most of the larger debris will eventually be tracked by the SSN, but the smaller debris will be difficult, if not impossible to track without at the same time damaging or destroying a satellite. So, it likely will be weeks if not months before the debris threat becomes clear.

Even if China broke no laws, the destructive ASAT test violated at least the spirit, if not the letter, of the 1967 Outer Space Treaty, in which signatory nations (including China) pledge not to interfere with the space operations of others and to consult when national action might lead to such interference. China neither notified others nor has it conceded fully to calls for consultations; behavior that is simply unacceptable, particularly in peacetime. While China has now admitted to conducting the test after an inexplicable two weeks of official silence,⁵ official dismissals of any "threat" emanating from the test are not credible, and all space-stakeholders have not only the right but also the responsibility to press China for more details and transparency regarding their future intentions. Indeed, the cavalier attitude toward endangering other's satellites raises serious questions about Beijing's credibility as a responsible space-faring nation – undercutting the good reputation that the Chinese leadership has been steadily building among the international space community. For example, concerns are already emerging about the potential negative impact of the test, and its implications for the future of the commercial space market.⁶ How that affects, or should effect, other nation's willingness to continue civil and commercial space cooperation with China will be discussed below, but suffice to say it is more than likely there will be repercussions at some level.

What Was the Motivation?

Considering the international outcry that one would hope Chinese officials anticipated, what could have been such a strong motivator that Beijing would be willing to go forward with the provocative test and "face the heat?"

Certainly, the testing of a destructive ASAT weapon is, on its face, a complete repudiation of China's decades-long public diplomacy on space, which has touted China's space program as aimed primarily at national development and has stressed Beijing's commitment to promoting the peaceful uses of space, cooperation with other space-faring nations and opposition to space weaponization. China's 2006 White Paper on space, "*China's Space Activities in 2006*," states: "China is unflinching in taking the road of peaceful development, and always maintains that outer space is the common wealth of mankind."⁷ On its face, the test is completely contradictory to China's declaratory policy and raises questions about Beijing's sincerity. If nothing else, China's leadership must have known that what "soft power" in-roads it has gained by espousing such a policy – such as cooperative civil and commercial ventures with a number of nations ranging from the United Kingdom to Nigeria – could be put at risk by such a blunt demonstration of "hard power" in space.

China's motivation, of course, is the billion dollar question being asked in Washington, and other national capitols around the world. There are several possible interpretations, including (but perhaps not limited to):

1. The Chinese military had long ago decided that they needed an offensive and asymmetric strategy of holding U.S. space assets at risk in any conflict over Taiwan, and Beijing's diplomatic offensive against space weaponization has been nothing more than political cover to buy time to achieve that capability.

2. The Chinese ASAT test (and possibly ongoing program) was conceived largely as a deterrent to U.S. space-based missile defenses, which China views as a threat to its nuclear deterrent, rather than as an offensive program.

3. The test was an effort to bring the United States to the negotiating table over space-based missile defense and space weapons – a classic Cold War "two track" tactic using a display of hard power to jolt the other side into discussions and to ensure a bargaining chip.

4. China sees space weaponization as inevitable, echoing the sentiments of many in the U.S. military who believe that as space becomes more important to the tactical aspects of war-fighting, space assets will inevitably become targets.

As to be expected, opinions in the United States on the viability of these possible motivations vary based on underlying assumptions about China's future as a military threat, peer competitor or potential strategic partner. It is also possible that the motivations behind the Chinese test effort have changed

over time, perhaps with research and development starting out as a "hedging" strategy that then shifted toward the goal of establishing a deterrent or offensive capability.

According to U.S. government officials, China tested the launch vehicle (with or without a kill mechanism seems to be The most worrisome of all is whether China's other rival nations will seek to react in kind.

unknown) at least three times in the past, although details in various media reports are sketchy and somewhat contradictory.⁸ Some analysts have claimed that Chinese ASAT efforts reach back to the late 1980 and 1990s – which would mitigate against the "deterrent" and "bargaining chip" arguments, and bolster the "offensive" rationale.

Still other U.S. analysts note that China has been increasingly frustrated with the U.S. refusal to discuss Beijing's concerns about U.S. military space plans – a stance that was hammered home in the Bush administration *National Space Policy* released Oct. 6, 2006, which flatly rejected any new efforts at space arms control or agreements that would "limit" U.S. options in space.⁹ Certainly, it is true that the U.S. position long has been – and continues to be – that there is "no arms race in space" and thus no need for any discussions regarding the matter.¹⁰ Simultaneously, the U.S. position has been to "keep its options open" regarding space weapons, with the new Bush space policy taking a harder line than ever on the subject. Thus, it is conceivable that Chinese leaders may have come to the conclusion that only a display of Beijing's power to launch such an arms race would bring Washington to the table to hear their concerns.

Even more puzzling, and perhaps more worrisome, is the possibility – as has been speculated by some U.S. officials – that perhaps the Chinese leadership didn't really understand what risks the test might entail, and that the People's Liberation Army (PLA) may have been less than forthcoming in briefing the leadership about those risks. U.S. National Security Adviser

The test is completely contradictory to China's declaratory policy and raises questions about Beijing's sincerity. Stephen Hadley suggested in an interview with The New York Times that it was possible that Chinese President Hu Jintao and other senior leaders may not have been fully aware of the military's plans regarding the test. "The question on something like this is, at what level in the Chinese government are people witting, and have they approved?" Hadley said. ¹¹ U.S. analysts are

divided on that question; and it may be that the initial response from the Bush administration was designed to give Hu some wiggle room to "save face." Nonetheless, there is a fairly strong consensus that, at a minimum, the Chinese Foreign Ministry was neither informed nor ready to respond to the outcry that ensued.¹²

Finally, recent remarks by senior PLA Col. Yao Yunzhu at the World Economic Forum in Davos, Switzerland, who directs the Asia-Pacific Office at the Academy of Military Sciences in Beijing, lead toward the "mirror image" explanation: the Chinese and American militaries have come to the same pessimistic conclusion about the future of space and have decided to prepare for the worst, including a competition with each other. "My prediction:" said Yao, "Outer space is going to be weaponized in our lifetime."¹³ She added, in an indirect allusion to the United States, that if there is going to be a "space superpower, it's not going to be alone, and China is not going to be the only one."

What Will the U.S. Response Be?

The Chinese test has raised the question of U.S. space security to a new level of political concern, with a fever pitch of activity gripping Washington policy-making circles and Congress. The vulnerability of U.S. satellites has been starkly highlighted and the need to seriously address those vulnerabilities is now being recognized. "This is a wake-up call," said Robert Joseph, the undersecretary of state for arms control and international security. "A small number of states are pursuing capabilities to exploit our vulnerabilities,"¹⁴ he said. If the ASAT test was a display of PLA sword rattling intended to drive home U.S. vulnerability in space, it has been successful.

Indeed, the Chinese action has spurred the already growing consensus around improving space-situational awareness (the ability to "see" and understand what is going on in space), ensuring that satellite systems have passive protections to the extent feasible, and building redundant capabilities – both in space and in other mediums – to guarantee back-up in case of loss.¹⁵ While the U.S. Air Force has long been advocating such activities, investment has not been in line with the rhetoric – something that may well change when Bush's fiscal year 2008 budget begins to be debated in Congress this spring, according to congressional aides from both Republican and Democratic offices.

However, if the intent of the Chinese test was to deter the United States from building space-based missile defenses, it may well backfire. Advocates of space-based missile defenses have leaped upon the Chinese ASAT test as proof of the urgent need for such a system to counter the Chinese threat. An email press release by the Missile Defense Advocacy Alliance, a pro-missile defense lobby group funded by a number of U.S. defense companies, stated: "China has proven, especially to Iran and North Korea that ballistic missile capability represents power, self defense and an ability to deter. This model of international behavior will only encourage proliferators to develop their ballistic missile attacks or threats of that capability now exists and has been demonstrated."¹⁶ Jeff Kueter, director of the conservative George C. Marshall Institute in Washington, said: "If the international community is truly worried about the debris-generating effects of ASAT weapons, then it ought to embrace, indeed demand, development and deployment of boost-phase missile defense capable of intercepting ASAT missiles long before they reach their satellite targets."¹⁷ While the shift in Congress to Democratic control had raised the prospect that the Bush administration plans for space-based missile defenses would be derailed over the next two years – with many Democrats in power positions on record in opposition – Democratic congressional aides say that the Chinese test will make holding the line more difficult from a political point of view.

On the civil space side, Beijing is also likely to feel repercussions in its efforts to spur cooperation with NASA on planetary exploration. Considering that there were strong voices in the U.S. national security establishment, and in Congress, opposing last year's visit to China by NASA Administrator Michael Griffin and accusing China of wanting nothing except access to technology it could supply to its military programs, it is almost inconceivable that any

If the intent of the Chinese test was to deter the United States from building space-based missile defenses, it may well backfire. new progress can be made in the wake of the ASAT test. And since civil cooperation in space is largely a political exercise for the United States, withholding cooperation is also a method of political punishment. Indeed, U.S. National Security Council spokesman Gordon Johndroe told reporters on Jan. 18 that "The United States believes China's development and testing of such weapons is inconsistent with the spirit of

cooperation that both countries aspire to in the civil space area."¹⁸ Likewise, military-to-military cooperation in space as a means of confidence-building – as called for by Gen. James Cartwright, head of U.S. Strategic Command last year¹⁹ – is now unlikely to get anywhere fast. Sen. Bill Nelson, D-Fla., the chairman of the Senate Armed Services strategic forces subcommittee that oversees military space spending, called a closed-door hearing on the Chinese test on Jan. 25, and reminded reporters that he has long been concerned about the transfer of U.S. technology to China that could allow it to become a space competitor.²⁰ Christopher Padilla, assistant secretary for export administration at the U.S. Commerce Department, told reporters in Beijing on Jan. 25 that the

test had contributed to distrust between the U.S. and Chinese governments. Padilla, who was in China to explain a proposed U.S. plan to heighten export controls on high technology to China, said: "I raised the point that the test is one more example of how a lack of transparency and clarity requires the U.S. to hedge its relations with China."²¹ This is too bad, for both sides, in that such cooperation and confidence-building – even if baby steps – would work to improve understanding between Chinese and American space officials and help mitigate against future misunderstandings.

Further, if the ASAT test was part of an effort to drive the United States into space-related negotiations with China, again it may backfire - at least in the near term. It is true that there has been a chorus of calls for the United States to now undertake efforts to ban ASATs, or at a minimum, ASATs that create debris. For example, Rep. Ed Markey, D-Mass., stated: "American satellites are the soft underbelly of our national security, and it is urgent that President Bush move to guarantee their protection by initiating an international agreement to ban the development, testing, and deployment of space weapons and anti-satellite systems."22 Industry weekly Space News also urged the Bush administration to change course and consider "whether new and verifiable accords - such as a ban on the testing of anti-satellite weapons in space," noting that it "only makes sense to ban an activity that increases debris that threatens the satellites of multiple countries."²³ However, there are no signs that the administration intends to heed such advice. Rather, quite the opposite. An unnamed State Department official told Space News in the immediate wake of the Chinese test: "We do not think there is an arms race in space. Arms control is not a viable solution for space."24 Similarly, attitudes among congressional hard-liners are expected to harden even more; while some moderates may be pushed into more hard-line stances. For example, Rep. Terry Everett, R-Ala., former chairman of the House Armed Services strategic forces subcommittee and long a moderate Republican voice on the issue of space weapons, issued a statement condemning the Chinese test and noting: "We cannot afford to stand idly by and not address these threats immediately."25

At the same time, it is unclear that the up-tick in U.S.-Sino tensions spurred by the test will result in an all-out U.S. drive for an arsenal of offensive counter-space weapons – including similarly destructive ASATs. As most space experts recognize, ASATs cannot protect U.S. space assets because there are myriad terrestrially-based ways to threaten space systems including satellites. It is also highly unclear that ASATs would serve to deter potential adversaries from seeking to target U.S. space assets, as most other nations (including China) are not as dependent on space. Certainly, the China test has raised questions about whether U.S. policy to keep its options open regarding space weapons, and to "dissuade or deter others from either impeding [U.S.] rights or developing capabilities intended to do so,"26 has already failed. On the other hand, U.S. National Space Policy also states that the United States will take action to "deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests"27 - and the Chinese ASAT test seems to be a sign that Beijing intends to do just that, raising the issue of how the United States might opt to implement, and possibly use, counter-space capabilities. The problem for the U.S. Air Force, which is the "keeper of the keys" on this "space control" policy, is that a build up of counter-space weapons will require major investment (not to mention time to develop technology) at a time when the Pentagon budget is under severe pressure from the ongoing costs of the wars in Iraq and Afghanistan. And as noted above, the first priorities for space are programs to improve space situational awareness and to protect U.S. satellites, commercial and military, from attack. These two factors suggest that funding for development of a counter-space arsenal may be difficult to garner, at least in the short-term.

Nonetheless, the specter of a U.S.-China space weapons race cannot be ruled out, and certainly the Chinese ASAT test has raised the profile of those who would take the United States down the same path. "I hope the Chinese test will be a wake up call to people," said Hank Cooper, former director

The specter of a U.S.-China space weapons race cannot be ruled out.

of President Ronald Reagan's Strategic Defense Initiative and chairman of the politically-connected missile defense advocacy group High Frontier. "I'd like to see us begin a serious anti-satellite program. We've been leaning on this administration. This

argument to prevent weaponization of space is really silly."²⁸ Sen. John Kyl, R-Ariz., addressing the right-wing Heritage Foundation in Washington, D.C., on Jan. 29 similarly called for the U.S. resumption of ASAT weapons testing and the development of a space-based arsenal of defensive and offensive counter-space capabilities.²⁹ Perhaps more worrying, Adm. Timothy Keating, commander of U.S. Northern Command, told the *Associated Press* that "there are a number of things that are on the list of potential military options"³⁰ if China decides to undertake similar follow up tests.

What Response Did the Test Elicit from the International Community?

Following the test, Britain, Australia, Canada, Japan, Taiwan, India, South Korea and the European Union joined the United States in protesting and calling upon Beijing for consultations – and while China has said it has fulfilled those calls, diplomats from the protesting nations disagree. A Canadian diplomat said that the three démarches made by Canada (at the Chinese Embassy in Ottawa, the Canadian Embassy in Beijing, and China's representation office to the United Nations in Geneva) have yet been unanswered. Indeed, diplomats are widely bemoaning the lack of communication and transparency regarding the test.

Further, considering that Kelso and other space tracking experts say that the latest debris information is showing that at least 51 pieces of the 517 now identified are likely to pass very close (within 10 kilometers) to the International Space Station,³¹ international concern is only likely to rise rather than fall. Heiner Klinkrad, head of the European Space Agency's space debris office in Darmstadt, Germany, said (even before the most recent debris catalog release): "Destroying a satellite at this altitude, in sun-synchronous orbit, presents a debris problem about as serious as you can get" and speculated that some debris could remain on orbit for hundreds of years.³² Kelso also pointed out that it is "what we don't know" with regard to the amount of smaller debris that is the real issue of concern.

Somewhat surprisingly, Russia's response to the news of the Chinese test was muddled, at best, and disingenuous at worst. Russian Defense Minister Sergei Ivanov at first denounced reports about the Chinese test as "rumors."³³ ITAR-Tass quoted Maj. Gen. Vyacheslav Fateyev as calling the test "hooliganism," but noting that it demonstrated a "strong capability;" and Lt. Gen. Leonid Sazhin as saying the test was a response to U.S. development of space weapons, to ensure China's security.³⁴ Russian President Vladimir Putin, addressing the issue in a Jan. 25 press conference in New Delhi with Indian Prime Minister Manmohan Singh, also blamed U.S. plans for space weapons as the reason for the Chinese test and avoided any direct criticism of China, while reiterating Russia's opposition to space weaponization. "We must not

let the genie out of the bottle," Putin said.³⁵ Considering that Russia has been China's chief partner in calling for a space weapons ban – even going so far as to make a unilateral declaration that it would not be the first to deploy weapons in space and urging others to do so – Moscow's failure to reprimand Beijing raises questions about Russia's seriousness on the issue, as well as its commitments regarding space debris mitigation. Further, the attempt to shift primary blame onto the United States plays into the hands of those in Washington who have long argued that the main goal of the Chinese-Russian weapons ban proposals has been to tie U.S. hands while strengthening their own positions to counter U.S. capabilities.

Because China technically broke no laws, it is hard to imagine that direct economic sanctions are likely to be forthcoming in the near-term. But charges that it is not fully abiding by its responsibilities under the *Outer Space Treaty* are likely to result in political repercussions. Certainly, Beijing's position regarding

Russia's response to the news of the Chinese test was muddled, at best, and disingenuous at worst. a weapons ban treaty in the Conference on Disarmament in Geneva, and its stature in the Committee for the Peaceful Uses of Outer Space in Vienna, are likely to be seriously undercut. Furthermore, rumors are already circulating that a number of international space meetings scheduled to take place this year in Beijing – such as the April meeting of the Inter-Agency Debris

Coordination Committee and the February meeting of the debris subcommittee of the International Standards Organization – may be moved to another locale in protest of the ASAT test. While isolating China on space issues is likely to cause more harm than good, some sort of near-term, short-lived punitive action may be called for in order to demonstrate to the Chinese leadership both the gravity of their misconduct and the fact that the international community is not "toothless" in responding to irresponsible space actors.

The more interesting question is what affect, if any, the damage to China's reputation as a responsible space actor will have on its long-term relationships with its current (and potential) civil and commercial space partners – particularly in Europe. According to China's White Paper on space, Beijing has a substantial amount of cooperation underway: "Over the past five years, China has signed cooperation agreements on the peaceful use of outer space and

space project cooperation agreements with Argentina, Brazil, Canada, France, Malaysia, Pakistan, Russia, Ukraine, the [European Space Agency] and the European Commission, and has established space cooperation subcommittee or joint commission mechanisms with Brazil, France, Russia and Ukraine. It has signed space cooperation memorandums with space organizations of India and Britain, and has conducted exchanges with space-related bodies of Algeria, Chile, Germany, Italy, Japan, Peru and the United States." Further, "In October 2005, the representatives of China, Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Peru and Thailand signed the Asia-Pacific Space Cooperation Organization (APSCO) Convention in Beijing, and in June 2006 Turkey signed the Convention as well. APSCO will be headquartered in Beijing."³⁶ And in December 2004, China signed a contract for its first satellite export: it will build and launch a telecommunications satellite for Nigeria.³⁷

For many developing nations, China is likely to continue to be a partner of choice due to China's eagerness and low prices for launch and satellite production. Likewise, Russia, which has already dedicated itself to cooperation with China on lunar exploration,³⁸ seems to be viewing Sino-Russian space cooperation as yet another tool in a geopolitical game to counterweight to the United States. Therefore, Russian-Chinese space cooperation is more

likely to increase than decrease, despite the ASAT test. However, the situation may be different in Europe – where questions about the wisdom of cooperation with China already have been raised for both security and competitive reasons. China's early participation in the development of the European Union's Galileo navigation, positioning and timing network

Russia seems to be viewing Sino-Russian space cooperation as yet another tool in a geopolitical game to counterweight to the United States.

has already run into trouble for other reasons, including Europe's refusal to allow Beijing access to its encrypted signal and China's decision to pursue its own similar satellite network.³⁹ The U.S. government has further already expressed concern to the U.K. government regarding China's cooperation with Surrey Satellite Technology Ltd. on the development of Earth observation satellites, including the Disaster Monitoring Constellation that includes Britain's National Space Center as well as the Nigerian, Algerian and Turkish equivalents.⁴⁰ China's ASAT test might serve as a spur for Europe to distance itself from Beijing; or at a minimum provide political cover for what may be decisions made for industrial policy reasons.

And the most worrisome question of all – beside the potential for sparking a Sino-U.S. ASAT race – is whether China's other rival nations, most specifically, India, will seek to react in kind. India's media, predictably, has been harshly denouncing the Chinese test as a threat to India. "It threatens our own expanding civilian space assets, undermines the credibility of our nuclear deterrent, and exposes New Delhi's lack of a military space strategy," the *Indian Express* newspaper said in an editorial on Jan. 20.⁴¹ M. Natarajan, science advisor to India's Defense Ministry, said the government would be especially concerned if such Chinese missiles could "disable" satellites with

The Chinese test comes amid a renewed push by the Indian Air Force to establish a military hold on Indian space policy and funding. military and/or navigation capabilities and told reporters that the Indian government is assessing "steps we need to initiate in this direction."⁴² Unfortunately, the Chinese test comes amid a renewed push by the Indian Air Force to establish a military hold on Indian space policy and funding; a push that has been underpinned by Air Force lobbying regarding the "China threat."⁴³ There has been a steady drum-beat for a number of years regarding India's need to

compete in military space, including the development of ASAT weaponry. In April 2005, Chief Air Marshall S. P. Tyagi told reporters in New Delhi that India intends to set up a Strategic Air Command, in part to lay the groundwork for counter-space capabilities.⁴⁴ His remarks echoed those of his predecessor, Srinivaspuram Krishnaswamy, made in October 2003, telling reporters that work on the command was aimed at deploying weapons in space: "Any country on the fringe of space technology like India has to work towards such a command as advanced countries are already moving towards laser weapon platforms in space and killer satellites."⁴⁵ While up to now, the Indian government has largely turned a deaf ear to Air Force advocacy, the Chinese ASAT test may turn the tide in its favor. When asked about India's anti-satellite capabilities, Natarajan refused comment, but noted: "Maybe we need to talk to ISRO [Indian Space Research Organisation]."⁴⁶

Likewise, the Chinese action may spur Japan not only to speed its efforts

at developing missile defenses but possibly to develop military space capabilities. "It may fuel the argument that Japan should develop space technology for national defense, especially as it came in the midst of the North Korean nuclear crisis," said Yasunori Matogawa, a professor of space engineering at the Institute of Space and Astronautical Science, part of the Japan Aerospace Exploration Agency.⁴⁷ Japanese Prime Minister Shinzo Abe said Tokyo had demanded an explanation from the Chinese government; while Foreign Minister Taro Aso criticized Beijing for failing to give advance notice of the test which he doubted was for "peaceful use" of space.⁴⁸ Japanese officials have continued to charge that the Chinese government has yet to give a full and credible account of the test and future plans.⁴⁹

Staving Off an ASAT Race

Given that the United States and China now seem poised at the precipice of a dangerous competition to develop and deploy ASATs and other counter-space capabilities – a competition that threatens to draw in other players are well – what are the options for the wider international community in attempting to prevent Washington and Beijing from falling over the edge? The unfortunate truth is that there are not many, beyond continued diplomatic efforts to encourage both sides to tread more carefully. That said, those nations and international institutions committed to a weapons-free space environment should not throw up their hands in despair, but rather work together to reconsider how to push forward a collective space security agenda that can serve mutual interests rather than fan competition.

If there is a silver lining to the current situation, it has raised the issue of space debris to a higher political level than ever before – and elicited a new commitment on the part of the U.S. government to refrain from testing debris-creating ASATs. "We don't believe anyone should be doing these kinds of activities," U.S. State Department deputy spokesman Tom Casey said Jan. 19.⁵⁰

It is hoped that the planned meeting of the UN Committee for Peaceful Uses of Outer Space in February in Vienna (the discussions on debris are currently slated for Feb. 19-20 although the schedule may change),⁵¹ where delegates (including Chinese representatives, which up to now have been active proponents of the effort) were to discuss and hopefully approve a set of debris mitigation guidelines, is not derailed, but instead is given more impetus towards an agreement. One of the tenets of that agreement, according to

diplomats involved, is that signatories pledge not to deliberately create space debris. While the accord would be voluntary, it would certainly make future destructive ASAT weapons tests by any of the signatories much more difficult to justify.

It may also be that both the Committee for Peaceful Uses of Outer Space and the Conference on Disarmament will now be willing to consider a more

China and the United States should take heed, and seek to shape rules of the road that can help ensure mutual security in space for all. specific, legally binding, accord that would bar the testing and use of weaponry that would create significant persistent debris. Certainly, it is in the interest of no spacefaring power for near-Earth orbit to become so polluted as to become unusable – an outcome that cannot be ruled out over the long-term in a weaponized space environment. But even in the short-term, an increase in the threat from space debris

could have negative consequences for space-faring nations and space operators. A report on the potential market impacts of the Chinese ASAT test by U.S. market consulting firm Teal Group found:

"About the last thing that the satellite market needs now is the uncertainty that will accompany any moves to start blowing up objects in space or arming military satellites with protective countermeasures. The added debris problem is bad enough. An ASAT weapons race will have the effect of increasing the financial risk of any satellite program, and this will undoubtedly be felt most within the commercial market through decreased investor confidence and(or) higher insurance rates."⁵²

Further, the fact that it will take months for a clear picture of the debris impact of the Chinese test to emerge should encourage all space-faring nations to invest more in capabilities to survey the space environment, and to consider how they can work together to improve debris monitoring. While the United States has the world's most comprehensive space surveillance system, it is widely acknowledged that it has gaps and process problems that need to be addressed. Other nations have spot-check capabilities that could be used to provide additional data and augment U.S. capabilities – provided that nations were willing to work out data-sharing protocols. In particular, the European Union should now move forward with its nascent plan to develop

a European space surveillance network and work with the United States to ensure compatibility.

Finally, the United States and China need to recognize that they must make an effort to manage their emerging competition in military space in a manner that does not undercut their own national security, as well as the security of others. Breaking off nascent discussions about space cooperation in favor of launching a kind of Cold War in space is bound to backfire on both Washington and Beijing in the long run. Instead, a frank and open dialogue about each side's national security concerns in space is called for – along with serious consideration of how a new code of conduct for behavior in space might be drafted to clearly demark the boundaries of acceptable and unacceptable behavior in space. A code of conduct for space is not a radical, or even new, idea. Indeed, the administration of Ronald Reagan, while pursuing space-based missile defenses and an ASAT program, also was considering the value of pursuing a code of conduct that might include measures such as barring attacks on early warning satellites.⁵³ Pursuit of a space code more recently has been endorsed by a number of international media outlets, including The Economist, a libertarian-oriented British magazine, and U.S. trade journal Aviation Week & Space Technology.54 China and the United States should take heed, and seek to shape rules of the road that can help ensure mutual security in space for all. Failure to act to restrain unfettered military competition in space is bound to result in a "Wild West" environment that raises the risks not only to Chinese and U.S. uses of space, but to the peace and prosperity of the entire world.

<u>Notes</u>

⁶ Marco Cáceres, "Market Impact Brief: China's ASAT Weapons Test," *Teal Group Corp.*, Arlington, VA (subscription only).

¹ See: Celestrak, at http://celestrak.com/events/asat.asp

 $^{^{2}\,}$ Author email exchange with a mateur satellite trackers.

³ Author email exchange, Jan. 29, 2007.

⁴ "China Space Attack: Unstoppable," *Defensetech.org*, Jan. 18, 2007, see: http://www.defensetech.org/archives/003183.html

⁵ "China Admits Anti-Satellite Test, Says Not A Threat To Anyone," *Agence France Presse*, Jan. 22, 2007

Theresa Hitchens

⁷ China National Space Administration, "China's Space Activities in 2006," Oct. 12, 2006, see: http://www.cnsa.gov.cn/n615709/n620682/n639462/79381.html

⁸ Jeffrey Lewis, "When Did China Start ASAT Testing," *armscontrolwonk.com*, Jan. 22, 2007 see: http://www.armscontrolwonk.com/1369/when-did-china-start-asat-testing#cpreview

⁹ Joseph Kahn, "China Shows Assertiveness in Weapons Test," *The New York Times*, Jan. 19, 2007, see: http://www.nytimes.com/2007/01/20/world/asia/20china.html?pagewanted=1

¹⁰ See the Dec. 13, 2006, remarks of Robert Joseph, U.S. undersecretary of state for arms control and international security, at the George C. Marshall Institute in Washington, D.C. see: http://vienna.usmission.gov/_index.php?cmd=cmdFrontendSpeechesAndRelatedDocumentsDetail& speechid=236

¹¹ David E. Sanger and Joseph Kahn, "U.S. Tries to Interpret China's Silence Over Test," *The New York Times*, Jan. 21, 2007, see: http://www.nytimes.com/2007/01/22/world/asia/22missile. html?pagewanted=1&_r=1

¹² Ibid.

¹³ Edith M. Lederer, "China's WEF Envoy Sees Space Weaponizing," *The Associated Press*, Jan. 26, 2007, see: http://news.yahoo.com/s/ap/20070126/ap_on_re_eu/world_forum_china_missile_2

¹⁴ Ibid.

¹⁵ "China's Anti-Satellite Test," Editorial, Space News, Jan. 22, 2007, p. 14.

¹⁶ "Incentive to the World," *MDAA Missile Alert*, Missile Defense Advocacy Alliance, Jan. 19, 2007.

¹⁷ "Chinese Antisatellite Test Should Spur U.S. To Deploy Space-Based Missile Defenses, Expert Says," *NTI Global News Wire*, see: http://www.nti.org/d_newswire/issues/2007_1_ 23.html#003F8AA5; Jeff Kueter, "Crossing the Rubicon in Space Again: Iacta alea est," *George C. Marshall Institute*, January 2007, see: http://www.marshall.org/pdf/materials/492.pdf

¹⁸ Jeremy Singer and Colin Clark, "China's Anti-Satellite Test Widely Criticized; U.S. Says No New Treaties Are Needed," *space.com*, Jan. 19, 2007, see: http://www.space.com/news/070119_china_asat_response.html

¹⁹ Jeremy Singer, "Cartwright Seeks Closer Ties with China, Russia: Cooperation, Personnel Exchanges Seen as Helpful in Avoiding Misunderstandings," *Space News*, Oct. 16, 2006, p. 14.

²⁰ Jen DeMascio, "SASC subcommittee to inquire about Chinese satellite weapons test," *Defense Daily*, Jan. 26, 2007 (subscription only).

²¹ "Mistrust from China Anti-Satellite Test," *Agence France Presse*, Jan. 26, 2007, see: http://www.spacewar.com/reports/Mistrust_From_China_Anti_Satellite_Test_999.html

²² Office of Congressman Ed Markey, Press Release, "Markey Denounces Chinese Missile Test; Urges Bush Admin. To Strike Agreement To Ban Future Tests," Jan. 18, 2007, see: http://markey.house.gov/index.php?option=content&task=view&id=2545&Itemid=125

²³ "China's Anti-Satellite Test," Editorial, Space News, Jan. 22, 2007, p. 14.

²⁴ Jeremy Singer and Colin Clark, op cit.

²⁵ Office of Congressman Terry Everett, Press Release, "*Strategic Forces Subcommittee Ranking Republican Terry Everett: "Space is No Longer a Sanctuary,*" Jan. 19, 2007, see: http://www.everett. house.gov/index.php?option=com_content&task=view&id=462

²⁶ White House Office of Science and Technology Policy, "U.S. National Space Policy," Oct. 6, 2006. see: http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf

²⁷ Ibid.

²⁸ Luke O'Brien, "Fanning Fears of a Space War," Wired News, Jan. 25, 2007, see: http://www.

wired.com/news/technology/space/0,72563-0.html?tw=wn_index_2

²⁹ See the Heritage Foundation website for streaming video and a transcript: http://www.heritage.org/press/events/ev012907a.cfm

³⁰ Lederer, op cit.

³¹ Email conversations with this author, Jan. 26-29, 2007.

³² Peter B. DeSelding, "Debris From FY-1C Destruction Poses Long-Term Concern," *Space News*, Jan. 29, 2007, p. 6 (subscription only).

³³ "Reports of Chinese satellite shoot-down 'rumours'," *Agence France Presse*, Jan. 19, 2007, see: http://www.spacewar.com/reports/China_Anti_Satellite_Test_Sparks_Space_Junk_Outcry_ 999.html

³⁴ Chisaki Wantanabi, "Three Nations Join China Test Protest," *The Associated Press*, Jan. 19, 2007, see: http://www.guardian.co.uk/worldlatest/story/0,,-6356876,00.html

³⁵ Saurabh Das, "Putin Slams U.S. Space Weapons," *The Associated Press*, Jan. 26, 2007, see: http://www.themoscowtimes.com/stories/2007/01/26/018.html

³⁶ China National Space Administration, "China's Space Activities in 2006," Oct. 12, 2006, see: http://www.cnsa.gov.cn/n615709/n620682/n639462/79381_1.html

³⁷ Peter B. DeSelding, "China To Build And Launch Nigerian Telecom Satellite," Feb. 21, 2005, *SpaceNews.com*, see: http://www.space.com/spacenews/archive05/Nigeria_0221.html

³⁸ "Russia, China plan moon exploration," *The Associated Press*, Sept. 11, 2006, see: http://www.physorg.com/news77207213.html

³⁹ Peter B. DeSelding, "EU Likely To Bar China From Galileo Supervisory Authority," *SpaceNews. com*, June 19, 2006, see: http://www.space.com/spacenews/archive06/China_061906.html

⁴⁰ Theresa Hitchens, "Military Satellites 2006: International Innovation and Cooperation," April 18, 2006, pp. 7-9, see: http://www.cdi.org/PDFS/Microsat%202006.pdf

⁴¹ "Spaced Out?" Editorial, *Indian Express*, Jan. 20, 2007, see: http://www.indianexpress.com/ story/21271.html

⁴² "China's weapons test a threat to India," *Agence France Presse*, Jan. 20, 2007, see: http://www.spacewar.com/reports/China_Under_Pressure_To_Explain_Satellite_Missile_Strike_999.html

⁴³ For a book-length treatment of the Indian Air Force position, See Squadron Leader K.K. Nair, Space: *The Frontiers of Modern Defence*, 2006, Center for Air Power Studies, New Delhi, in association with Knowledge World, New Delhi.

⁴⁴ "India to set up strategic Aerospace command," *India Daily*, April 27, 2005, http://www. indiadaily.com/breaking_news/33107.asp; Jeffrey Lewis, "An Aerospace Command for India?," *armscontrolwonk.com*, May 1, 2005, http://www.armscontrolwonk.com/category/outer-space/ ?pg=3

⁴⁵ Lewis, op cit.

⁴⁶ "India to assess Chinese anti-satellite test," Zeenews.com, (India edition), Jan. 20, 2007, see: http://www.zeenews.com/znnew/articles.asp?aid=349110&sid=NAT

⁴⁷ Shaun Tandon, "China Shows Its Power With Anti-Satellite Test," *Agence France Presse*, Jan. 20, 2007, see: http://www.spacewar.com/reports/China_Shows_Its_Power_With_Anti_Satellite_Test_999.html

⁴⁸ "Nations express concern over China's anti-satellite test; press Beijing to explain," *Mainichi Daily News*, Jan. 20, 2007, see: http://mdn.mainichi-msn.co.jp/international/news/20070120p2g00m0in017000c.html

⁴⁹ "Japan seeking explanation of Chinese anti-satellite test," *The Associated Press*, Jan. 22, 2007, see: http://hosted.ap.org/dynamic/stories/A/AS_GEN_JAPAN_CHINA_SATELLITE_ASOL-

?SITE=ASIAONE&SECTION=SOUTHEAST&TEMPLATE=DEFAULT&CTIME=2007-01-22-22-07-47

⁵⁰ Peter B. DeSelding, "China Says It Remains Opposed to Weapons in Space," *Space News*, Jan. 29, 2007, p. 6 (subscription only).

⁵¹ A provisional agenda for the meeting may be found at: http://www.unoosa.org/pdf/limited/ c1/AC105_C1_L287E.pdf

⁵² Marco Cacéres, "Market Impact Brief: China's ASAT Weapons Test," Teal Group Corp., Arlington, VA, Jan. 22, 2007, (available for fee); "Teal Group Assesses Satellite Market Impact Of China ASAT Test," *Space War Express*, Jan. 22, 2007, see: http://www.spacewar.com/reports/ Teal_Group_Assesses_Satellite_Market_Impact_Of_China_ASAT_Test_999.html

⁵³ See written testimony to the 98th Congress, 2nd Session, 1984, House Documents Nos. 196-203, 13575 U.S. Congressional Serial Set, "U.S. Policy on ASAT Arms Control."

⁵⁴ "A New Arms Race in Space? There are better ways to manage China's space rivalry with America," Editorial, *The Economist*, Jan. 25, 2007, see: http://www.economist.com/opinion/displaystory.cfm?story_id=8592950; "China's ASAT Test: Irresponsible And Against International Norms," Editorial, *Aviation Week & Space Technology*, Jan. 29, 2007, (subscription only).



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China's ASAT Test: Strategic Response

Eric Hagt

China's testing of a direct-ascent anti-satellite weapon on Jan. 11, 2007, was an unambiguous challenge not to U.S. *power* in space but to its *dominance* in space. With little explanation emanating from officialdom in China, their principal motivation has not been made clear. A number of alternative intentions have also been offered up, for example, it was a clumsy maneuver to force the United States to the negotiating table for a space arms control treaty. Or, with a turbulent year expected in the run up to Taiwan elections, it was a grave reminder of Beijing's resolve to defend the nation's sovereignty at all cost. Or, that it was a raw show of force, a flexing of its growing military muscle. It is possible that all these motivations played a part in China's decision to test an ASAT. But behind the test was a simpler message and arguably one more benign to international space security than this spectacular test and the orbital debris cloud it created would suggest. In fact, the test is consistent with both China's notion of active defense and its deterrence doctrine, and should not have been a surprise in light of the growing threats that China perceives in

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While the fundamental aim of the test may have been relatively straightforward the process and conflict within China's political and military system associated with deciding to conduct the test are far less clear. That process has been marked by 1) diverging domestic influence over China's space program and its direction and 2) the differing responses by constituencies within China to the nations' perceived security threats in space. Understanding the domestic actors and their objectives does not alter the danger this test poses to the security of space. It can, however, illuminate the critical defects in the present strategic architecture in space and may point a way forward to avoid an arms race in space.

ASAT Test as a Response

In the past decade, China has derived a number of key conclusions from its observations of U.S. military activities in space that have fundamentally shaped China's own strategic posture. The first is the profound implications of space for information and high-tech wars. China witnessed with awe and alarm the power of the U.S. military using satellite communication, reconnaissance, geo-positioning and integration capabilities for an impressive show of force beginning first with the Gulf war in 1991 to the recent campaign in Afghanistan and Iraq.¹ The U.S. military's almost complete dependence on space assets has also not escaped the close examination of Chinese analysts.²

Coupled with a number of key U.S. policy and military documents that call for control in space and the development of space weapons as well as the U.S. refusal to enter into any restrictive space arms control treaty, China

China has concluded that the United States is determined to control space. has concluded that America is determined to dominate and control space.³ This perceived U.S. intent leads Beijing to assume the inevitable weaponization of space.⁴ Even more worrisome for China is the direct impact of these developments on China's core national interests. The accelerated development of the U.S. ballistic

missile system, especially as it is being developed in close cooperation with Japan, has been cited as threatening China's homeland and nuclear deterrent.⁵ The 'Shriever' space war games conducted by the U.S. Air Force in 2001, 2003 and 2005⁶ strongly reinforced the conclusion that U.S. space control sets
China as a target.⁷ Most central to China's concerns, however, is the direct affect U.S. space dominance will have on China's ability to prevail in a conflict in the Taiwan Straits.⁸

As U.S. military space developments have evolved, China's observations and subsequent conclusions have engendered a fundamental response: we cannot accept this state of affairs. For reasons of defense of national sovereignty as well as China's broader interests in space – civilian, commercial and military – America's pursuit of space control and dominance and its pursuit to develop ASATs and space weapons pose an intolerable risk to China's national security.⁹ China's own ASAT test embodied this message. Attempting to redress what China perceives as a critically imbalanced strategic environment that increasingly endangers its interests, China demonstrated a deterrent to defend against that threat. Its willingness to risk international opprobrium through such a test conveys China's grim resolve to send that message.

This still leaves unanswered nagging questions about: who made the decision, who was party to the decision, when was the decision made, and its significance for China's intentions in space. Knowing the answers to some of these important issues may do little to temper the detrimental effects of the test, but can hopefully provide clues as to how the United States and the international community can respond to avert a further escalation of military competition in space.

Conflicting Voices

China's approach to addressing its perceived insecurity in space fundamentally took on two separate forms: one political/diplomatic, the other military. At the international level, China's pursuit of a space weapons ban and test ban treaty as well as attendant verification measures is most visibly represented by China's efforts at the Conference on Disarmament in Geneva.¹⁰ Other official initiatives included China's opposition, along with Russia and Belarus, over the U.S. decision to withdraw from the ABM treaty and its push to build the NMD system.¹¹ China's White Papers on space, the first issued in 2000 and the other in 2006, reinforce this message but also put China's ambitions in space in a broader national and strategic context, calling the space industry an important part of the state's comprehensive development strategy.¹² Though official documents reveal limited information about China's space program, especially its military components, at a minimum they clearly lay out the political/diplomatic stance of China's interest in pursuing the peaceful development of space and its willingness to cooperate with others to achieve those goals.

The other solution is a military hedge, including the strengthening of capabilities to protect China's satellites and a robust ASAT capability. This military hedging approach largely focuses on capabilities to enhance the survivability of China's satellite networks, and to ensure its access to space.¹³ 'Active defense', a central component of this strategy, includes countermeasures such as anti-interference and anti-jamming techniques, and in extreme situations using micro-satellites to actively guard other satellites, act as decoys or even counter-attack.¹⁴ The heart of this strategy is to protect against an adversary's ability to prevent or restrict China from using space to its economic and national security advantage and constitute "comprehensive defensive actions." ASAT technology has been cited as an "evitable choice for most medium-sized and small space-faring states to protect themselves and deter strong enemies."¹⁵

Although most aspects of China's military program in space are largely unknown, the open source literature indicates that it proceeded in several stages as a response to developments in the United States. It largely began in the late 1980s with a realization that the U.S. missile defense, ASAT and space weapons programs could endanger China's national security interests.¹⁶ Yet, at this time, it seems China preferred to solve this through a diplomatic approach. With gridlock at the CD beginning in the mid-1990s, however, the

China undertook diplomatic and military hedging approaches to address a perceived threat in space. military option took on greater urgency with the call for a development of relevant space technology.¹⁷ An awareness that effective defensive capabilities in space would require a long time to develop gave early impetus to these trends.¹⁸ The second phase was marked by the Shriever war game exercise in 2001 (reinforced by the

Rumsfeld Commission and other factors¹⁹), which vindicated China's longheld fear of being a primary target of the U.S. military space program and triggered China's determination to resolve this threat in space – either through military or diplomatic means. From China's perspective, all U.S. actions since that time have served to diminish a diplomatic solution while underscoring the necessity of a military hedge in space. While there is no explicit evidence of a concerted ASAT program in China, a significant increase in calls to meet this threat as well as various research and development programs for ASAT and related space defense technologies began in the mid-1990s, and accelerating in the early 2000s.²⁰²¹ (The ASAT test itself also attests to the fact that China's military space program, particularly its ASAT program, has been in development for some time.)

This urgency to address China's rising security concerns is also evidenced by the call within key military institutes around the 2003-2005 timeframe to create a dedicated military space command with a stated purpose of tackling the growing strategic and national security threats in space.²² The driving force behind this new command system appears to be the PLA General Armament Department (GAD) or the closely related Armament Academy (AA).²³ Presently, command over civilian space experiment activities is roughly divided between the State Council, the Central Military Commission (CMC) and functional sections of the GAD.²⁴ Although the institutional hierarchy of China's military space program is not fully understood, military space activities are probably led by the CMC and the PLA General Chief Department, with significant personnel coming from the GAD.²⁵ Under a new powerful supreme command department for space, an agency with the Chinese president as the supreme commander, military space would take on a new priority in terms of budgeting and military and political authority; similar to what occurred with the Second Artillery, China's strategic force, upon its establishment.²⁶ While a space command and space forces may not have formally taken shape, the call for them strongly indicates the need for the military to seriously counter perceived threats to its national security challenges in space.²⁷

China's increasingly heightened sense of insecurity in space and its calls for a separate space command in response to the U.S. drive for space control have additional significance for the development of its military space initiatives and its eventual ASAT test. These trends have driven the establishment of domestic institutional and industrial constituencies that have taken root in the system and are vying for political and economic influence and authority. This phenomenon is certainly not unique to China as the experience of bureaucratic agencies in the United States will attest.²⁸ With deepening institutional interests, such agencies naturally evolve a degree of imperviousness to outside influence. The closed and nontransparent nature of China's military establishment, which largely runs the space program, only exacerbates this tendency. The sum of these realities suggests that once set in motion, national defense considerations planned over a long period to address security threats may be influenced to a degree by external factors but cannot be altered at the whim of those factors.²⁹

In this sense, China's space program may have been less malleable to altering its course of developing as a military hedge than has been hoped. Nevertheless, the poignant lesson that the U.S. pursuit of space control has not only triggered this process but has deeply reinforced it remains. Furthermore, this internal dynamic within China would have been particularly immune to U.S. pressure and influence since there are virtually no political or military relations between the two countries in space. Sadly, even business interaction is scarcely better.³⁰ As with many other areas, commercial interests act as a salve for otherwise tense bilateral relations, as is arguably the case between China and the United States. But without any commercial relations in space, and with perceived security concerns bearing down, China has too little to lose by conducting the test.

Not a Ruse

The ASAT test itself also implies that the military option is beginning to win out over a diplomatic one in China as a solution to head off U.S. space control ambitions. Every call by China's diplomatic effort at the CD for prevention of space weaponization has been effectively blocked by the United States.³¹ It has rejected any treaty that will restrict its freedom to act in space, claiming it has the most to lose and therefore has unique security considerations.³² The United States has also offered the reasoning that a treaty to ban weapons in space was not needed because there was no military space race.³³ China sees this U.S. stance as a thinly veiled attempt to retain absolute access to space while leaving the door open for the United States to develop space weapons in the future if necessary.³⁴ Along with the Bush administration's willingness to use force against those who threaten U.S. national security interests in space, concluding an arms control treaty in space seems remote.³⁵ Verification measures for a test ban for ASAT and other space weapons have also been rejected as infeasible due to the inherent dual-use nature of space technology.³⁶ The Chinese side has believed, fairly accurately, that the United States simply will never sign such a treaty for lack of trust, fearing others will secretly pursue space weapons capabilities while America's hands are tied.³⁷

China has also taken a deeper lesson from U.S. action: the United States negotiates based primarily on strength. Without strength of its own, China cannot bring the United States to the negotiating table.³⁸ This reveals a strong

strain of realism running through Chinese strategic thinking. A balance of force, attained by a show of strength, can redress strategic imbalance in space and ultimately promote peace.³⁹ These lessons are ingrained in China's perspective on the Cold War, where such a balance maintained world peace for 50 years.⁴⁰ The ASAT test will, the Chinese hope, restore a modicum of balance and deter the United States from acting on that position of superiority.⁴¹

Questions have also been raised about whether the ASAT test was conducted without the full knowledge of China's top leadership.⁴² If so, it would indicate that outsiders still know disturbingly little about China's internal decision-making process or its intentions. But more importantly, it would cast doubt on the leadership's control over the decision to test and therefore the motives behind it. Perhaps those motives include a direct challenge to the United States rather than a defensive response to perceived threats in space. However, there are two factors that make this implausible. First, the president of China is both the head of the top political entity in China (CCCP) and the commander in chief of the military (head of CMC).⁴³ A significant military test cannot be taken without the top political leadership's acquiescence or, at a minimum, its knowledge. Second, and more importantly, in its decision-making, the government considers the comprehensive national interest of the country, not only narrow military interests, or solely diplomatic concerns. Having said

this, it doesn't exclude the possibility of bargaining within the system between those advocating and those opposing such a test. In fact, the balance between competing constituencies in China may have an unpredictable influence on such a critical decision. Especially since China

China's heightened sense of insecurity in space has raised calls for a space command.

lacks the equivalent of the U.S. 'national security council', it is more difficult to weigh competing political and strategic considerations in a coherent and comprehensive way.⁴⁴ In light of this, it is possible that the decision to test was in fact unfavorable for China (as some would argue is the case), but the sum of competing interests created a bias for testing. Nevertheless, the gravity of the ASAT test and its obvious strategic implications for relations between China and the United States rules out the reasonable possibility of a decision to test based purely on narrowly conceived (military) interests.

The above discussion indicates that the military's actions to develop space

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weapons during China's diplomatic offensive were a separate and perhaps independent hedging track rather than a deliberate design to develop space weapons. The opposite has been suggested by some: that diplomacy was nothing more than a smokescreen to buy time for the military to achieve an ASAT capability.45 These accusations simply do not square with China's interests or its past behavior. First, outside of purely military interests, as a vastly inferior power in space, China has no conceivable interest in blindly pursuing an all-out space weapons program (let alone conducting a test). Such a move would not only launch China into a costly space race with the United States but would threaten China's delicate strategic balance with nearly all its neighbors (both potentially adversarial, such as Japan and India, as well as others in Southeast Asia) and even with Europe. Such behavior by China is also inconsistent with history. The military has frequently been subordinated to greater diplomatic and national interests. China's highly restrained development of its nuclear weapons program in the face of direct nuclear threat by both the Soviet Union and the United States in the past is an instructive example.46 The tight control over military program spending during the first decades of its opening up and reform is another case in point.⁴⁷

Second, implicit in this charge is also that the diplomatic effort was colluding with the military to pursue a space weapons program. Undermining years of China's reputation and hard work for dubious military gains fraught with high risk is utterly inconsistent with China's otherwise patient international diplomacy.⁴⁸ Similarly, the test could not reasonably be a ploy – particularly by China's Foreign Ministry – to force the United States back to the negotiating table. Nations do not respond to threats by acquiescing, particularly when threatened by a weaker state. It would smack of appeasement, or worse, cowardly surrender, neither of which would be an option in any country's domestic political environment. There is no historical U.S. behavioral precedent that would lead China to believe the United States would respond constructively to such an egregious act. It is conceivable that the MFA acquiesced in light of the failure to sway the U.S. through diplomacy or, at worst, the MFA wasn't fully informed.⁴⁹

From this perspective, the principal driving force behind the decision to test was uncomplicated. It was a deliberate and strategic, but also defensive, act. Facing the inevitability of space weaponization and U.S. plans to dominate space, China voiced its opposition in a most strident way: that is, to demonstrate a deterrent capability. First of all, China's doctrine of deterrence is highly defensive in nature.⁵⁰ That is, deterrence aims to negate others' ability to coerce China. China felt the need to demonstrate its resolve to counter potential U.S. coercion in space. This conclusion is also reinforced by the

nature of the test itself. It was indeed a spectacular demonstration of capability, creating a large amount of debris and endangering over 125 satellites as a result.⁵¹ But despite the international outcry over the test, it was a response calculated not to overstep "technical" and "moral" bound-

China believes the United States negotiates based primarily on strength.

aries vis-à-vis previous ASAT testing by the United States and the former Soviet Union.⁵² The ASAT technology represented by this particular test did not appreciably surpass that of the U.S. ALMV (Air-Launched Miniature Vehicle) System test in 1985.53 Nor did it greatly exceed the Soviet Co-orbital System tests from 1963 to the early 1980s.⁵⁴ As such, the Chinese ASAT test did not constitute a "challenge" to the United States in a technological sense. The testing of a kinetic energy ASAT into geostationary orbit or the use of a "killer satellite" would have caused far greater disquiet among U.S. military planners as a challenge to American power.⁵⁵ In the end, China just basically did what the United States and the Soviet Union did decades ago. Without any international law on banning weapons in space, the test was calculated to keep China on morally "safe ground."56 In addition, the test was also "limited" in light of China's probable ASAT capabilities. With uncertain evidence of China's work on other types of ASAT technology and also its reported "blinding" of an American satellite using laser technology several months ago,⁵⁷ it is reasonable to assume that China did not display its full capability through this test.

Looming Thresholds

A final and crucial question is why China decided to test now. Many see the ASAT test as particularly ill-timed,⁵⁸ since China was gaining a positive reputation at the CD as a vocal opponent of space weaponization and international efforts for an arms control treaty in space were arguably making progress.⁵⁹ More poignantly, the domestic political tide in the United States was perhaps beginning to turn against developing weapons for space.⁶⁰ All of those gains may have been destroyed along with the Fengyun 1C satellite. However, the

timing of the ASAT test was not an accident and goes to the heart of China's deepest security concerns and its national interests in space.

In an immediate sense, China felt that the U.S. military space program was reaching a critical point in relation to its own changing security interests. A number of factors have reinforced China's fears here. In the first place, a number of documents by defense officials and the Air Force strongly espouse both complete military dominance in space and even outright weaponization .⁶¹ The recently issued NSP articulates the Bush administration's position in space. For China it confirmed suspicions of an official U.S. government ambition to preserve, with force if necessary, dominance in space militarily while denying it to others.⁶² There has also been tangible, if episodic, progress in R&D on several space weapons systems and the ballistic missile defense system. Thus, both rhetoric and behavior have revealed to China a U.S. proclivity to pursue weapons systems to gain strategic advantage by fighting in, through and from space.⁶³

American scholars closely monitoring the situation correctly note that the future of the U.S. space weapons program is far from certain and that China's ASAT test has only fanned the flames of its proponents in the United States.⁶⁴ Significant political, budgetary and even technological obstacles constantly threaten to derail the program.⁶⁵ For instance, in the past several years a number of space weapons systems have had their funding cut or the program shelved altogether and the U.S. Air Force is under increasing pressure to prove economic viability of its military space programs.⁶⁶ Numerous technological difficulties continue to plague the NMD program.⁶⁷ Also important is the perennial domestic political debate over whether such systems will enhance America's security or threaten to undermine it. With Congress now under control of the Democrats, and U.S. military quagmired in Iraq, Bush's military space ambitions would have been scrutinized far more and perhaps even reversed.

There are a number of problems here, however, and they speak to the lack of communication between the United States and China; the self-absorbed nature of America's strategic outlook; as well as China's hardening suspicion of U.S. intentions in space. First, both U.S. words and actions appear to support a robust military program in space. Furthermore, the budgetary and technological issues that affect the U.S. decision on this matter are obscure and nuanced making it unrealistic for China to accurately read these tea leaves in D.C. over trends in space weaponization? Coupled with America's refusal to sign onto any treaty that constrains its military actions in space, how is China to respond? Can China bank its security interests on a changeable and complex political system such as the United States? Moreover, a significant portion of the U.S. military space program is classified, making a determination of the extent of U.S. military space program highly problematic.⁶⁸ In fact, it can be reasonably argued that as a best case scenario, "the jury is still out" on whether the United States will ultimately pursue weapons in space.

The Chinese military, like any military, is charged with defending the country, and a best case is not a scenario on which to entrust national security. Militaries are inherently conservative, and make a strategic calculus based on worst case scenario assumptions. The United States certainly does and has. This is exacerbated by the fact that China has very little meaningful

The blind pursuit of a weapons program is inconsistent with China's interests and past behavior.

contact with the United States at the military-to-military level and virtually none in space. A high level of suspicion remains between the two countries, especially in the political and security spheres, setting up an antagonistic if not adversarial relationship. None of this is conducive to the effective communication and transparency that would be required for China to understand both arcane U.S. domestic debates on the subject as well as each other's relevant security concerns in space.

There is a second threshold rapidly approaching that is raising China's national security anxieties. China now stands at the cusp of becoming a heavily invested power in space. China has deep and growing interests in terms of the lucrative commercial satellite industry, its civilian, manned and exploratory space programs as well as military programs in space.⁶⁹ China plans to launch up to 100 satellites during the *Eleventh Five Year Plan* (2006-2010), an almost four-fold increase from the number launched in the preceding FYP.⁷⁰ It's manned and unmanned civilian exploratory programs are equally ambitious for the next 15 years with launches planned for manned docking in orbit, voyages to the moon and the beginning of a Mars program.⁷¹ Several new satellite and micro-satellite research and production facilities have significantly boosted China's indigenous satellite production program. Also, a

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brand new launch center is under construction in Hainan Province, which will vastly increase China's capacity to launch vehicles into geostationary

China's ASAT test has fanned the flames of space weapons proponents in the United States. orbit. Due to China's highly opaque system and the inherent dual-use nature of space technology, its military programs are largely unknown, though certainly significant. All told, China's ambitions in space are impressive and the growth of its programs is unprecedented, perhaps even compared with past Soviet and American space programs. Moreover, space is far more than a

monetary investment for China. It's aspirations in space are also part of a larger and more comprehensive economic and social plan.⁷² Presently, China remains less dependent and therefore less vulnerable in space than the United States, but that situation is changing. The ASAT test was a clear message that China also has deep and growing interests in space that require defending.

Star Wars Act II?

China's ASAT test has understandably surprised and angered the international community. All are now seeking a reason and an explanation by China as well as fearfully awaiting a U.S. response. Both will determine whether this act will trigger a competition to gain military advantage in space or not.

While China's ASAT test may have been an act of defense, it was not an act of leadership. China has stated that despite having tested an ASAT weapon, it continues to pursue peaceful development in space. This paper has also argued that China's test was not merely an act to fire the first shot in a military space race but one that sought to illustrate its deterrent resolve against an unacceptable threat in space. But without more communication on China's motivations for the test and an increased transparency of China's strategic intentions in space, the ASAT test will almost certainly lead to a vicious circle in space security. While an official explanation may not be forthcoming, the message can be communicated in other ways. The recent high-level military visit to Washington is a beginning, but, unless sustainable, will not be enough.⁷³ The time has come for a hotline to be established between senior commanders and officials in the defense establishments of Beijing and Washington. Critical understanding can also occur through high level Track II channels, including scholarly exchanges, NGO conferences and lower, unofficial mil-to-mil insti-

tutional visits. Even the loosening of domestic discussion through publication within China can serve a useful purpose in helping outside analysts to better comprehend China's concerns and motivations. Lastly, despite the anticipated setback of China's reputation at the CD as a result of the test, re-doubling its efforts within international space arms control mechanisms will be vital if the current precarious state of affairs space security is to be salvaged. China may have an opportunity to begin this healing at the upcoming CD meeting in February.⁷⁴

Even if we are facing the worst case scenario and China is bent on space weaponization (entirely inconsistent with its past behavior), the reality remains that China can be brought to the negotiating table with appropriate measures and international pressure. After all, China clearly remains the far weaker space power vis-à-vis the United States and a space race would be proportionately far more costly to China than the United States. But in order for progress to be made, the United States also needs to come to terms with a new reality. China's ASAT test was a voice of opposition both to the structure of security in space and the U.S. pursuit of military dominance in space at the exclusion of others.

And thus, it is actually America's response to the ASAT test that may be even more important in how the future of space security plays out. China probably has both the technological and financial means to compete with the United States in space over the long term. If the United States concludes it must meet a threat with more threat, it may invite a military race in outer space and China may just give it to them. If the United States can muster the political will and leadership to restrain its reaction, there is still hope. But flexibility and sacrifice will be essential.

Unfortunately, this administration has not shown an inclination for such restraint. And there is already noise amongst harder line elements within the U.S. defense establishment to respond to the ASAT test with countermeasures.⁷⁵ It is the key task of supporters of non-weaponization of space in the United States and around the

America's response to the ASAT test may be even more important in how the future of space security plays out.

world to take a hard and long look at how to deal with the reality of the current situation, and how we got here. China should be démarched for conducting

the test, but if the underlying architecture of space security is not addressed, a solution to why China felt compelled to make the test will escape us.

Part of the solution may come in the form of a renewed push for a space weapons ban treaty, a test ban treaty, a "rules of the road" for all activities in space or a more modest moratorium on ASAT weapons testing.⁷⁶ Greater protection of space assets through satellite hardening and improved space object monitoring have also been recommended as positive steps.⁷⁷ For any of these measures to be successful, however, the individual security interests of all space-faring countries must be recognized, not just that of the United States. Recognition of a state of mutual vulnerability will require well-defined limits to ASAT, space weapons and the targeting of space assets in a time of conflict.

Finally, to focus only on the impact on the future security in space by this ASAT weapon test would be to miss the larger strategic undercurrent that it represents. While its purpose may have been only a specific challenge to U.S. intentions to dominate space, China has lucidly demonstrated a willingness to challenge U.S. policies and strategies that are inherently threatening to China.⁷⁸ America's unipolar moment probably died with its decision to go into Iraq. Now, its ability to act without consideration of others' security interests is being challenged. The Chinese call this "hegemony" and they are now opposing it openly. As this article began, China was not challenging U.S. power in space; it was challenging the U.S. self-described right to dominate it. With America's vulnerability in space, this test is in fact the easier way to challenge the United States (to do so conventionally would be suicidal). If the United States continues to pursue its own strategic and security interests at the exclusion of China (or others), it should be prepared for more confrontation, especially if that impinges on China's core national interests. Conceding this is not about surrendering strategic ground to a potential or future adversary, it's about reaching accommodation and common ground that is not only equitable but inevitable.

<u>Notes</u>

¹ Wei Chenxi, "Space Warfare and War Fighting Environment," Aerospace China, Issue No. 10, October 2001; Chang Xianqi, Military Astronautics, National Defense Industry Publishing House, 2nd Edition, January 2005; Ling Yunxiang, Xiu Dishan, Xu Peide, Space Armaments Application, National University of Defense Technology Publishing House, May 2005; Wang Jijian, "From Space Support to Space Control," National Defense Science & Technology, Issue No. 4, 2006; "China's Space-based Construction Needs Ramping up", Aerospace China, Issue NO. 5, May, 2003

² ASATs are viewed by many analysts as a weapon in line with China's asymmetric military strategy; to hit enemies' vulnerable and hugely expensive assets in space with relatively cheap and easy countermeasures. See, Wang Bo, Zhao Xinguo and Zhao Hui, "Reflections and Suggestions after the end of the U.S. Space Warfare Exercise", *Aerospace China*, Issue NO. 6, 2001; Qian Zongfeng and Zhang Gengxin, "Several Thoughts on China's Space-based Information System," *National Defense Technology Basics*, Issue No. 1, 2005.

³ Lu Yousheng, "The Aim of US New Space Policy," Outlook Weekly, Nov. 1, 2006.

⁴ Tan Xianyu, "Study of the arms and weaponry of the U.S. military's space warfare in the 21st century," *Space Electronic Confrontation*, Issue No. 1, 2004;

First, the article concludes from U.S. and Russian actions and reactions that the weaponization of space is inevitable. Second, the U.S. military has decided to develop war-fighting capabilities from air to space and that space will be the new battlefield for future wars. Third, what both the United States and Russia want from space is to seize the advantage in space information and prevent enemies from using this advantage. The U.S. military believes that future warfare is an all-dimension, integrated warfare that combines ground, sea, air, space and special forces, in which information warfare is the thread that connects all dots. pp 25-29.

Ji Rongren, deputy director of the Division of Military Branch Studies of the National Defense University, stated "The United States has accelerated its pace towards space control. There is no longer the question of whether or not to conduct space warfare, it is already a reality before our eyes." This comment was made following the U.S. space warfare military exercise on Jan. 5, 2001 in "Space Warfare: Challenge, Focus and Countermeasures," *World Outlook Magazine*, Issue No. 9, May 1, 2001;

Wang Jijian, "From Space Support to Space Control," National Defense Science & Technology, Issue No. 4, 2006;

Also see, Li Bo and Weng Huaming, "Military Space Technology and Space War," National Defense Science & Technology, Issue No. 1, 2005 and Chang Xianqi, Military Astronautics, National Defense Industry Publishing House, 2nd Edition, January 2005.

⁵ "The U.S. NMD system, no matter where it is deployed, whether in Japan, South Korea or with the Pacific Fleet, it will establish a 'missile blockade' along China's eastern territory and will make the regions 1000-1300 km away from the sea 'militarily transparent.' The countries and regions that are equipped with the missile defense system have the ability to monitor, track, intercept and destroy strategic and tactical missiles launched from China in this cordon, allowing them to conduct missile defense warfare within China's territory. This directly undermines our defensive military capability and constitutes direct threats to our defense posture." Luo Gang, "Study on Armament Development Countermeasure for U.S. Missile Defense," Armament Command Department, *Journal of the Academy of Armament Command and Technology*, Issue No. 2 of 2005, April 2005; Also see Zhu Feng , "Nuclear Posture Review and China: Why the United States Reinstates a "Nuclear Deterrence" Policy Against China Again?" International Politics, Issue No. 2, May 2002;

⁶ Thomas E. Ricks, "Space is Playing Field For Newest War Game; Air Force Exercise Shows Shift in Focus," *The Washington Post*, Jan. 29, 2001.

⁷ "The U.S. Accelerates Space Warfare, Setting China as the Imagine Enemy," *International Aviation*, Issue No. 9, 2005.

⁸ Xia Liping, "Initiation of Missile Defense System by Bush's Administration: Strategic Thinking & Consequences," *International Review*, Issue No. 4, 2001.

Wu Xianbin, "TMD and Taiwan Issue," Contemporary Asia-Pacific Studies, Issue No. 4, 2002.

⁹ Su Enze, professor of the PLA Air Force Command Academy, "We are not going to participate in a full-fledged space arms race...but we shall not avoid the choice of answering the challenges from others...we should concentrate our resources, increase the investment and produce something with real deterrent as soon as possible in order to safeguard our national security and status as a great power in the 21st Century." Ruan Keyang, Vice President of the PLA Air Force Command Academy, "Battles extending to space is a real problem...I think we should start right now to answer the challenge." This comment was made after the U.S. conducted the military exercise of offense-defense space warfare on Jan. 5, 2001. See, "Space Warfare: Challenge, Focus and Countermeasures," *World Outlook Magazine*, Issue No. 9, May 1, 2001.

¹⁰ Memorandum of Agreement on Liability for Satellite Launches Between the Government of the United States of America and the Government of the People's Republic of China, See: http://www.oosa.unvienna.org/SpaceLaw/multi_bi/china_usa_001.html.

Possible Elements for a Future International Agreement on the Prevention of the Development of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects, See: http://www.fmprc.gov.cn/eng/wjb/zzjg/jks/kjfywj/t189572.htm.

¹¹ Chinese-Russian Press Communique on Consultations on Issues Pertaining to the ABM Treaty, April 14, 1999. See: http://www.nti.org/db/China/chindocs/zchru499.htm.

¹² Information Office of China's State Council, *China's Space Activities*, November 2000; Information Office of China's State Council, *China's Space Activities in 2006*, October 2006.

¹³ Feng Bin, Du Guoxin, Su Tiezhuang, "The Development and Methods of Space Informational Warfare," *Communication Measures*, Issue No. 1 2005.

Li Bo and Weng Huaming, "Military Space Technology and Warfare," *Science and Technology of National Defense*, Issue No. 1, 2005.

Chang Xianqi, Military Astronautics, National Defense Industry Press, January 2005, pp 71-72.

¹⁴ Described in, Eric Hagt, "Mutually Assured Vulnerabilities in Space", *China Security Quarterly*, Issue No. 2, 2006.

¹⁵ "Current Situation of Global ASAT Weapons", *World Outlook Magazine*, Issue No. 479, November 2003.

Also see, Chang Xianqi, "Space Warfare Isn't Fairytales", China Science & Technology Monthly, September 2000.

"China's space industry has built a quit solid foundation after decades of efforts. We are moving from experimental periods to comprehensive application of space technology...It can be predicted that all local wars that will break out in China's peripheral regions in the future will directly involve military space system (by the enemy), including space information support and even the attacks and defense and counterattacks of space crafts. Facing such a threat, we should concentrate on accelerating the pre-research (feasibility) research on core technology of groundand space-based ASAT weapons, ground-based ASAT technology in particular. We shall develop one or two ASAT weapons that can play a deterrent role against enemies' space system, in order to take an upper hand in future space war." (Maj. Gen. Chang Xianqi is the former President of the Academy of Armament Command and Technology explained why China needs ASAT.)

¹⁶ For instance see, "...developing ASAT weapons will be an important and meaningful approach to strengthening the survival and retaliation capability of China's limited strategic deterrence. It is imperative, from the perspective of international politics, military and the drive for technological modernization, for China to devise appropriate plans to research and develop ASAT technology that its own development level." Wu Beisheng, the Second Institute of the Aerospace Ministry, "Noteworthy Tendency in ASAT Weapon Development," *Systematic Engineering and Electronic Technology*, Issue No. 2, 1987.

¹⁷ For instance see, Liu Shaoqiu, Gao Shuxia, Gao Yonghao, Chen Juanyong and Yu Yanbing, "Analysis and Research of ASAT Weapons Development," *Systematic Engineering and Electronic Technology*, Issue No. 1, 1994. This document labeled itself as a research task force sponsored by China's 863 Project, a project with a budget of 10 billion rmb to push ahead China's overall high-tech research and development beginning in 1986. The document explains the preliminary study on challenges from space started in the early 1990s, first with a concern about Star Wars but then shifted to ASAT and other space developments that threatened China's security.

Also see: Shi Shiping, "Survival Capability of Military Satellite Communication System," *Military Telecommunication Technology*, Issue No. 1, 1994. This document proposes preparatory research on how to increase the survivability of China's military satellites. This is in line with the decision to begin major R&D projects, as a prelude to real projects.

¹⁸ Xu Gangliang, Luo Yong, "Problems in Developing China's Space Power", *Journal of the Academy of Armament Command and Technology*, Vol. 17, No. 2, April 2006.

¹⁹ Yu Xiaohong, Feng Shuxing, Qin Daguo, "The Influence and Enlightenment of the U.S.A. Space War Game," *Journal of Institute of Command and Technology*, Issue No. 2, 2001. Other factors include the EP-3 incident and the bombing of the Chinese embassy in Belgrade. Also see, Ren Guoguang, "Comment on the First Space Warfare Exercise of U.S.," *Aerospace China*, Issue No. 6, 2001; Zhang Dewen, "US Air Force Prepares for Space War," *Aerospace Electronic Warfare*, Issue No. 5, 2001; Yang Jiemian, "Chins-U.S. Relations Subjected to Tests: G. W. Bush's China Policy," *American Studies*, Issue No. 2, 2001.

²⁰ In 1995, more articles about the overall military satellites application and their roles in modern local wars began to appear. But the literature of real substance, specification and sophistication appeared mostly after 2000. A thorough bibliographical search related to Chinese literature ASAT shows that in 1994, there are 30 such articles; in 1995, 33 articles; in 1998, 50 articles; in 1999, 60 such articles; in 2000, 100 articles; and in 2003, 120 such articles.

²¹ Zhang Hui, "China's ASAT Capabilities: As a Potential Response to US Missile Defense and 'Space Control' plans," Ensuring America's Space Security: Report of the FAS Panel on Weapons in Space. Federation of American Scientists (October 2004). See: http://www.fas. org/resource/10072004164453.pdf.

²² Mu Shimin, Li Yongxiang, Chang Xianqi, "Establishment of Military Space Command System." Mu Shimin is a postgraduate of the Academy of the PLA Armament Command and Technology, Li Yongxiang works for the Department of Combat and support under the Second Artillery Engineering Institute, *Journal of the Academy of Armament Command and Technology*, Vol. 14, No. 4, August 2003; Feng Shuxing and Cui Yang, "Studies of Space Warfare Command System," *Journal of the Academy of Armament Command and Technology*, Vol. 15, No. 1, 2004; also Yu Kunyang, Mao Zhaojun, Li Yunzhi, "Analyses and Reflections on the U.S. and Russian Space Force Structure and System," *Journal of the Academy of Armament Command and Technology*, Vol. 16, No. 6, 2005. ²³ Chang Xianqi, Feng Shuxing, Zhao Chun and Li Qi, "Developing Military Space to Meet the Challenge of Revolution in Military Affairs", *Journal of the Academy of Armament Command and Technology*, Vol. 10, No. 5, October 1999.

²⁴ The China National Space Administration (CNSA) is the country's governmental organization responsible for the management of space activities for civilian use and international space cooperation with other countries, and responsible for implementing corresponding governmental functions. And the PLA General Armament Department has an Administration of Space Technology Armament.

²⁵ In the debate over whether to follow the Russian model to build a unified and separate space force or to follow the U.S. model to put the space force under the air force, it seems the former has won out. Zhao Chu, "China with Space Rights", *World Outlook Magazine*, Issue No. 526, 2005; also Yu Kunyang, Mao Zhaojun, Li Yunzhi, "Analyses and Reflections on the U.S. and Russian Space Force Structure and System", *Journal of the Academy of Armament Command and Technology*, Vol. 16, No. 6, 2005; "Space Warfare: Challenge, Focus and Countermeasures", *World Outlook Magazine*, Issue No. 9, May 1, 2001.

²⁶ Ibid.



图 1 多层次军事航天指挥机构示意图

²⁷ A space warfare lab was up and running in 2001 in its early stage with a high capability for modeling and real-time emulation of space war-gaming is already up running in 2001.See: Tan Xianyu, "Reflection and Advice after the U.S. Space Exercise", Issue No. 6, 2001.

²⁸ John Q. Wilson, *Bureacracy*; Basic Books; Rep edition, January 1991; Michel Oksenberg and Kenneth Lieberthal in *Policy-making in China: Leaders, Structures, and Processes*, Princeton Unversity Press, 1988.

²⁹ The ideas in this paragraph come from conversations with scholars from in the Academy of Military Sciences and National Defense University.

³⁰ Guo Xiaobing, "US Regulatory Policies on Space Technology Exports to China," *China Security Quarterly*, Issue 2, 2006.

³¹ "China's Attitude Toward Outer Space Weapons." See: http://www.nuclearthreatinitiative. org/db/china/spacepos.htm.

³² "Assuring Vital Interests Drives US Space Policy", speech given by Robert G. Joseph, Under Secretary for Arms Control and International Security, USA at the Center for Space and Defense Forum in Colorado Springs Jan. 11, 2007. See: http://www.spacewar.com/reports/Assuring_ Vital_Interests_Drives_US_Space_Policy_999.html. Marc Kaufman, "Bush Sets Defense As Space Priority," The Washington Post, Oct. 18, 2006.

³³ Statement by Ambassador Robert T. Grey Jr., United States Representative to the Conference on Disarmament, Geneva, Feb. 15, 2001. See: http://www.usmission.ch/press2001/0215grey. htm.

³⁴ Wang Jun, "Estimation on the Future Trend of Space Weaponization," *Contemporary International Relations*, Issue No. 12, 2002.

³⁵ U.S. National Space Policy, authorized by the president on Aug. 31, 2006. See: http://www. ostp.gov/html/US%20National%20Space%20Policy.pdf.

³⁶ R. Hagen, J. Scheffran, "Is a space weapons ban feasible? Thoughts on technology and verification of arms control in space," *UNIDIR Disarmament Forum*, Issue No.1, 2003. A more technical and detailed discussion is given in: D. Wright, L. Grego, L. Gronlund, "The Physics of Space Security: A Reference Manual," *American Academy of Arts and Sciences*, 2005.

³⁷ Liu Shaoqiu, Gao Shuxia, Gao Yonghao, Chen Juanyong and Yu Yanbing, "Analysis and Research of ASAT Weapons Development", *Systematic Engineering and Electronic Technology*, Issue No. 1, 1994.

³⁸ Huang Zuoyi, Interviews in documentary Shaking the Heavens; Tan Xianyu, "Reflection and Advice after the U.S. Space Exercise", Issue No. 6, 2001.

³⁹ Tang Shiping, "Understanding Chinese Security Strategy," *Studies of International Politics,* Issue No.3, 2005.

⁴⁰ Wang Zeping, "Hegemony Deterrence and Strategic Counterbalance", *World Economy and Politics Forum*, Issue No. 2, 2004.

⁴¹ Ruan Keyang, Vice President of the PLA Air Force Command Academy, "Space Warfare: Challenge, Focus and Countermeasures", *World Outlook Magazine*, Issue No. 9, May 1, 2001.

⁴² Jeffrey Lewis, "When Did China Start ASAT Testing?" Jan 22, 2007. See: http://www. armscontrolwonk.com/1369/when-did-china-start-asat-testing.

⁴³ See Chapter III: China's Leadership and Administration System For National, *China's National Defense in 2006*

⁴⁴ Such an agency, as in the United States, helps to weigh political, economic and national security interests. The lack of this entity in China could lead to greater segmentation of decision-making, creating an environment that provides opportunity for strong interests to win out especially when the strategic context favors it. Lin Limin, CICIR, "Several Thoughts about China's National Security Strategy in the 21st Century", *Journal of Jiangnan Social University*, Vol. 4, No. 2, June 2002; Zhao Ying, "Constructing China's National Economic Security Strategy", *Science News*, January 24, 2007, http://www.sciencenet.cn/html/shownews.aspx?id=2284; Qiu Zhenhai, "China Should Build National Security Council: Comments on ASAT Test", Lianhe Zaobao website, http://www.zaobao.com/special/forum/pages5/forum_zp070131a.html.

⁴⁵ Kevin Pollpeter, "Motives and Implications Behind China's ASAT Test," *China Brief*, Jan. 24, 2007.

⁴⁶ Li Bin, "China's Nuclear Disarmament Policy," in Harold A. Feiveson et al. ed., "The Nuclear Turning Point, A Blueprint for Deep Cuts and De-alerting of Nuclear Weapons," Brookings Institution Press, Washington, D.C., 1999, pp.325-332.

⁴⁷ Keith Crane, Roger Cliff, Evan S. Medeiros, James C. Mulvenon, William H. Overholt, Modernizing China's Military, the 2005 study conducted by the RAND Corporation's Project Air Force examines the "opportunities and constraints" of the Chinese government's pursuit of military modernization.

⁴⁸ State Council Information Office, China's Endeavors for Arms Control, Disarmament and Non-

Proliferation, Sept. 1, 2005.

⁴⁹ The 12-day silence by the MFA following the test is a testament to this probability. "China Under Pressure To Explain Satellite Missile Strike," *AFP*, Jan. 20, 2007; "China Admits Anti-Satellite Test, Says Not A Threat To Anyone," *AFP*, Jan. 22, 2007.

⁵⁰ Li Bin, "Understanding China's Nuclear Strategy," World Economy and Politics, Issue No. 9, 2006.

⁵¹ Leonard David, "China's Anti-Satellite Test: Worrisome Debris Cloud Circles Earth," *SPACE. com*, Feb 2, 2007.

⁵² Email exchange with Zhang Hui, research associate on the Project on Managing the Atom, Belfer Center for Science and International Affairs, Harvard University; and conversations with experts from Academy of Military Science.

 ⁵³ Laura Grego, "A History of Anti-Satellite Weapons Programs." See: http://www.ucsusa. org/global_security/space_weapons/a-history-of-asat-programs.html.
⁵⁴ ibid.

⁵⁵ Stephanie C. Lieggi, Research Associate, "Space Arms Race: China's ASAT Test a Wake-up Call," Jan. 24, 2007. See: http://cns.miis.edu/pubs/week/070124.htm.

⁵⁶ Zhang Hui, "China's ASAT Capabilities: As a Potential Response to US Missile Defense and 'Space Control' plans," *Ensuring America's Space Security: Report of the FAS Panel on Weapons in Space.* Federation of American Scientists (October 2004). See: http://www.fas.org/ resource/10072004164453.pdf.

⁵⁷ Vago Muradian, "China Attempted To Blind U.S. Satellites With Laser," *DefenseNEWS.com*. See: http://www.defensenews.com/story.php?F=2121111.

⁵⁸ Craig Covault, "China's Asat Test Will Intensify U.S.-Chinese Faceoff in Space," *Aviation Week and Space Technology*, Jan. 20, 2007.

⁵⁹ Statement by Ambassador Leonid Skotnikov Permanent Representative of the Russian Federation at the Plenary Meeting of the Conference on Disarmament, Feb. 1, 2005. See: http://www.geneva.mid.ru/press/2005-02.html.

⁶⁰ Theresa Hitchens, "The Bush National Space Policy: Contrasts and Contradictions." See: http://www.cdi.org/program/document.cfm?DocumentID=3692&StartRow.

⁶¹ Rumsfeld Space Commission Report, Jan 11, 2001. See: http://www.defenselink.mil/pubs/space20010111.html.

Air Force Doctrine Document 2-1.7: Airspace Control in the Combat Zone, May 9, 2001. See: http://www. dtic.mil/doctrine/jel/service_pubs/afd2_1_7.pdf.

Air Force Doctrine Document 2-2.1: Counterspace Operations, Aug 2, 2004. See: http://www.fas.org/ irp/doddir/usaf/afdd2_2-1.pdf.

The Vision for Space Exploration, Jan 14, 2001. See: http://www.nasa.gov/mission_pages/exploration/main/index.html.

U.S. National Space Policy, Aug 31, 2006. See: http://www.ostp.gov/html/US%20National%20S pace%20Policy.pdf.

⁶² Yuan Jun, "Space Strategy, Weapons and Space War-gaming", *Ground-based Air Defense Weaponry*, Issue No. 3, 2005; Yang Yunzhong, "The New Military Hegemonic Strategy of the United States", *Contemporary Asia-Pacific Studies*, Issue No. 4, 2004; Yu Xiaohong, Feng Shuxing, Qin Daguo, "The Influence and Enlightenment of the U.S.A. Space War Game," *Journal of Institute of Command and Technology*, Issue No. 2, 2001.

⁶³ Eric Hagt, "Mutually Assured Vulnerabilities in Space," *China Security Quarterly*, Issue No.2, 2006.

⁶⁴ Theresa Hitchens, "Chinese Anti-Satellite Weapons Test in Space is Provocative and Irresponsible." See: http://www.cdi.org/program/document.cfm?DocumentID=3800&StartR ow=1&ListRows=10&appendURL=&Orderby=D.DateLastUpdated&ProgramID=68&from_page=index.cfm.

 $^{65}\,$ Jeffrey Lewis, "When Did China Start ASAT Testing?" See: http://www.armscontrolwonk. com/

Theresa Hitchens, "China's Space Weapons: What Next?" See: http://newsweek.washingtonpost. com/

⁶⁶ Theresa Hitchens, "Safeguarding Space: Building Cooperative Norms to Dampen Negative Trends," *Disarmament Diplomacy*, Issue No.81, Winter 2005.

⁶⁷ Victoria Samson, Theresa Hitchens, "Missile defense R&D funding: is the micro satellite program leading to space based weapons by stealth?" *CDI Missile Defense Update*, March 23, 2006.

⁶⁸ Theresa Hitchens, Michael Katz-Hyman, Jeffrey Lewis, "U.S. Space Weapons: Big Intentions, Little Focus," *The Nonproliferation Review*, Volume 13, March 2006.

⁶⁹ For detailed description of the various programs see Eric Hagt, "Mutual Vulnerabilities in Space," *China Security Quarterly*, Issue No.2, 2006.

⁷⁰ Peng Ge, "Obstruction of Chinese International Commercial Satellite Launch: Discriminatory Exam and Approval by US?" *China Business*, April 16, 2005.

⁷¹ State Council Information Office, *China's Space Activities in 2006*, October 2006.

⁷² "China considers the development of its space industry as a strategic way to enhance its economic, scientific, technological and national defense strength, as well as a cohesive force for the unity of the Chinese people, in order to rejuvenate China." State Council Information Office, *China's Space Activities in 2006*, October 2006.

⁷³ "Chinese Military Deputy Chief of the General Staff Set out to Visit U.S.," PLA Daily, Jan. 25, 2007.

⁷⁴ The first session of Conference on Disarmament in 2007 is from Jan 22 to Mar 30.

⁷⁵ Sen. John Kyl, R-Ariz. called for the U.S. resumption of ASAT weapons testing and the development of a space-based arsenal of defensive and offensive counter-space capabilities. See the Heritage Foundation website for streaming video and a transcript: http://www.heritage.org/press/events/ev012907a.cfm.

⁷⁶ Nader Elhefnawy, "Making sense of China's weapons test," *The Space Review*. See: http://www. thespacereview.com/article/801/1.

⁷⁷ The seminar, entitled with "Chinese Anti-Satellite Weapons and American National Security", was held by the Heritage Foundation on Jan 29, 2007. See: http://author.heritage.org/Press/ Events/ev012907a.cfm.

⁷⁸ The author is not arguing this was the intended challenge, but rather it was an ancillary, though no less important result of the test.

Nuclear Challenges and China's Choices^{*}

Wang Zhongchun

On Jan. 17, 2007, the U.S. Bulletin of Atomic Scientists announced in an unprecedented news conference that the Doomsday Clock¹ would be reset from 23:53 to 23:55 – the closest it has been to midnight since the end of the Cold War. This announcement is a warning that the world is now facing the most dangerous time in over a decade – the strike of midnight symbolizes the destruction of human civilization. Since 1947, the Doomsday Clock has moved both forward and backward 18 times, signifying how the world is faring from the hour of doom. Discussions among some scientists and strategists at the Bulletin of Atomic Scientists about the inevitable ticking of the Doomsday Clock commenced back on Oct. 11, 2006 – the third day after North Korea conducted its nuclear test. 23:55 signifies a chilling moment, and should stir great concern among people around the world.

Challenges to Global Nuclear Security

The global structure of nuclear power consists of multi-level forces: with two nuclear superpowers, the United States and Russia; three medium-sized

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China Security, Winter 2007, pp. 52 - 65 ©2007 World Security Institute nuclear powers, Britain, France and China; three de facto nuclear states including India, Pakistan and Israel; North Korea, which has just crossed the nuclear threshold, but is yet to be recognized by the international community; and countries and organizations, openly or secretly, pursuing nuclear weapons for different purposes. A multitude of complexities poses serious challenges to the stability of this inherently unstable power structure today.

First, the U.S. pursuit of absolute nuclear advantage and Russia's reliance on its nuclear arsenal to maintain its great power status will bring dangerous tensions and dynamics that will rock this structure from within. While actions by

forces at all levels of the nuclear power structure will play a role, the actions taken by the two great nuclear powers penetrate all levels and especially influence the stability of this structure. The direction of their nuclear strategies, particularly those of the United States, will play a dominant role in shaping global nuclear security.

U.S. nuclear hegemony has driven some threatened countries to pursue nuclear weapons programs.

Second, the international community has yet to make proper arrangements for dealing with the three de facto nuclear states: India, Pakistan and Israel. This problem must be solved in order to maintain the stability of the global nuclear power structure.

Third, the emergence of new nuclear states dramatically increases the probability of triggering a chain-reaction in the R&D of nuclear programs among neighboring countries. A reality where more and more countries want to jump on the "nuclear bandwagon" seriously threatens the validity of the international nonproliferation regime and global nuclear stability. Terrorist organizations, which may possess even the most preliminary nuclear capabilities, also cause alarming and largely undeterminable threats to global nuclear security. At present, the international community's efforts to strengthen the already battered nuclear nonproliferation regime are not strong enough to counter the instabilities at each level of the nuclear structure.

U.S. Nuclear Hegemony

Since the end of the Cold War, the nuclear balance between the United States and Russia has gradually shifted to a reality of U.S. hegemony over the

global nuclear community. A look at U.S. approaches and actions in its nuclear weapons program illustrates both its efforts and successes toward a hegemon status. The reality of U.S. nuclear hegemony and the resulting aggressive behaviors of the United States has profoundly undermined the disarmament movement and driven some threatened countries to pursue nuclear weapons programs.

First, the refusal of the United States to ratify the Comprehensive Test Ban Treaty (CTBT) has greatly increased the dangers of resumed nuclear testing and the vertical proliferation of nuclear weapons.² The CTBT is an important part of the global nuclear nonproliferation system, as it constrains worldwide nuclear proliferation by banning all nuclear explosions for military or civilian purposes and limits a country's ability to make nuclear advancements. In 1999, the U.S. Senate, whose consent is required for international treaties to become valid and binding, voted not to ratify the CTBT.³ The United States believed that the CTBT could not ensure the safety, security and reliability of its nuclear deterrent force. In September 2001, the United States decided that it would no longer provide funds for organizing and implementing ratification mechanisms for on-site inspections of suspect locations for the CTBT despite the fact that on-site inspection is one of the core ratification mechanisms of the treaty.⁴ The United States also stopped sending delegates to participate in expert panels related to the implementation of on-site inspections at that time. The more delayed the ratification and implementation of the CTBT, the greater the danger of resumed nuclear tests.⁵ The U.S. government has created major obstacles for the treaty to take early effect which will undoubtedly result in vertical proliferation of nuclear weapons.

Second, the unilateral withdrawal of the United States from the 1972 Anti-Ballistic Missile (ABM) Treaty, the cornerstone of strategic stability between nuclear great powers, has triggered a nuclear arms race in defense capabilities.⁶ The ABM treaty is the foundation for a series of arms control treaties between the United States and Russia. The U.S. withdrawal from the ABM treaty clears the legal obstacles to its development of a missile defense system, which grants the United States a great nuclear advantage against other nations.

Third, in signing the *Treaty on Strategic Offensive Reductions* (SORT) with Russia in 2002, the United States was able to push forward its own interests and agenda and thus dominate the international nuclear arms control and disarmament process.⁷ The treaty states that the total number of deployed

combat nuclear warheads of the United States and Russia must not exceed 1,700-2,200 by Dec. 31, 2012. However, it is not really effective as a permanent and verifiable arms control treaty; the treaty does not require the destruction of nuclear warheads (they can be stored), nor does it require that reductions be permanent. Under SORT, the United States committed to a non-equal reduction of nuclear weapons to the Russian commitment.⁸ More importantly, SORT forced Russia to accept the reality of the U.S. withdrawal from the ABM treaty because it allows Russia and the United States to field multiple-warhead land-based ballistic missiles.⁹

The forth indication of U.S. nuclear hegemony is its readiness to use nuclear weapons at will to threaten other countries. Since the mid-1990s, a new interventionism has dominated the U.S. approach to foreign policy. The United States, in its own interests, assigned titles such as "rogue state" and "axis of evil" to other countries.¹⁰ It also disregarded the United Nations and unleashed military strikes against other countries (most notably Iraq). In their new nuclear strategy, the United States willfully defines "major threat" and "contingency" as the basis for the use of nuclear weapons. With such efforts and actions by the United States, it is no wonder other countries already under grave national security pressures and driven to pursue nuclear weapons.

A Broadening Utilization of Nuclear Weapons

As the world entered the 21st century, the nuclear strategies of the United States and Russia shifted to emphasize the principle of "preemptive strikes." Such nuclear strategies emphasize a hard-line approach and explicitly promote the utilization of nuclear weapons in necessary times and conditions. With these nuclear strategies, the United States and Russia have broadened the conditions for the use of nuclear weapons, which has important consequences for global nuclear security.

For the United States, the expansion of the role of nuclear weapons can be traced to the end of the Cold War. Though the U.S. government has yet to give a clear definition of its new nuclear strategy, we can see from a series of important U.S. strategy documents that the U.S. nuclear strategy is expanding its role, including the 2002 Nuclear Posture Review, the 2001 and 2006 Quadrennial Defense Reviews, the 2002 and 2006 National Security Strategy Reports, the 2002 National Military Strategy to Combat Weapons of Mass Destruction, and the 2005 Doctrine for Joint Nuclear Operations. First, the U.S. nuclear attack strategy changed from the use of nuclear attacks to counter nuclear attacks to the use of nuclear attacks "to counter the asymmetric use of chemical and biological weapons."¹¹ Second, current U.S. nuclear strategy has expanded the scope of a "nuclear strike" such that nuclear weapons may be used when it is perceived that conventional weapons cannot conquer an enemy or "in the event of surprising military developments."¹² According to this nuclear strategy, the United States has specified the conditions, timing and locations of nuclear attacks, locking targets on seven countries (Russia, China, North Korea, Iraq, Iran, Libya and Syria) as potential targets for nuclear strike. Three specific "nuclear strike" contingencies are listed as "an Iraqi attack on Israel or its neighbors, a North Korean attack on South Korea, or a military confrontation [with China] over the status of Taiwan."¹³

Third, the United States has formed a full-spectrum and multi-level nuclear deterrence structure that further defines and details nuclear deterrence for different contexts. For example, the structure calls for: the use of large-scale strategic nuclear weapons to deter Russia; the use of nuclear weapons and the missile defense system to deter nuclear countries with small numbers

The nuclear arms race between the United States and Russia in defensive weapons is intensifying. of nuclear weapons and long-range vehicles; and the use of nuclear weapons and advanced conventional weapons to deter members of the so-called "axis of evil." Fourth, the United States has simplified the nuclear strike procedure by decentralizing the authorization of the use of nuclear weapons. Now, field commanders, under authorization of the president, are allowed to launch preemptive nuclear strikes on

countries or terrorist groups that use weapons of mass destruction, which largely shifts nuclear war-fighting operations to the U.S. military. The scope of U.S. nuclear strategy, both in terms of nuclear deterrence and nuclear strikes, has broadened to encompass attacks by non-nuclear countries, target non-nuclear countries, and non-nuclear regions. This both lowers the threshold and increases the flexibility of the use of nuclear weapons for the United States, therefore greatly threatening global nuclear security.¹⁴

The new National Security Concept of the Russian Federation (2000 Concept) and the Military Doctrine, both released in 2000, introduced a concept which can be summarized as a "realistic containment strategy." This strategy, which constitutes both Russia's military and nuclear strategy, has clearly and specifi-

cally worked to expand the scope of nuclear weapons.¹⁵ First, it emphasizes the important status and role of nuclear weapons in Russia's military strategy and stresses abandoning the commitment of "no first use" tactics. The 2000 Concept allowed for the use of nuclear weapons to deter small-scale wars that do not necessarily threaten Russia's existence and sovereignty. The 2000 Concept and the Military Doctrine identify Russia's most important priority as the maintenance of its nuclear force at a level high enough to ensure strategic and regional containment.¹⁶ Second, the strategy calls for Russia to use nuclear weapons against not only invading nuclear countries or armed groups but also non-nuclear countries or armed groups that have allied with those invading entities. Third, the new Russian strategy adds terrorist groups to the list of nuclear strike targets. This indicates that Russia is prepared, when necessary, to take large-scale action in the event of terrorist attacks. Fourth, as a direct response to SORT, which forced Russia to significantly reduce the number of its strategic nuclear weapons, Russia has increased civilian targets and decreased military targets, as they require former nuclear firepower strikes. Finally, the Russian strategy requires the use of nuclear weapons as a deterrent from the outset of military operations. The strategy reinforces the use of operational-tactical nuclear weapons, when necessary, to prevent the escalation of conflict and attempts to deter potential enemies.

Nuclear Weapon Modernization

All nuclear countries, particularly the United States and Russia, are actively pushing forward their nuclear weapon modernization programs. The United States has shifted from a position of emphasizing a balance of strategic forces with Russia to one that seeks to actively acquire comprehensive nuclear advantages. The United States has proposed a new "triad" strategic force.¹⁷ The nuclear force the United States is gradually building integrates "offensive strike systems (both nuclear and non-nuclear)," "defenses (both active and passive)," and is supported by "a revitalized defense infrastructure that will provide new capabilities in a timely fashion to meet emerging threats" in order to ensure the security of the United States and its allies.¹⁸

Russia continues to balance the modernization of the three tiers of its strategic triad: strategic bombers, intercontinental ballistic missiles (ICBMs), and ballistic missile submarines (SSBNs). Further, despite the fact that Russia has a consistently lower quantity and quality of nuclear weapons than the United States it remains relatively at par in its overall nuclear power capabilities.¹⁹ The modernization of Russia's strategic weapons programs is invariably aimed at breaking the U.S. missile defense system, exemplified by the successful test of the new Poplar-M missile.

It is notable that the nuclear arms race between the United States and Russia in the area of defensive weapon is intensifying. In fact, the United States and Russia have never stopped from the race to develop missile defense systems that began in the 1960s. One of the three tiers of the U.S. triad is the missile defense system, which has both offensive and defensive capabilities. Russia is also researching and developing a strategic triad that integrates air defense, anti-ballistic missile defense and space defense capabilities. Believing that the U.S. missile defense system may weaken Russia's strategic offensive capabilities, Russia has taken pointed countermeasures against the U.S. missile defense system, and continues to introduce new nuclear missiles to ensure that they can break any missile defense shield the U.S. builds.

The New Nuclear States and Challenges of Catastrophic Terrorism

The nuclear nonproliferation regime, which includes among other bi-lateral agreements and organizations, the *nuclear Nonproliferation Treaty* (NPT), the *International Atomic Energy Agency* (IAEA), the *Comprehensive Test Ban Treaty* and the *Nuclear Suppliers Group* (NSG), still plays a role in constraining nuclear proliferation. However, due to U.S. global nuclear hegemony, as well as increased threats of nuclear terrorism by non-state actors, the nonproliferation regime has been in serious danger, which has resulted in rapid nuclear proliferation in the past decade.²⁰

The NPT, the cornerstone of the global nonproliferation regime, has been cast into doubt. When the 173 non-nuclear states unanimously agreed to extend the NPT indefinitely in 1995, they committed to give up their right to research and develop nuclear weapons in exchange for commitments from the five recognized nuclear states – the United States, Russia, Britain, France and China – to dismantle their nuclear arsenals. All things considered, more and more non-nuclear states of the NPT have felt that the five nuclear states may not truly intend to fulfill their treaty obligations. If the nuclear states do not take action to fulfill their NPT obligations, how can they, both legally and morally, convincingly persuade non-nuclear states from "going nuclear" and developing nuclear weapons?

Moreover, the perceived "double standards" and conflicting roles of the United States seriously weakens the integrity and effectiveness of international nonproliferation and counter-proliferation measures and frustrates other nations around the world. On one hand, the United States prioritizes nonproliferation as a main goal of its national security strategy. By sponsoring the *Proliferation Security Initiative* (PSI), the United States attempted to establish an effective international counter-proliferation system. On the other hand, the United States continues to use nonproliferation and counter-proliferation measures as tools to carry out its own interventionist global strategy. The United States follows double standards in its nonproliferation and counterproliferation policies: using sanctions, embargo and military strikes against some countries (North Korea, Iran and Iraq), while tacitly consenting to and even patronizing other countries (India and Israel). The United States, by playing conflicting roles, has seriously undermined the nonproliferation regime and put global nuclear security at risk.

The weakening of the international nonproliferation regime has serious consequences for global nuclear security. Currently, 12 countries have nuclear weapon development programs, 28 countries have ballistic missiles, 13 countries have biological weapons and 16 countries have chemical weapons.²¹ This has led to another realization that the existing international laws and compulsory measures on export control are obviously not well structured or strong enough to prevent the proliferation of nuclear technologies and material.²²

India and Pakistan became de facto nuclear countries in 1998, bringing the grave danger of nuclear arms and a missile race to South Asia. Worse, a conventional military conflict between India and Pakistan may, at any time, transform into a nuclear war. In October 2006, North Korea also crossed the nuclear threshold. In this context, we can hardly feel optimistic about the nuclear program of Iran. Danger does not lie in the possibility that North Korea and Iran may actually use nuclear weapons because this is bound to invite large-scale nuclear retaliations, but, alarmingly, it raises issues of how concerned countries in the region will react. A nuclear chain-reaction may spread throughout their region or even the world and eventually cause the international nonproliferation regime to collapse and a nuclear disaster to occur.

The September 11 terrorist attacks against America proved that underground organizations, not controlled by any state, have the capability to carefully plot and successfully launch large-scale terrorist attacks and seriously endanger global nuclear security. In recent years, activities of international underground nuclear trading networks involving several countries and regions have been continuously exposed. We cannot ignore the reality that, if unchecked, the convergence of terrorism and nuclear proliferation will bring immeasurable catastrophe to human societies all over the world. If no strict and effective nonproliferation measures are taken, it won't be long before terrorist organizations obtain nuclear weapons.

China's Options to Confront Nuclear Challenges

Despite U.S. attempts to maintain nuclear hegemony, the world is moving toward a multi-polar balance of power, and the international community is facing increasingly diverse and complex security threats. China has never been as intertwined with the rest of the world as it is today. As a large developing country with nuclear weapons, China should actively respond, both prudently and strategically, to these increasingly serious nuclear challenges in order to obtain a long-term peaceful external environment that has to be backed up by international nuclear security.

Building an Image of a Transparent and Responsible Nuclear State

As a signatory to the NPT, China has to make the world understand its peaceful rise is an opportunity rather than a threat. It is imperative that China build an image of being an open, transparent and responsible nation. In the latest white paper, *China's National Defense in 2006*, China's nuclear strategy explicitly states:

China remains firmly committed to the policy of no-first-use of nuclear weapons at any time under any circumstances. It unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weaponfree zones...China upholds the principles of counterattack in self-defense and limited development of nuclear weapons...and endeavors to ensure the security and reliability of its nuclear weapons and maintains a credible nuclear deterrent force.¹⁹

China's nuclear strategy seeks to: deter other countries from using nuclear weapons against China; oppose the nuclear threats of enemies and counterattack against any major nuclear attacks; develop a lean and effective nuclear force and support comprehensive and complete nuclear disarmament. China's nuclear strategy is mainly defensive, directional, passive and limited. Providing a clear picture and vocally interpreting its' rationale is important to reduce and eliminate doubts and sometimes vicious slanders against China.

Actively Responding to Advancement in the World's Nuclear Armament

Driven by new security threats and the advancement of science and technology, the nuclear armaments of existing nuclear powers are continuously modernizing and evolving. The developments of early detection, early warning and anti-ballistic missile technologies have accelerated the research, development and deployment of the missile defense system, which has achieved the domestic legal "green-light" through the 2002 Nuclear Posture Review. Once

the system is completed, the United States will obtain a strategic deterrent force with both offensive and defensive capabilities, which could pose serious challenges to the limited nuclear deterrent capabilities of medium-sized nuclear countries. The new generation of nuclear weapons is grow-

China should avoid sacrificing its interests to satisfy U.S. nonproliferation requests.

ing smaller in size (thus having smaller collateral damage), is more precise in targeting (with limit errors within 10 meters), has stronger electronic anti-jamming mechanisms and a higher capability of earth penetration and defense penetration.

The development of nuclear armaments in the United States poses a severe threat to the survival and penetration capabilities of China's nuclear weapons. China's nuclear weapons play multiple strategic roles. First, nuclear weapons hold up China's power status and its position as one of the five permanent members of the United Nations. Second, as a retaliatory strategic force, nuclear weapons are an indispensable deterrent to those nuclear states that put China on their "nuclear strike lists." Finally, nuclear weapons, as "an assassin's mace," can be used at a time when China's core national security and development interests are fundamentally undermined.

In order to maintain the current limited nuclear force, China should further develop nuclear weapons in classified ways to enhance the flexibility of their strategy. China should also invest in the research, development and construction of its space technology; satellite and strategic reconnaissance; and command, control and communication systems to improve its strategic early warning, counter-intelligence, counter-reconnaissance and electronic anti-jamming capabilities.

To enhance the survivability as well as the offensive and defensive penetration capabilities of its limited nuclear force, China needs to concentrate on the deployment of mobile land-based nuclear weapons and the development of submarine-launched ballistic missiles. This will fundamentally ensure the reliability and credibility of China's nuclear force. In addition, China should conduct prudent and active research on the specific policies governing the use of nuclear weapons. In the western nuclear community, it is generally agreed that flexible interpretations of nuclear strategy and more explicit enforcement of the concrete conditions and policies governing the use of nuclear weapons can increase the power of nuclear deterrence. In a context of moral responsibility and the obligations of the NPT, China should learn how to maintain necessary flexibility without being fettered by responsibilities and obligations at the level of strategic deterrence. China should also determine the circumstances necessary in the context of war, including specifications of the conditions and targets of China's nuclear counterattacks, in order to thwart attempts by other nuclear powers to attack China.

Taking Action and Non-action in Nuclear Disarmament and Proliferation

There is no doubt that the efforts of nonproliferation and counter-proliferation made by the international community are beneficial to China's national security interests. By examining the current trends, we see China will sooner or later join bilateral or multi-lateral nuclear disarmament negotiations. These realities raise an important question to China: How shall we prepare and respond? While this question cannot be answered here, China should follow a basic principle in any path it chooses: to act (or choose to abstain from action) based strictly on its national security interests and its belief in what is right and wrong.

As nuclear great powers are actively developing and deploying missile defense systems, the defensive penetration capabilities of China's nuclear force will inevitably be weakened. Disarmament negotiations will force commitments to reduce nuclear weapons. To gain a favorable position in future negotiations of nuclear disarmament, China should urge the United States and Russia to truly and effectively carry out nuclear disarmament commitments that will not only reduce the number of nuclear weapons but will make the disarmament process irreversible. Reduced warheads should not be just dismantled and removed from missiles, but should be destroyed. As China's participation in multi-lateral nuclear disarmament negotiations will unavoidably lead to a reduction and weakening of its strategic deterrent force, we should improve the base number of our nuclear force before participating in any nuclear disarmament negotiations. This can be achieved through the development of a necessary quantity and quality of nuclear weapons so that that any concession in future disarmament negotiations will not lead China's strategic forces to fail to fulfill the promise of a retaliatory strike against enemies' nuclear attacks.

Though the United States put international nonproliferation and counterproliferation at the top of its policy agenda, it must be noted that it seeks in the meantime to maintain its status as the dominant superpower and to shape the international security environment for its own national interests. China should treat the varied actions of the United States in equally flexible ways. First, for U.S. policies and actions against nuclear proliferation to separatists, extremists and terrorists, we should give firm support and full cooperation. Second, when the United States wantonly interferes with our normal development of armament (justified by their effort to prevent nuclear proliferation), we should respond skillfully and be sure never to swallow a "bitter pill." China should avoid sacrificing its interests to satisfy U.S. nonproliferation requests. Third, if the United States attempts to interfere in our internal affairs, we should strongly oppose and resist. Finally, as a friend of many developing countries, China should be attentive to their interests when the United States tries to impose unreasonable demands on them.

<u>Notes</u>

* The views expressed in this paper are entirely those of the author himself and do not necessarily reflect the views of the National Defense University of China and the Chinese military.

¹ The Doomsday Clock was designed by the wife of a physicist who took part in the U.S. Nuclear Weapon Research Program. In 1947, it was put up in the building of the Bulletin of Atomic Scientists. See: http://www.thebuletin.org/press_center/20061011.htm.

² There are two types of proliferation: horizontal and vertical. Horizontal proliferation refers to nuclear states that transfer nuclear weapons, technology or materials to nuclear or non-nuclear entities. Vertical proliferation refers to nuclear states that research and develop new types of

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nuclear weapons, technology, materials and means of warhead delivery.

³ Lawrence Scheinman, "Comprehensive Test Ban Treaty (CTBT)," *Issue brief on Nuclear Threat Initiative (NTI)*, April 2003, See: http://www.nti.org/e_research/e3_9a.html

⁴ Geophysical and other technologies, seismology, hydroacoustics, infrasound, and radionuclide monitoring, are used to monitor compliance with the CTB Treaty. On-site Inspection occurs when concerns about compliance arise.

⁵ The treaty will enter into force 180 days after it is ratified by all of the 44 countries which formally participated in the 1996 session of the Conference on Disarmament, and possess either nuclear power or research reactors. Among above 44 states, there are still 10 states that have not ratified the treaty, and it is unlikely to happen in the near future. The CTBT has now been signed by 177 states and ratified by 138.

⁶ "The ABM treaty, which was signed by the United States and the former Soviet Union on May 26, 1972, and came into affect on Oct. 3, 1972, constrained strategic missile defenses to a total of 200 launchers and interceptors per country- 100 at each of two widely separated deployment areas. These restrictions were intended to prevent the establishment of a nationwide defense or the creation of a base for deploying such a defense." the Monterey Institute's Center for Nonproliferation Studies, U.S.-Russian Treaties & Agreements, Updated October 2005 See: http://204.71.60.37/f_wmd411/gloss.html.

⁷ The Treaty on Strategic Offensive Reductions (SORT), also known as the Moscow Treaty, signed between Russia and the United States limits their nuclear arsenal to 1700–2200 operationally deployed warheads each. It was signed in Moscow on May 24, 2002. SORT came into force on June 1, 2003 and will expire on Dec. 31, 2012. Either party can withdraw from the treaty with three months written notice to the other party.

⁸ "The Bush administration is actually planning to retain the potential to deploy not 1,700 to 2,200 nuclear weapons, but as many as 15,000." Natural Resources Defense Council, "Faking Nuclear Restraint: The Bush Administration's Secret plan For Strengthening U. S. Nuclear Forces," February, 13, 2002. see: http://www.nrdc.org/nuclear/restraint.asp; also see: http://www.iss. niiit.ru/pub-eng/pub-06.htm.

⁹ National Library of China Reference Materials Digital Library, "Russian-U.S. Relations" in Background Materials to Countries-Europe: Russia; Philippe Lagassé, The SORT Debate: Implications for Canada, IRPP Working Paper Series, no. 2003-01.

¹⁰ Many Chinese scholars believe that the United States assigned "rogue states" and "axis of evil" according to its political interests and value judgments. See: Zhang Jiadong & Shen Dingli, "Terrorism in the Context of Terrifying Language," *World Economics and Politics,* issue 12, 2003.

¹¹ Bush Administration, "The National Security Strategy of the United States of America," June 1, 2002 See: http://www.whitehouse.gov/nsc/nss.html

¹² the United States Department of Defense, *"Nuclear Posture Review,"* Dec. 31, 2001, p.12. See: http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

¹³ Ibid, pp.16-17.

¹⁴ the United States Joint Chiefs of Staff, "Doctrine for Joint Nuclear Operations - Final Coordination (2)," March, 15, 2005. See: http://www.globalsecurity.org/wmd/library/policy/dod/jp3_12fc2. pdf.

¹⁵ In Chinese academic circles, there are two views on the military strategy which Russia pursues at present: one theory is that the Urgent Tasks for Developing Russian Armed Forces issued by the Russian Ministry of Defense is the "quasi-military theory" that guides the development of the Russian military. Guided by this military theory, Russia currently pursues "a nuclear containment-based flexible strategy." The Security-2004 Exercise was an important sign of the implementation of the strategy. The other view holds that before a new "military theory" is introduced, Russia still pursues a "realistic containment" military strategy, which is a strategy using "nuclear weapons" as the main means of containment. See: *World Military Yearbook (2005)*, PLA Press, December 2005, p.292.

¹⁶ Chief of General Staff of the Russian Armed Forces Colonel General Yury Baluyevsky: The Tasks of the Department of General Staff and Military Building---to the memory day of the 243rd anniversary of the Department of General Staffs. See: World Military Research Department of the Chinese Academy of Military Sciences, *World Military Reference*, Issue 15, 2006.

¹⁷ In January 2002, the Bush administration announced the completion of a congressionally mandated review of U.S. nuclear capabilities. Called the Nuclear Posture Review (NPR), the study unveiled a new triad strategic force, consisting of nuclear and precision non-nuclear strike forces; passive and active defenses; and a revitalized defense infrastructure.

¹⁸ the United States Department of Defense, "*Nuclear Posture Review*," Dec. 31, 2001, pp.12-13. See: http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

¹⁹ "In Russia, modernization does not affect all three aspects of the triad simultaneously, in contrast to Soviet Union practices. Instead, modernization of ICBMs is now in full swing, modernization of the sea-based leg is only beginning, and heavy bombers are clearly left for the future." Dr. Nikolai Sokov, "*Modernization of Strategic Nuclear Weapons In Russia: The Emerging New Posture*," the Nuclear Threat Initiative (NTI), May 1998

See: http://www.nti.org/db/nisprofs/over/modern.htm.

²⁰ "Focus on Nuclear Posture in the new international structure," *Guangming Daily*, Feb.7, 2006, See: http://www.gmw.cn/content/2006-02/07/content_366895.htm

²¹ the United States Department of Defense, "Nuclear Posture Review," Dec. 31, 2001.

See: http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

²² Carnegie Endowment for International Peace, Universal Compliance: A Strategy for Nuclear Security, World Knowledge Press, 2005, pp.3-5.

U.S. Nuclear Primacy and the Future of the Chinese Deterrent

Keir A. Lieber and Daryl G. Press

Since the end of the Cold War, and particularly since the September 11 attacks, public discussions about nuclear weapons have focused on the dangers of terrorism, "loose nukes," and the consequences of nuclear proliferation. These are critical issues and deserve close attention. Yet, insufficient attention has been given to important developments at the global strategic nuclear level. This is unfortunate because the shifting nuclear balance among the major powers of the world could have a dramatic impact on international security in the 21st century.

The last great change in the strategic nuclear balance of power occurred nearly half a century ago with the onset of nuclear stalemate between the superpowers.¹ That stalemate, characterized by the condition of mutual assured destruction (MAD), meant that neither the United States nor the Soviet Union had the capability to destroy the other's retaliatory force, even by launching a surprise attack. Since the end of the Cold War, however, the

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strategic nuclear balance among the great powers has shifted dramatically. While Russia's nuclear arsenal has steeply declined and China's arsenal remained largely unchanged, the United States has steadily improved its nuclear counterforce capabilities. As a result, today we are witnessing the dawn of a new era of U.S. nuclear primacy.

Our research on U.S. nuclear primacy draws attention to this important development and calls for further discussion and debate about its implications for international relations.² For example, we see several ways in which U.S. nuclear primacy could significantly affect U.S.-China security relations. First, the continued growth of U.S. nuclear counterforce capabilities will put pressure on China to take steps to reduce the vulnerability of its own arsenal; for instance, by enlarging its long-range nuclear arsenal, expanding plans to deploy intercontinental-range mobile missiles, and perhaps even pre-delegating some launch decisions to subordinate commanders.³ Such steps would be costly for China, and might leave the United States worse off than before it acquired nuclear primacy.

Second, the emergence of U.S. nuclear primacy may lead to dangerous crisis instability and increase the odds of nuclear war. For example, if China does not redress its vulnerability in peacetime, leaders in Beijing may feel com-

pelled to do so in the midst of a brewing crisis or conventional war. In such a case, Beijing may feel pressure to alert its small intercontinental ballistic missile (ICBM) force either to signal China's resolve or to (slightly) reduce the vulnerability of its arsenal. But a Chinese alert could backfire and trigger a preemptive nuclear attack on China's vulnerable missile force.

The emergence of U.S. nuclear primacy may lead to dangerous crisis instability and increase the odds of nuclear war.

Third, the growth of U.S. nuclear counterforce capabilities may give U.S. leaders valuable coercive leverage during future crises and wars, including conflicts with China. The United States strongly prefers that its future wars be waged exclusively with conventional weapons; in fact, one of the great quandaries currently confronting U.S. strategists is how to fight conventional wars against nuclear-armed adversaries without triggering escalation. Nuclear primacy may provide one solution: allowing Washington to credibly warn adversaries not to alert their nuclear forces or issue nuclear threats during a

conflict. In other words, U.S. nuclear primacy may allow the United States to force its enemies to keep their nuclear forces on the sideline and keep their conflicts with the United States at the conventional level.

In sum, America's growing nuclear counterforce capabilities are a doubleedged sword for the United States – raising the danger of renewed arms races and crisis instability, but also conferring real benefits for the United States.

The Critics

Our critics raise myriad questions about our analysis.⁴ Bruce Blair, Chen Yali, and Li Bin are skeptical that we are witnessing the emergence of U.S. nuclear primacy. Furthermore, they are confident that China will feel little pressure to respond and strengthen Beijing's small nuclear arsenal, even as the United States continues to enhance its nuclear counterforce capabilities.

America's growing nuclear counterforce capabilities are a double-edged sword. They are also sanguine about crisis stability, apparently because China is committed to a policy of "no first use" (NFU), meaning that it has deliberately chosen to absorb a nuclear first strike before retaliating with nuclear weapons. Therefore, escalatory dangers during a crisis will be greatly mitigated because

one side – China – will avoid taking any coercive or preemptive actions with its nuclear weapons. Finally, the critics argue that nuclear primacy will not grant the United States any real utility; U.S. coercive threats would lack credibility because a disarming strike would become impossible if China alerted its forces in the wake of an American threat. In sum, our critics claim that nuclear primacy is "irrelevant" and that deterrence will remain robust – even if the United States continues to hone its counterforce capabilities, and even if China's rise triggers increased hostility between Beijing and Washington.⁵

Before we address our critics' analyses, we clarify four potential points of confusion about our argument. First, we believe that America's drive for nuclear primacy is primarily driven by concerns about future relations with China, rather than Russia.⁶ We modeled a hypothetical U.S. first strike against Russia because doing so provided a much harder test of our thesis about the dramatic shift in the nuclear balance. (Russia has a far larger nuclear arsenal compared to China.) We would be greatly surprised if relations between Moscow and Washington deteriorated so completely in the coming decades that a nuclear war became, once again, a plausible concern for either country.
However, we lack such optimism about Sino-American relations.

Second, our analysis self-consciously understates many aspects of America's first-strike capability against Russia or China. For example, we omit consideration of any conventional military attacks that could support a U.S. nuclear counterforce strike. Our model also excludes attacks on nuclear command and control sites, which could prevent (or sufficiently delay⁷) an adversary's retaliation if a few nuclear targets survived a U.S. first strike. And finally, our analysis only considers the current capabilities of U.S. forces, even ignoring some significant upgrades that are already underway and which will soon give another boost to U.S. nuclear counterforce capabilities.⁸

Third, we have never claimed that the United States is pursuing a first strike strategy, as Blair and Chen assert in their article addressing our work.⁹ Rather we claim that the United States is pursuing a first-strike capability. The distinc-

tion is crucial. The United States plans to win its future wars without resorting to nuclear weapons. Nevertheless, the U.S. military continues to enhance its nuclear counterforce capabilities with two plausible purposes: strengthening U.S. coercive leverage in high-stakes crises against nuclear-armed adversaries, and giving U.S. leaders nuclear options in case nuclear attack by an enemy appears imminent. But nowhere

America's drive for nuclear primacy is primarily driven by concerns about future relations with China.

do we state – or believe – that the United States is seeking a nuclear first-strike strategy – i.e., a military doctrine that relies on nuclear first strikes to win the nation's wars.

Finally, the importance of the shift in the nuclear balance does not hinge on the U.S. willingness to launch a nuclear attack on Russia or China, let alone on an assumption that a nuclear strike against one of those countries is guaranteed to succeed. Chinese and Russian military planners pay close attention to changes in the U.S. arsenal and are likely to adjust their force levels, deployment patterns, and alert status accordingly. Just as American planners put greater stock in actual Chinese military capabilities than in China's stated intentions, we assume that Chinese and Russian leaders pay more attention to changes in American military capabilities rather than the declarations from Washington about America's goals and intentions. Therefore, even if the United States would never launch a preemptive nuclear strike, the pursuit of nuclear primacy should be expected to trigger a response among U.S. adversaries.

Below we address our critics' arguments about the effects of nuclear primacy. We first focus on issues that bear directly on China's security and U.S.-China relations. We then address several technical critiques of our model and assumptions about U.S. nuclear primacy.

Implications of U.S. Nuclear Primacy for Chinese Security

We contend that America's growing counterforce capabilities will have three significant implications for China: it may pressure China to reduce the vulnerability of its nuclear forces, it could promote dangerous escalatory dynamics if the United States and China became engaged in a major crisis or conventional war (e.g., over Taiwan), and it might give Washington valuable coercive leverage over Beijing in a high-stakes military crisis. Our critics dispute each of these claims. We describe and address their criticisms in turn.

China's Reaction to its Vulnerability

Several of our critics claim that leaders in Beijing are unconcerned about the growth of America's nuclear counterforce capabilities. For example, Blair and Chen claim that Chinese strategists believe in the theory of existential deterrence – the notion that deterring a first strike merely requires that there is "some conceivable prospect" that a small portion of China's retaliatory force will survive the attack and retaliate.¹⁰ This theory of deterrence differs from other formulations on two dimensions: it assumes that robust deterrence merely requires the possibility of retaliation (rather than the assurance of retaliation), and that robust deterrence merely requires that a small nuclear retaliatory force survive a first strike (rather than a massive retaliatory force).¹¹ According to Blair and Chen, China's leaders trust that a small and vulnerable retaliatory force will have sufficient deterrent effect, so China will not build up its arsenal in response to U.S. nuclear primacy. To support their view, Blair and Chen note that China maintained a small deterrent arsenal throughout the Cold War, even as the superpowers scrambled to out-do each other with new counterforce weapon systems.

We believe that Blair and Chen are overly confident that China will sit idly by while the United States hones its counterforce capabilities. We note that two articles recently published in this journal – by Shen Dingli and Sun Xiangli – suggest that Blair and Chen have misinterpreted Chinese thinking about nuclear deterrence. The articles suggest that although China's leaders believe that a small number of surviving Chinese warheads would be sufficient for inflicting unacceptable damage on an adversary, Chinese planners do care about ensuring that at least a portion of their small retaliatory force will survive a first strike. In other words, Beijing is not satisfied with merely having "some conceivable prospect" of retaliation.

Specifically, Shen and Sun explain that although Beijing has never tried to numerically match its adversaries' nuclear arsenals, Chinese nuclear strategy has always required that its retaliatory force be survivable. Shen explains why the Chinese nuclear arsenal is relatively small, writing that China is uninterested in nuclear warfighting capabilities and "only needs to assure a credible nuclear retaliation so as to deter a first nuclear attack."¹² Sun is more explicit. She notes that "the effectiveness of nuclear deterrence is determined not by the comparative quantity...of the weapons but rather by their capability for retaliation."¹³ According to Sun, the key requirements for China's nuclear deterrent are the ability "to survive an enemy's first strike" and thereby maintain "a basic retaliatory capability."¹⁴

Sun goes further and explicitly argues that China evaluates its deterrent requirements by assessing the threats to its nuclear forces. China's limited nuclear arsenal "does not mean the number of weapons that make up a limited nuclear force is immutably fixed. ... [T]he required size for such a capability is a dynamic quantity relating to the nuclear arsenal's survivability."¹⁵ If Sun

is correct, then the ongoing U.S. efforts to increase U.S. counterforce capabilities will force China to rethink the size of its nuclear arsenal and its low peacetime level of readiness.

It is true that China maintained a small nuclear arsenal during the Cold War but there are good reasons to wonder whether China's reaction to U.S. nuclear primacy will be conditioned by the broader strategic context.

China's Cold War nuclear posture is a reliable guide to its future nuclear arsenal. For one thing, China was much poorer during the Cold War than it is today, so even a modest nuclear buildup would have required much more painful tradeoffs in the form of reduced spending on conventional military forces or reductions in non-military expenditures. More important, the most significant military threat facing China during much of the Cold War was from the Soviet Union, not the United States. Soviet nuclear forces were substantially less accurate (and hence less effective for disarming attacks) than U.S. forces during the Cold War, and both were substantially less lethal than the current American arsenal.

Most important, China's reaction to U.S. nuclear primacy will be conditioned by the broader strategic context: China's role in the world. During the Cold War, China was initially a junior member of the Soviet alliance system; later it disentangled itself from the Cold War confrontation, establishing only loose

China is poised to become a "great power" and perhaps a strategic competitor to the United States. political ties to the United States. Today, in contrast, China is poised to become a "great power" and perhaps a strategic competitor to the United States. If China's role in world politics expands, its relations with the United States will likely sour, and its requirements for nuclear deterrence will likely expand as well. Assuming that China's defense policies in the coming decades will

mirror its policies in the Cold War is like assuming America's security policies in the mid-20th century would resemble its policies in the 19th century – that is, before America's rise to true great power status.

In sum, we do not claim to know for certain how China will react to growing U.S. counterforce capabilities; after all, other Chinese strategists may disagree with Shen and Sun and instead claim that Chinese leaders place less emphasis on force survivability. Our point is simply that U.S. counterforce developments pressure China to reduce the vulnerability of its arsenal, and the pressure will increase if the United States and China become real rivals. The implication is that the United States should only pursue nuclear primacy if it recognizes and accepts the risk of a Chinese buildup – including an expanded arsenal, a larger force of mobile long-range missiles than would otherwise be built, and perhaps arrangements including decentralized and pre-delegated launch authority. Continuing to hone U.S. counterforce capabilities under the assumption that leaders in Beijing will do nothing in response is reckless.

Dangerous Crisis Dynamics and China's Commitment to NFU

A second line of criticism holds that our worries about crisis instability are unnecessary. Critics claim that Beijing will not take actions during crises, such as alerting its nuclear forces, which could trigger a preemptive U.S. attack. Worries about crisis instability – and a nuclear war that neither side intends – can be set aside because of China's commitment to the principal of NFU and its concomitant willingness to leave its nuclear forces un-alerted and in a non-threatening posture during crises.

China's official NFU pledge is sweeping, promising that "[a]t no time or under no circumstances would China first use nuclear weapons."¹⁶ This pledge is taken seriously by many knowledgeable observers of China, including Sun,

Shen, and Li. Blair and Chen are adamant about China's sincerity about NFU, noting that "China never wavered from its nofirst-use (NFU) doctrine," that Beijing's "NFU commitment remains solid," and that "NFU will not be dislodged any time soon, if ever. It is a virtual canon of Chinese nuclear orthodoxy."¹⁷

U.S. counterforce developments pressure China to reduce the vulnerability of its arsenal.

However, it is difficult to reconcile this confidence in China's commitment to NFU with the apparently widespread view in China that Beijing might initiate nuclear war against the United States rather than lose a conventional conflict over Taiwan. The statements along these lines by Maj. Gen. Zhu Chenghu, dean of China's National Defense University, have been widely reported. In a previous article, Blair wrote that Zhu's belief, "that China would resort to all military means necessary, including nuclear weapons, in order to preserve China's territorial integrity (of which Taiwan is a part) seems noncontroversial from a Chinese perspective." Blair continues and observes that "Zhu's view is consistent with China's policy in saying that China would risk everything under the circumstances" of a failed conventional (non-nuclear) war over Taiwan.¹⁸

Zhu and Blair are not alone in believing that China might threaten or use nuclear weapons first in a conventional war over Taiwan. Referring to Taiwan, Shen notes that "China's...core national interest is national unification" and that "[i]t is logical to conclude that China will use any means to defend its core interest – nuclear weaponry certainly being one such means."¹⁹ Chen apparently agrees. In her article with Blair, they write: "The Taiwan issue...arouses such fervent emotions throughout [China] that irrational behavior in its use of nuclear weapons cannot be ruled out."²⁰

If China may be willing to threaten or initiate nuclear war against the

United States during a war over Taiwan, then why should we be sanguine about crisis stability? Why wouldn't the United States be tempted to preempt China's forces in such a scenario, if a Chinese alert (for example, mating the DF-5A warheads to missiles) may actually indicate that China is about to launch an attack on the United States? Contrary to the claims of our critics, the dangers of crisis instability – and a nuclear war that neither the United States nor China want – may in fact be grave.

Nuclear Primacy and Coercive Leverage

Li denies that U.S. nuclear primacy will give the United States greater coercive leverage or more military options over China – whether during peacetime, a crisis, or even a conventional war. As Li notes, in order to coerce China to change its behavior (for example, to compel China to cease attacks on Taiwan), the United States would need to signal Beijing that China's actions risk a nuclear response from the United States. (Coercion requires warning about the ramifications of non-compliance, even if such warning is conveyed discreetly or implicitly.) The problem for the United States, according to Li, is that if confronted by such a warning, China can "raise its nuclear alert accordingly and thereby increase the survivability of its nuclear forces." Specifically, Li says "China may relocate its cave-based ICBMs" if the United States signals that a nuclear attack is possible. Li's point is that the very act of issuing a coercive threat will permit a Chinese alert, which will greatly reduce the likelihood of a successful U.S. disarming strike.²¹

The available information on the Chinese nuclear arsenal suggests that Li is mistaken. Although Li suggests that China could relocate its "cave-based" missiles in response to a U.S. threat, the only Chinese nuclear missiles hidden in caves are apparently DF-4s – and those missiles lack the range to strike the United States. China's only nuclear weapons capable of reaching the United States are its DF-5A missiles, which are based in silos. The DF-5A missiles are maintained at low levels of readiness; their nuclear warheads are kept separately in storage and the missiles themselves are un-fueled.²² China could respond to U.S. coercive threats by mating warheads to missiles, but even that step would not meaningfully reduce their vulnerability to attack. China lacks not only a national early-warning system to provide indication of an incoming attack, but also a launch-on-warning doctrine that would allow its forces to escape destruction if it believed an attack was coming.

In sum, the Chinese long-range arsenal appears to be vulnerable to a

disarming attack, regardless of whether those forces are "alerted" or not. Therefore, Li is wrong to discount the possibility of U.S. nuclear coercion during a crisis or war on these grounds.

Ironically, one of the clearest explanations for how the United States may use nuclear primacy in a crisis or war with China appears in an earlier article by Blair. His recent article with Chen labels our suggestion that the United

States might use nuclear threats "the zenith of provocation" and "unthinkable."²³ However, in the autumn 2005 issue of China Security, Blair describes exactly the crisis dynamics we envision leading to U.S. nuclear threats and perhaps even a preemptive nuclear attack. He notes that

The Chinese long-range arsenal appears to be vulnerable to a disarming attack.

if China were to alert its strategic nuclear forces during a war with the United States over Taiwan, "the United States would likely act to beat China to the punch." He continues, "Given constant U.S. surveillance of Chinese nuclear launch sites, any major Chinese preparations to fire peremptorily would be detected and countered by a rapid U.S. preemptive strike against the sites by U.S. conventional or nuclear forces... The United States could easily detect and react inside of the lengthy launch cycle time of Chinese forces."²⁴

Blair's words mirror our argument and suggest the two ways that nuclear primacy may benefit the United States. First, if the Chinese were to threaten nuclear escalation in the context of a Taiwan war, the U.S. could strike first and likely destroy the Chinese force on the ground – "beat China to the punch," as Blair puts it. Second, China's knowledge of its vulnerability to nuclear preemption might prevent China from alerting its nuclear force – or even attacking Taiwan – in the first place.

To be clear, we do not claim that U.S. nuclear primacy will prevent China from fighting a war if Taiwan were to declare independence. The high intensity of Chinese views about Taiwan suggests that Beijing might fight for Taiwan, regardless of the risks of doing so. Rather, we argue that U.S. nuclear primacy may play an important coercive role in such a war – as Blair's analysis, quoted above, also implies. Specifically, U.S. nuclear primacy could be used to warn China against issuing nuclear threats or alerting its nuclear forces, and hence contain the fighting at the conventional level. In the coming years, in fact, the greatest payoff to Washington from U.S. nuclear primacy might be that it allows the United States to fight and win conventional wars against nuclear-armed adversaries: coercing adversaries to keep their nuclear arsenals out of the strategic equation.

Alleged Flaws in our Model of U.S. Nuclear Primacy

We support our findings about the emergence of U.S. nuclear primacy by modeling a surprise U.S. nuclear attack against Russia. Our model uses unclassified data on U.S. weapons systems, the numbers and types of Russian targets, and standard formulas for estimating the likely results of a given set of attacks on a given set of targets.²⁵ Scholars and analysts have carried out similar analyses since the dawn of the nuclear age. By our calculations, no Russian strategic missiles, bomber bases, or submarines would survive a U.S. first strike if the attack caught the Russian forces in their normal peacetime routines. Given the far smaller and more vulnerable Chinese nuclear arsenal, we concluded that a similar U.S. first strike against China would be much easier.

Our critics raise several important challenges to our model, but their critiques miss the mark. We address their key concerns below.

U.S. Missile Accuracy

Blair and Chen argue that our assessment of U.S. nuclear primacy rests on unwarranted confidence in U.S. missile accuracy. They note that we consider the possibility that U.S. weapons may perform below expectations – i.e., as much as 20 percent below expectations – but they claim that we ignore the possibility that actual U.S. missile performance may be even lower: perhaps 40-50 percent below our expectations. They thus charge that we "do not adequately inform the reader that the probabilities of destroying Russian hard targets such as missile silos would plummet if U.S. missiles missed their targets by a considerably greater distance than assumed by their model."²⁶

This criticism is factually incorrect. We published much more sensitivity analysis than Blair and Chen acknowledge on both of the key variables that drive the results of the model: the accuracy of U.S. delivery vehicles and the reliability of U.S. weapon systems. Contrary to Blair and Chen's claims, we show that the results of our model do not change even when we allow the accuracy and reliability of U.S. weapons to fall below expectations by 40 or 50 percent.²⁷

Why are our results so robust? During the past 15 years, the United States

has done so much to upgrade its first strike capabilities – most notably by deploying Trident II D-5 missiles throughout the entire ballistic missile submarine (SSBN) fleet, placing high-yield W88 warheads on many of those missiles, and deploying stealthy B-2 bombers – that today a first strike could succeed even if the performance of key U.S. weapon systems fell far short of their expected accuracy, reliability, or both.

Furthermore, the United States continues to work to increase the lethality of its nuclear forces, thereby reducing even more the significance of any actual deviations from expected levels of accuracy. For example, the U.S. Navy recently experimented with using Global Positioning System (GPS) signals to provide terminal guidance for Trident II reentry vehicles (which would dramatically improve the warhead's accuracy) and it is enhancing its Trident II W76 warheads with a new fuze to permit ground-bursts (which will greatly enhance the warhead's lethality against hardened targets).²⁸ Achieving GPS-like accuracy with submarine-launched ground-burst warheads would mark a tremendous leap in U.S. counterforce capabilities, providing gains in performance that could substitute for potential inaccuracy in other weapon systems. The point is that our analysis is not sensitive to plausible levels of uncertainty about U.S. accuracy, and will become even less sensitive in the future as U.S. weapons grow even more capable.

U.S. Ability to Generate a First Strike Force

Blair and Chen question whether the United States could secretly bring its strategic nuclear forces to combat-ready status without alerting Russia and China. Although nearly all of the U.S. ICBM force is ready to fire during peacetime conditions, Blair and Chen claim that the process of readying U.S. bombers and submarines would be "noisy" – i.e., detectable by Russia and China. The bomber force in particular, they argue, would require approximately 72 hours of visible preparations prior to a nuclear operation.

This criticism is unpersuasive for three reasons. First, the U.S. attack we model uses only those submarines that are at sea conducting routine activities at the time of the strike; no submarines are flushed out of port prior to the attack, because doing so would, in fact, warn U.S. adversaries. Our estimate of the number of U.S. submarines typically at sea is conservative. We assumed that the United States typically has eight of its 14 ballistic missile subs at sea: four on "hard alert" and four additional subs exercising or traveling to or from deployments. After we published our analysis, newly available information reveals that the United States has actually maintained on average 62 percent of its ballistic missile submarine fleet at sea in recent years; in fact, at one point during the 1990s the United States briefly had 78 percent of its SSBN fleet underway.²⁹ Therefore, without any manipulation of normal U.S. submarine deployment routines, the United States could have eight or nine SSBNs at sea. By slightly manipulating the deployment schedules (e.g., delaying the return of just one submarine to port) the United States should be able to get 10 submarines into firing position without sending any visible signals to adversaries.

Second, regarding the U.S. bomber force, Blair and Chen provide no evidence for their claim that it would require three days of visible activity for the United States to ready its bombers for a nuclear mission.³⁰ As they note, the United States stores nuclear gravity bombs and cruise missiles on its

The United States continues to work to increase the lethality of its nuclear forces. bomber bases with the aircraft. Although it is theoretically possible that the United States has configured its bombers in such a way that preparation for nuclear delivery would be visible and time consuming, we see no reason to assume this is the case. It is important to remember that the total number of aircraft involved in the attack

we model is modest: 42 B-52s and 16 B-2s, plus (roughly) an equal number of tankers. Prepping this force would be a smaller and less visible task than launching a typical Cold War-era strike, which would have involved hundreds of bombers and their support planes.

Most importantly, even if Blair and Chen are correct that preparing a large bomber strike would require several days of "noisy" activity, the United States could substantially reduce the number of bombers (and hence tankers) involved in the attack with no significant change in outcome. In fact, the United States could conduct an attack on the Russian arsenal with only half of the bomber force we used in the model: that is, with only 21 B-52s and nine B-2s, which is 38 percent of the entire force. If even that modest number of aircraft could not be readied quickly and quietly, the targets assigned to some of those bombers could be covered if nine or 10 submarines were available instead of eight, which the discussion immediately above suggests is entirely plausible. Finally, none of these issues should obscure an important point: the problem of alerting U.S. forces for a large-scale attack is only relevant in the context of a strike on Russia. A disarming attack on China would not even require the full arsenal from a single U.S. ballistic missile submarine; in fact, just three B-2s could do the job.³¹

Russian "Launch on Warning"

In our analysis we demonstrate that the United States appears able to strike Russian or Chinese nuclear forces before they have a chance to launch and escape destruction. Our claim is not surprising with regard to China. China has no comprehensive early warning system to detect an incoming nuclear attack, and Beijing's long-range nuclear forces are not configured to launch quickly in any case. More surprising is that Russia – which has relied on a hair-trigger "launch on warning" doctrine for many years – would be unable to fire its missiles before incoming U.S. warheads arrived and detonated. Russia's early warning problems stem from three factors: (1) Russia's satellites cannot detect the launch of submarine-fired missiles; (2) its ground-based radar network has a hole pointing toward the Pacific ocean, through which the United States could launch a submarine attack; and (3) the United States has stealthy bombers plus approximately 400 stealthy nuclear-armed cruise missiles, which could also evade Russia's early warning network.

Blair and Chen acknowledge that there is a hole in the Russian early warning network but claim that we exaggerate the relevance of this gap. They make two points: First, they dismiss the importance of the Russian radar hole, arguing that it contributes little to Russia's already precarious ability to launch on warning. Even if the hole did not exist and Russia was able to quickly detect an incoming U.S. attack, Russian leaders would have difficulty completing their own launch sequence before fast-arriving U.S. submarinelaunched missiles began detonating on Russian silos. Second, Blair and Chen then reverse course and observe that incoming warheads from U.S. submarines would only outrace the Russian launch sequence by a few moments – a window of Russian vulnerability that is too narrow for the United States to exploit with any confidence.³²

This line of argument is deeply flawed because it concedes the existence of the radar hole, but then ignores its implications. They assert that the hole is essentially redundant, because even without the hole, U.S. sub-launched missiles could hit their targets too quickly for Russia to respond. But then they undermine their point about redundancy by illustrating why the radar hole is critically important: without the hole, incoming sub-launched warheads would barely beat the completion of the Russian launch sequence. With the hole, U.S. submarines can "sneak in" hundreds of warheads before Russian leaders are even aware the race to launch has begun. In short, if U.S. missiles exploit the Russian radar hole, Russian leaders will not be in a tight race to launch before the incoming warheads arrive. Instead, Russian commanders will not even get off the starting mark until the U.S. warheads are only a few (less than five) minutes from their targets – far too late to launch on warning.

Moreover, if a U.S. submarine-launched missile attack was supported by hundreds of stealthy nuclear-armed cruise missiles plus hundreds of nuclear bombs delivered from stealthy B-2 bombers, the United States could conceivably detonate many hundred warheads in Russia with no warning at all.

Finally, Blair and Chen claim that even if there is a hole in Russia's early warning network, a major U.S. first strike would be detected early because the

In the event of a U.S. first strike, China would have no reasonable hope of launching its missiles before they were destroyed. United States would attack Russia from all sides.³³ This assumption, however, is unreasonable. If the Russian warning network has glaring vulnerabilities, U.S. planners would strive to exploit them fully. We refer readers to the chilling memos, now declassified, which describe analyses conducted in 1961 for senior Kennedy administration officials, and which were briefed to the president at the height of the Berlin crisis. The memos describe ideas for modifying U.S. nuclear

attack plans to maximize the chance for success in a surprise strike against an un-alerted Soviet strategic force. In these analyses, a small U.S. bomber force (about 40 planes) was to exploit known holes and vulnerabilities in Soviet warning radars to sneak through and destroy Moscow's missiles and bombers before they could launch.³⁴ There is no reason to believe that U.S. planners have grown less creative or would forego the opportunity to exploit holes in the Russian early warning system in a nuclear war.

In sum, in the event of a U.S. first strike, China would have no reasonable hope of launching its missiles before they were destroyed because China has never built such a capability. But even Russia – with its satellites, radars, and a launch on warning doctrine – would need to absorb a U.S. first strike before retaliating (if any retaliatory forces survived such an attack). As our model demonstrates, this leaves the Russian arsenal very vulnerable.

The Problem of Imperfect Intelligence

Li suggests that our analysis of U.S. nuclear primacy fails to acknowledge the problems of imperfect intelligence. Li asks: How do we know if the United States has really identified the entirety of the Chinese long-range nuclear arsenal? He acknowledges that the United States could destroy all of the Chinese missiles it has located, but emphasizes that military planners and political leaders can never be certain that they have accounted for every weapon. Thus, our conclusion that the United States can destroy the Russian or Chinese arsenal in a first strike is unwarranted, and responsible leaders would shrink back from issuing nuclear threats or launching attacks because they would recognize the speculative nature of their target intelligence.

The problem of fallible intelligence does not negate either the fact or the significance of U.S. nuclear primacy for at least four reasons. First, U.S. leaders have historically been willing to initiate nuclear war against a nuclear-armed adversary with a vulnerable arsenal, even though U.S. leaders understood that their intelligence was not perfect. For example, during the previous period of U.S. nuclear primacy (in the 1950s), U.S. strategy called for initiating nuclear war against the entire "Sino-Soviet Pact" if the Soviets invaded Western Europe – even though there was no guarantee that U.S. intelligence had located every Soviet nuclear weapon, or that the attack would destroy them all.³⁵ In short, U.S. leaders believed that the United States could probably destroy the entire Soviet long-range nuclear force with a first strike, and that was good enough for the U.S. government. The United States kept this strategy right until the Soviets developed a survivable arsenal, which ended the first period of U.S. nuclear primacy.

Second, military planners employ a standard targeting strategy for dealing with intelligence uncertainty: when in doubt, assume that possible targets are real targets. For example, rather than risk leaving a real Chinese DF-5A missile untargeted, U.S. warplans likely target every identified DF-5A silo plus many possible silos – some of which may be decoys and some of which may simply be suspicious topographical features. This sort of "overkill" targeting is a luxury available to a country with a huge numerical advantage in nuclear forces, and the United States has such an advantage against China.

Third, in the midst of a high-stakes military confrontation – for example, if China began alerting its nuclear forces during a conventional war with the United States – the United States might strike first even if leaders in Washington doubted they could destroy every single long-range Chinese weapon. In the immediate aftermath of a limited U.S. counterforce attack – one that targeted only China's DF-5A silos, but avoided direct attacks on Chinese leadership and population targets – U.S. leaders would likely hasten to explain that any Chinese nuclear retaliation against U.S. forces, American allies, or the U.S. homeland would trigger a second and far more extensive American strike.

Finally, even if U.S. awareness of fallible intelligence reduces the likelihood of a U.S. preemptive strike during a crisis or war, Chinese leaders do not know the state of U.S. intelligence about their weapons, or the level of U.S. confidence in that intelligence. Regardless of America's actual willingness to conduct a preemptive attack on an alerting Chinese missile force, current U.S. counterforce capabilities create strong incentives for Chinese leaders to reduce the vulnerability of the Chinese arsenal.

Identifying the Onset of Nuclear Primacy

Blair and Chen argue that if nuclear primacy triggers the consequences we describe, it would have already done so. They claim that "the tectonic moment actually occurred 15 years ago when the Soviet Union collapsed and sapped its nuclear strength in the process." They highlight 1991 as the key date because "that is when Russia drastically curtailed submarine and mobile land missile patrols, and when Russian missile silos became acutely vulnerable to a first strike by U.S. Peacekeeper (MX) missiles and soon after by Trident D-5 submarine missiles armed with W-88 warheads." They note that the past 15 years have not witnessed Russian and Chinese efforts to reduce their vulnerability, the rise of crisis instability, or the exercise of U.S. nuclear coercion so, they conclude, our "theory is not valid."³⁶

The claim that U.S. nuclear primacy had emerged by 1991 is simply wrong. The profound shift in the strategic nuclear balance occurred in the decade and a half since the end of the Cold War due to the combined effects of U.S. nuclear modernization and the deterioration of the Russian arsenal.

First, America's efforts to expand its nuclear counterforce capabilities were only beginning to bear fruit in 1991. The most lethal first strike weapons in the U.S. nuclear arsenal are the Trident II D-5 missile, the W88 warhead, the B-2 bomber, and the stealthy AGM-129 cruise missile. These weapons are critical for a U.S. first strike because they possess an unprecedented combination of minimal warning, high accuracy, and large warhead yield. For example, the AGM-129 has a relatively small yield (up to 150 kilotons) but pinpoint accuracy, and its stealthy characteristics would provide virtually no warning of attack. The B-2 bomber can deliver very high yield weapons (up to 1.2 megatons) with no warning, albeit at lower accuracy. The Trident II D-5 is fast-arriving (especially if it slips through the Russian radar hole) and highly accurate. If it is armed with the high-yield W88 warhead, it may be the most lethal weapon of the group. These four weapons systems are the foundation of America's current nuclear first strike capability.

The critical point is that of these four weapons, only the cruise missiles were well integrated into the U.S. nuclear arsenal by 1991. The first B-2 bomber became available for nuclear missions in late 1993, but it took the rest of the decade for the rest of the force to be deployed. The twenty-first (and last) B-2 did not become operational until 2000.³⁷ Similarly, although the entire arsenal of W88 warheads had been manufactured by 1989, the missiles

that would carry them (the Trident II) were deployed gradually throughout the 1990s. The first submarine began to carry Trident II missiles in 1990, but it took eight years to get 10 Trident II subs into the force. Throughout the 1990s the majority of U.S. SSBNs carried the far less accurate Trident I missile and the

Countries violate taboos and many of their most deeply held values when confronting dire threats.

far less lethal W76 warhead. In fact, America's nuclear first strike force is still emerging: the last two submarines are currently being converted to Trident II missiles; when they return to service in 2008, the whole process of equipping U.S. submarines with Trident II D-5s will have taken nearly 20 years.³⁸ Nuclear primacy did not emerge overnight; it continues to be a gradual process.³⁹

Second, Blair and Chen fail to acknowledge the extent to which the Russian deterrent arsenal has deteriorated – in both quantity and quality – since 1991.⁴⁰ For example, they contend that 1991 was the year when Russia "drastically curtailed" its strategic submarine deterrent patrols and the early 1990s was a period when it was "struggling to keep a single submarine on patrol at any given time."⁴¹ In fact, the Russian navy continued to generate enough SSBN

deterrent patrols in the early 1990s to significantly complicate U.S. nuclear attack plans. In 1991, for example, Russian submarines conducted more than 30 deterrent patrols, more than enough to keep several subs at sea at all times and render a successful U.S. first strike improbable. Three years later this number had dropped to approximately 20 patrols, and it then dropped again to about 10 patrols per year by 1998. The point is that the collapse of the Russian submarine-based deterrent was a gradual process. In fact, the force could not be considered totally ineffective as a deterrent until about 2001, when Russian subs only sortied twice. (Russia conducted no SSBN patrols in 2002.)⁴² Additionally, aside from the sheer numbers, the quality of Russia's nuclear deterrent force has also deteriorated significantly from 1991 to the present. To give but one example, the longer Russian crews go without significant patrol experience, the more they are losing the skills needed to evade U.S. efforts to track them.

Finally, Blair and Chen's criticism about the timing of the emergence of U.S. nuclear primacy misses a broader point. The significance of nuclear primacy depends on the nature of the strategic relationship between two countries at any given time. The United States did not have hostile relations with Russia or China in the 1990s, and still does not today. But trouble may be brewing for U.S.-Sino relations as Chinese power grows. The real test for our concerns about nuclear primacy will occur in the next 15 years. We believe that as U.S. counterforce capabilities continue to grow, and especially if Sino-American relations sour, nuclear primacy will loom larger.

The Nuclear Taboo

A final flaw in our model, as alleged by our critics, is that the nuclear taboo renders the entire scenario of a nuclear first strike attack implausible and irrelevant. Nuclear weapons have become so abhorrent that their use by U.S. leaders is unthinkable. As Li writes, nuclear weapons are merely "a paper tiger," and U.S. counterforce improvements are "just a whitening of the paper tiger's teeth."⁴³ According to Blair and Chen, Chinese leaders completely discount the utility of nuclear force and believe that the United States shares its view in spite of the lip service American leaders pay to the importance of nuclear weapons.⁴⁴ All of this merely reinforces the point that China has no reason to build up its nuclear arsenal in response to U.S. nuclear primacy.

There are several reasons to doubt that leaders in Beijing will entrust their national security to the restraining power of the nuclear taboo. First, it is hard

to believe that Chinese leaders base their defense plans on the assumption that the United States is too moral to be ruthless in war. The paramount goal of national survival greatly overshadows leaders' confidence in the normative prohibitions constraining their adversaries. Second, the seminal studies of the nuclear taboo merely claim to establish that the nuclear taboo exists and has constrained state behavior, but do not attempt to measure the power of that constraint.⁴⁵ Does the taboo reduce the probability of U.S. nuclear use relative to what it would be without the taboo by 20 percent? Or by 80 percent (or more)? Absent that critical data, there is no rational justification for leaders in Beijing or elsewhere to base their countries' security on the nuclear taboo.

Third, taboos can change or disappear. One scholar recently listed a set of trends that "could unravel" the nuclear taboo.⁴⁶ What is striking is that every one of these trends is either happening or being considered today.⁴⁷ There is no guarantee that the nuclear taboo will disappear, but why would Chinese leaders stake their national security on a malleable norm of unknown power and longevity?

Fourth, countries (and individuals) violate taboos and many of their most deeply held values when confronting dire threats. For example, in 1937 and 1938 the United States led the world in condemning Japan's campaign of indiscriminate bombing raids on Chinese cities. The U.S. Department of State used the strongest possible language in railing against Japan's "slaughter of civilian populations" in China, calling Tokyo's tactics "barbarous," "inhuman," "contrary to the principles of law and humanity," and "crimes against humanity."48 Of course, American leaders felt quite differently about the ethics of counter-civilian bombing after the United States had entered the war. The United States conducted indiscriminate terror bombing raids against Germany, and later adopted a strategy meant to inflict maximum pain on the Japanese people: it firebombed Tokyo (killing about 100,000 civilians in a single night) and over 60 other Japanese cities, and then dropped atomic bombs on Hiroshima and Nagasaki. All told, the incendiary and nuclear bombing campaign against Japan killed several hundred thousand Japanese civilians.

Our point is that the history of war is replete with episodes of countries doing things to their enemy during wartime that they would have found absolutely abhorrent before the conflict. Even in the 21st century this dynamic is still evident. Americans are not as worried about al-Qaida today as they were afraid of Germany and Japan in the 1940s, but a muted version of the same dynamic – the willingness to violate taboos when scared – can be seen in the U.S. response to the September 11 terrorist attacks. For several years after the attack, the United States violated existing taboos against torture, kidnapping, and operating extra-judicial secret prisons. Only now are these practices being reined in. If the United States will violate taboos when Americans feel angry and scared, why would Chinese leaders assume that the nuclear taboo will protect their country during a serious military crisis?

The history of the nuclear age supports our position. The nuclear taboo did not allow the superpowers to stop worrying about a nuclear attack during the Cold War. Scholars claim that the taboo became institutionalized within the U.S. government from the 1960s to the 1980s. But this period directly coincides with a major nuclear arms race, one in which both the United States and the Soviet Union deployed enormous nuclear arsenals and paid great attention to their survivability. There is no evidence that either superpower was willing to forgo building survivable deterrent forces and rely on the nuclear taboo instead. We see no reason to expect China to behave differently today.

Conclusion

We hoped that our work on U.S. nuclear primacy would trigger a muchneeded debate among scholars, analysts, and policymakers about the implications of America's emerging nuclear primacy and the wisdom of current U.S. policies designed to achieve such primacy. Thus, we welcome the critical articles recently published in this journal and are grateful for the opportunity to rebut those criticisms. The results of an extended debate on U.S. nuclear primacy will reveal a great deal about the nature of great power relations in the 21st century: most importantly, about the intensity of great power rivalries among nuclear-armed states, especially the United States and China, and the likely role of nuclear weapons in future crises and war.

<u>Notes</u>

¹ We date the onset of nuclear stalemate to the early 1960s. Since that time, shifts in the nuclear balance have been minor because neither nuclear-armed superpower had a reasonable chance of destroying its adversary's retaliatory capability.

² Keir A. Lieber and Daryl G. Press, "The End of MAD? The Nuclear Dimension of U.S. Primacy," *International Security*, Vol. 30, No. 4 (Spring 2006), pp. 7-44; Keir A. Lieber and Daryl G. Press, "The Rise of American Nuclear Primacy," *Foreign Affairs*, Vol. 85, No. 2 (March/April 2006), pp. 42-54. For previous debates about our analysis see also Jeffrey S. Lantis, Tom Sauer, James J. Wirtz, Keir A. Lieber, and Daryl G. Press, "The Short Shadow of U.S. Nuclear Primacy?" *International Security*, Vol. 31, No. 3 (Winter 2006/07), pp. 174-93; Peter C. Flory, Keith Payne, Pavel Podvig, Alexei Arbatov, Keir A. Lieber, and Daryl G. Press, "Nuclear Exchange: Does Washington Really Have (or Want) Nuclear Primacy?" *Foreign Affairs*, Vol. 85, No. 5 (September/ October 2006), pp. 149-157.

³ We believe that China will feel greater pressure than Russia because as China's power grows, the likelihood of serious Sino-American conflict seems greater than Russo-American conflict. Additionally, the Chinese nuclear force is so much more vulnerable even than Russia's that they will face great pressure to establish at least a minimal level of force survivability.

⁴ We focus here principally on the critiques raised in Bruce G. Blair and Chen Yali, "The Fallacy of Nuclear Primacy," *China Security (Autumn 2006)*, pp. 51-77; and Li Bin, "Paper Tiger with Whitened Teeth," *China Security (Autumn 2006)*, pp. 78-89. Also see Ivan Safranchuk, "Beyond MAD," *China Security (Autumn 2006)*, pp. 90-98.

⁵ Blair and Chen, "The Fallacy of Nuclear Primacy," p. 74; Bin, "Paper Tiger with Whitened Teeth," p. 88.

⁶ Other observers have noted that U.S. conventional force modernization programs appear driven by a potential rivalry with China. U.S. strategic nuclear modernization programs should be seen as part of the same long-range planning effort to deal with the uncertainties of Sino-American relations in coming decades. For example, as part of these efforts, in the 1990s the United States added China back into U.S. nuclear war plans (it had been removed from the U.S. SIOP in 1982). And over the past decade the United States has shifted the weight of its ballistic missile submarine force – the most lethal first strike weapon in the U.S. arsenal – from the Atlantic Ocean to the Pacific Ocean. Nine of 14 U.S. ballistic missile submarines are now slated for operations in the Pacific. See Hans M. Kristensen, Robert S. Norris, and Matthew G. McKinzie, *Chinese Nuclear Forces and U.S. Nuclear War Planning*, Washington, D.C.: Federation of American Scientists/Natural Resources Defense Council, November 2006, pp. 160-69.

⁷ If attacks on Russian command and control facilities delayed the launch of surviving Russia weapons by even an hour or two, a U.S. follow-on attack could be launched against those targets which might have survived the initial nuclear onslaught.

⁸ For example, we exclude the coming leap in lethality for the U.S. submarines as the first upgraded W76 warheads (W76-1) are deployed in the coming months. Nor do we incorporate the ongoing upgrades to the U.S. ICBM force, notably the deployment of Mk-21 reentry vehicles and W87 warheads (from retired Peacekeeper missiles) onto the Minuteman III force.

⁹ Blair and Chen, "The Fallacy of Nuclear Primacy," pp. 52, 56.

¹⁰ Ibid., pp. 68, 73.

¹¹ To be clear, nuclear deterrence theories differ from each other on two critical dimensions: the

magnitude of retaliation that must be threatened to deter attack (e.g., 100 retaliatory warheads, or just one), and the probability that such retaliation will occur (e.g., assured retaliation, likely retaliation, or just possible retaliation).

¹² Shen Dingli, "Nuclear Deterrence in the 21st Century," China Security (Autumn 2005), p. 12.

- ¹³ Sun Xiangli, "Analysis of China's Nuclear Strategy," China Security, (Autumn 2005), p. 24.
- ¹⁴ Sun Xiangli, "Analysis of China's Nuclear Strategy," p. 24.
- ¹⁵ Ibid.
- ¹⁶ This quote, from China's official NFU declaration, appears in Shen Dingli, "Nuclear Deterrence in the 21st Century," p. 10.
- ¹⁷ Blair and Chen, "The Fallacy of Nuclear Primacy," pp. 68, 72.
- ¹⁸ Bruce G. Blair, "General Zhu and Chinese Nuclear Preemption," *China Security (Autumn 2005)*, p. 19.

¹⁹ Shen Dingli, "Nuclear Deterrence in the 21st Century," *China Security, (Autumn 2005)*, pp. 10, 13.

²⁰ Blair and Chen, "The Fallacy of Nuclear Primacy," pp. 71-72.

²¹ Li Bin, "Paper Tiger with Whitened Teeth," pp. 83-85.

²² Robert S. Norris and Hans M. Kristensen, "Chinese Nuclear Forces, 2006," *Bulletin of the Atomic Scientists*, Vol. 62, No. 3 (May/June 2006), pp. 60-63.

²³ Blair and Chen, "The Fallacy of Nuclear Primacy," p. 53.

²⁴ Blair, "General Zhu," p. 19.

²⁵ Details about the modeling can be found in Lieber and Press, "The End of MAD?" pp. 14-26 and 41-43.

²⁶ Blair and Chen, "Fallacy of Nuclear Primacy," p. 62.

²⁷ See Lieber and Press, "End of MAD?" p. 22-26, and especially Figures 1-3.

²⁸ Robert S. Norris and Hans M. Kristensen, "U.S. Nuclear Forces, 2007," *Bulletin of the Atomic Scientists*, Vol. 63, No. 1 (January/February 2007), pp. 79-82.

²⁹ Kristensen, Norris, and McKinzie, Chinese Nuclear Forces and U.S. Nuclear War Planning, pp. 167-168.

³⁰ To support their claim about the lengthy time required to prepare U.S. bombers for nuclear missions, Blair and Chen cite Bruce G. Blair, "De-alerting Strategic Nuclear Forces," in Harold A. Feiveson, ed., *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons*, Brookings, 1999, pp. 117-18. However, those pages merely assert the same claim about the delay in alerting U.S. bombers without providing supporting evidence.

³¹ A single B-2 can carry 16 variable-yield nuclear gravity bombs. Set to their high-yield setting (greater than a megaton), these bombs would be highly lethal against China's ICBM force – consisting entirely of 20 silo-based DF-5 missiles.

³² Blair and Chen, "The Fallacy of Nuclear Primacy," pp. 58-59.

³³ Ibid., p. 59.

³⁴ William Burr, "First Strike Options and the Berlin Crisis, September 1961: New Documents from the Kennedy Administration," *National Security Archive Electronic Briefing Book*, No. 56 (Washington, D.C.: National Security Archive, 2001).

³⁵ An excellent description of U.S. warplans in the 1950s and 1960s is in Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* Princeton, NJ: Princeton University, 1990, chap. 1. There was no element of bluffing in these plans; they were approved at the highest level of the U.S. government, and the president himself repeatedly declined to develop alternative approaches (i.e., he declined to consider non-nuclear approaches) for defending Western Europe. The only

plan on the shelf in the 1950s was to defend Western Europe by launching a massive nuclear strike against targets throughout the "Sino-Soviet Pact."

³⁶ Blair and Chen, "The Fallacy of Nuclear Primacy," pp. 66, 72-73.

³⁷ "B-2 Production," see: http://www.globalsecurity.org/wmd/systems/b-2-production.htm.

³⁸ "Trident II D-5," see: http://www.globalsecurity.org/wmd/systems/d-5.htm; "SSBN-726 Ohio-Class FBM Submarines," see: http://www.globalsecurity.org/wmd/systems/ssbn-726-unit.htm; and Norris and Kristensen, "U.S. Nuclear Forces, 2007."

³⁹ Blair and Chen are correct to point out that by 1991 the United States already possessed a potent first strike weapon: the highly accurate Peacekeeper missile. Furthermore, because of major problems with the Russian early-warning satellite network (distinct from the problems with their radar network), these Peacekeeper missiles could have struck with little warning and thus contributed significantly to a U.S. disarming attack. Nevertheless, a U.S. first strike could not succeed prior to the major changes that occurred in U.S. and Russian forces throughout the next fifteen years, such as (1) the deployment of the Trident II missiles throughout the U.S. submarine force, (2) the deployment of a substantial B-2 bomber force, and (3) the deterioration of the Russian submarine force (described below).

⁴⁰ See Lieber and Press, "The End of MAD?" pp. 12, 26-27.

⁴¹ Blair and Chen, "The Fallacy of Nuclear Primacy," p. 66.

⁴² Hans M. Kristensen, "Russian Nuclear Submarine Patrols," *Nuclear Information Project Nuclear Brief*, August 3, 2005, see: http://www.nukestrat.com/russia/subpatrols.htm.

⁴³ Li Bin, "Paper Tiger with Whitened Teeth," p. 88.

⁴⁴ Blair and Chen, "The Fallacy of Nuclear Primacy," p. 69.

⁴⁵ Nina Tannenwald, "The Nuclear Taboo: The United States and the Normative Basis of Nuclear Nonuse," *International Organization*, Vol. 53, No. 3 (Summer 1999) pp. 433-468; Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo," *International Security*, Vol. 29, No. 4 (Spring 2005), pp. 5-49.

⁴⁶ Tannenwald, "Stigmatizing the Bomb," pp. 43-45.

⁴⁷ For a list of the conditions and a discussion of this point, see Lieber and Press, "*The Short Shadow of U.S. Nuclear Primacy*," pp. 174-193.

⁴⁸ John W. Dower, *War Without Mercy: Race and Power in the Pacific War* (New York: Pantheon, 1987), pp. 38-41.

Crisis Management in China*

Zhong Kaibin

Shifting Threats

There has been a significant shift in the nature and intensity of threats to China. Many international relations scholars have noted that especially since the end of the Cold War, while the risk of military attack by other countries has seriously diminished for China, domestic threats and challenges to the "individual" have risen precipitously. Perceptions of a conventional threat have given way to a more diverse range of contingencies including natural disasters, industrial incidents, social unrest, and economic crises.¹ Three decades of economic growth have considerably improved the quality of life for Chinese citizens. Yet such economic growth has also created risks to human security. China's primary security risk is now the individual, not the state. As the Severe Acute Respiratory Syndrome (SARS) crisis demonstrated, globalization, modern medical practices, urbanization, climatic change, changing social and behavioral patterns and the chance that individuals will be confronted by life-threatening contingencies pose the greatest challenge to the government.²

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China Security, Winter 2007, pp. 90 - 109 ©2007 World Security Institute As opposed to traditional military defense of the state, such crises and their management constitute a "gray area" that will be a profound test not only to China's highest leadership but also to the global community. These emerging non-traditional security threats differ significantly from traditional state-centric paradigms both in their causes and the policies designed to ameliorate them.³

Natural and anthropological crises have been a reality in China for centuries. However, the frequency and occurrence of major crises have dramatically risen in the wake of the economic, social and environmental transformations

of the past three decades. As China shifted from a revolutionary era under Mao Zedong to Deng Xiaoping's reforming age, major socio-economic changes have magnified tensions between humans and nature creating a variety of new risks and

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challenges. A look at the largest and most politicized crises such as SARS, avian flu, the Songhua River benzene spill and the exceptionally high number of accidents and fatalities in China's coal mining industry support this trend. Environmental, social and health incidents have all increased and pose greater challenges than they have in the past. Experts estimate that about 200,000 people die each year due to public incidents, with a six percent annual loss of China's GDP (up to \$80 billion USD).⁴ As such, many crisis management experts say that China is presently near the 'bottom of the curve' and that the frequency and vulnerability of the nation to crises will get worse before it gets better.

Along with changes in the threats to Chinese society, the approaches to addressing these challenges have also shifted. An increased reality of crisis is complicated further by poor government crisis management. States in transition often suffer from inadequately robust crisis management regimes, as their political and social structures are in flux with frequent and wide-ranging changes in the socio-economic order.⁵ Institutional weakness hampers China's ability to sufficiently cope with crises of varying scales and complexities. The high number of fatalities from many sources of crisis is inconsistent with China's economic boom. While 28 years of rapid economic development have hugely boosted China's private sector, the capacity of government has lagged behind. The social cohesive power of former institutional norms, rules,

organizations and routines has greatly diminished while no new alternative institutional structures capable of managing and making sense of crises have been created. The ineffective system and political sensitivity of crisis management means that China is likely to become more vulnerable to disasters, disturbances, and other critical contingencies. One of the key tasks for the Chinese government and Chinese society in the years ahead will be to address both *why* existing institutions do not have the robust ability to combat crises and *what* the potential solutions are to appropriately address future crises.

Institutional Barriers

Many aspects of the structural and organizational environment of the Chinese government and its agencies limit the ability to develop and implement a sound crisis management system. An outline of such constraints provides an important framework to understand its approach and actions to date. A combination of a lack of clarity about the roles that different levels and different functional sectors of the government should play and the persistence of self-interested action among government players pose serious limitations to appropriate state action in situations of crisis.⁶ Recent major health crises in China have brought to light these institutional barriers, which are an important first step to making effective change.

There exist many incoherencies and inconsistencies both between different levels of government and with government bureaucratic agencies. China's government is organized in a largely vertical system, with five levels of government: central, provincial, prefecture, county, and township.⁷ The roles and responsibilities of government are ambiguous, with many jurisdictional gaps and contradictions. Structural inefficiency, paired with often poor communication both vertically between different government levels and horizontally between different bureaucratic agencies, results in an inability to create a clear crisis management system. Government and agency action under such a system is often fragmented and ineffective.

The avian bird flu crisis exposed the lack of coherency between Chinese government agencies, as it seriously impeded effective action in a situation of emergency. The Ministry of Health (MOH) and the Ministry of Agriculture (MOA) shirked responsibility for the bird flu crisis at its outset (though they later fought over it when funding was increased). The defined role of the MOA is to prevent the emergence and spread of epidemics within livestock and bird populations while the jurisdiction of the MOH is to handle epidemics for human populations. Unfortunately, neither department considers itself responsible for covering avian to human viral transmission. It was not until 2005, when more cases were confirmed, that the two ministries established a cooperative mechanism that involved the development of an inter-agency team that now holds regular meetings and has launched a pandemic reporting system and joint inspection system.⁸

Similar jurisdictional gaps and contradictions in government department roles and responsibilities (that affect how crises are handled) exist between departments of public health, transportation, rail, civil aviation and quarantine, as well as between departments in different regions. Although many of these became manifest during the SARS epidemic and avian flu incidents, the central and local governments have not yet succeeded in their resolution. Safety experts have stressed that China's emergency response systems fall under 17 different departments, each independent, but whose responsibilities often overlap, leading to a waste of resources.⁹ The "stove-pipe" nature of China's bureaucratic organizations continues to hamper effective action.

Further, there is a lack of clarity in the reporting process of potential emergency situations between government agencies in the Chinese system.

At best this state of affairs discourages timely and accurate reporting and at worst distorts the reality of circumstances by embellishing optimistic information and suppressing bad news. The result is often government inaction and the magnification of a crisis. The recent case of the Songhua River incident illustrates the interplay of these factors that lead to breakdowns in

Institutional weakness hampers China's ability to sufficiently cope with crises of varying scales and complexities.

communication and a delay in reporting. What should have been a small and relatively localized incident became a major emergency. The state-run China Daily reported that while Harbin officials learned of the slick on Nov. 18, 2005, they did not turn off the city water (which became contaminated with the chemical) until the evening of Nov. 22, a full nine days after the explosion on Nov. 13.¹⁰

Legislative measures also operate to inhibit effective communication both between government entities and with Chinese citizens. Under Chinese law, certain crises are classified as "state secrets."¹¹ For example, in accordance with

China's classification and policy treatment of infectious diseases, epidemics are classified as "state secrets" whereby national level authorities have control over all public announcements about disease outbreaks while provincial and local officials have no power to comment publicly.¹²

The structure and organization of China's government fail to institute an atmosphere that promotes accountability and transparency. This reality limits the government's ability to act efficiently in situations of crisis and conflict. Furthermore, the existence of complex loyalties, diverse interests and structural rigidity paired with a lack of cooperation between different levels of government and government agencies limits transparent action.

Under the current vertically oriented political system, local government officials, who are appointed from above and lack accountability to local people,

The roles and responsibilities of government are ambiguous, with many jurisdictional gaps and contradictions. have a tendency to stray from good governance practices. At present, the majority of Chinese officials are not subject to elections.¹³ Officials report to their superiors rather than to the people they ostensibly govern, creating an environment that promotes their self-interested action. The central government is often stymied by its inability to assert power; central policies are largely not welcomed by local officials. Such power struggles became evident in early 2005

when orders from China's State Environmental Protection Administration (SEPA) to shut down 30 local hydroelectric projects for not carrying out required provincial environmental impact assessments were largely ignored at the local level.¹⁴ Local officials' selective policy implementation weakens central government authority and can lead to policy fiasco.

Local officials have deep interests in the success of their own administrative jurisdiction due to the often symbiotic relationship between local government and enterprise. Obsessed with social stability and economic development, they have little incentive to report negative data unless they are sure that it will not cause panic or slow down economic growth through reduced consumption or investor flight. The utilization of "performance contracts" at the local level further encourages the self-interested behavior of officials. Performance contracts make it clear that a key responsibility for local officials is the implementation of policies to expand economic development. Consequently, social development is neglected, and a capacity for more comprehensive development is weakened, which increases the likelihood of crises and weakens government capacity in dealing with them when they occur.¹⁵ Since the reappointment of local officials largely depends on the productivity of such performance contracts, local bureaucrats often make decisions to increase their chances of survival in the system and maximize their private interests and agendas.¹⁶ As economic reforms have become a focal point of government attention in the last three decades, not enough emphasis has been placed on dealing with the non-economic aspects of reform, including education, public health, poverty alleviation and other basic social services, all of which play a vital role in building robust response mechanisms to crises of all kinds.

The structure and organization of the government also encourages power disparities and conflicts of interest to emerge horizontally between government and different bureaucratic agencies. For example, a reality for the MOH is its weak institutional position. The MOH does not have the power to keep health care at the top of the political agenda. At the local level, the MOH is subordinate to party authority. Thus, when local party leaders transmit messages to, for example, downplay a disease, there is little health officials can do. The full impact of the economic cost of a pandemic may be the best antidote to bring the leadership to act decisively.¹⁷

The early stages of the SARS outbreak were significantly affected by interagency and interregional conflict.¹⁸ Information about the virus and subsequent fatalities were delayed by bureaucratic infighting and protection-

ism, which also precluded the coordination between regional government and citizens. During the early stage of the SARS epidemic, a clash of interests existed within the Guangdong government. On the one hand there was a serious need to implement effective SARS prevention and treatment, yet it was also deemed important to limit damage to economic growth. In a battle over interests,

The "stove-pipe" nature of China's bureaucratic organizations continues to hamper effective action.

business "won out" over health to the detriment of many SARS victims. The Guangdong provincial government did not share information with Beijing and other affected areas. Consequently, although the first cases of SARS appeared locally in the province as early as November 2002, no government

action took place until February 2003.19

Finally, a critical lack of adaptability resulting from a dependence on an outdated national defense mobilization system cripples government and state agencies ability to efficiently respond to national crises. With institutional and organizational environments that lag behind the current social, economic, and political order in China, the government agencies and authorities responsible in situations of crisis are not able to effectively respond to domestic or foreign pressures.²⁰ The mobilization system of national defense evolved out of a need for domestic defense during the early decades of the People's Republic of China (PRC), and was to be used in times of war or severe natural disasters.²¹ It was geared to mobilizing people's support for responding to crises but it was a closed system with the government as the sole actor, limiting information collection and exchange. With China's social and economic

The central government is often stymied by its inability to assert power. conditions undergoing rapid transformation, a heavy reliance on the traditional national mobilization system is paired with a failure to utilize informal institutions such as nongovernmental organizations (NGOs) that are necessary in times of emergency. There is a fundamental tension between a system

structured to control and manage information flows, and a society that is information savvy and "wired." A resultant lack of adequate information limits the ability for government to make educated decisions, but rather promotes an ad-hoc and improvised approach to crisis management.²² This approach often leads policy-makers to underestimate crisis situations and reinforces a sense of fatalism about the expected outcome.

While certain policy and legislative foundations have been initiated, the predominant problem of China's traditional crisis management approach lies in the absence of an integrated command and control system. China's system remains burdened by top-down decision-making and social management relies heavily on a traditional unit system.²³ The recent salvo of crises in China has exposed unprecedented discord between various bureaucracies and governments and their coordination to combat these contingencies has suffered significantly as a result.

Resultant Strategy

Major recent crises have brought to light the institutional and structural limitations to the development of an effective crisis management system. The context that governs planning, action, cooperation and communication largely explains the Chinese government's approach in situations of crisis. The modus operandi of responding to crisis has been to deny or conceal its existence, and utilize a reactive approach.

The first response of high-level officials to an emerging crisis has often

been its outright denial. The disincentive of local officials to report a crisis to high-level decision-makers is often a fundamental missing link in the chain of appropriate action. There is simply no incentive for local officials to report bad news.²⁴ Consequently, it has only been after the discovery or leakage of contradictory information that any measures to take control of a crisis have occurred.

The early stages of the SARS outbreak were significantly affected by interagency and interregional conflict.

This phenomenon took on particular poignancy during the SARS incident, when the brave actions of an incensed military doctor who, disillusioned by the actions of public health officials and state media, turned to the international press to put pressure on China's leaders to act.²⁵ Realities of secrecy, censorship and manipulation have encouraged the Chinese leadership to be predominantly reactionary in its approach.

The constraints that limit China's ability to develop an adequate crisis management system often result in the utilization of situations of crisis as state propaganda opportunities. By defining the parameters of a crisis on favorable terms the government maximizes benefits and minimizes the negative impact in terms of publicity.²⁶ In the SARS crisis the use of propaganda mechanisms were used to portray the incident as a patriotic struggle. Songs of homage presented nurses and doctors as the "angels in white coats," so moved by their love of the party and concern for people that they worked tirelessly to conquer the disease.²⁷ During the incidents of bird flu in 2005, the Chinese state media placed disproportionate emphasis on international media coverage in an attempt to render China the victim. Following the Songhua River accident, China's official media was dominated by images of leaders' sending convoys of water trucks decorated with red banners ("Love the people—deliver water") and ordering soldiers to drill new wells.²⁸ Such approaches amount to a traditional propaganda policy of the maintenance of "internal vigilance and outward calm."29

Government Action

Following the array of recent crises in China, leaders have realized the critical need to enhance the capacity of contingency planning and emergency management, particularly at the local level. Officials have begun to link the development and maintenance of a sound emergency response system to a "harmonious society."³⁰ Consequently, over the past three years since the SARS crisis, many steps toward the development and implementation of crisis management mechanisms have been put into action. Such initiatives illustrate an acknowledgement and identification of the necessity for an operational mechanism, particularly with regard to increasing local accountability, public awareness, improving communication and strengthening scientific research and education.³¹

One major initiative to create a sound crisis management system in China has been the development of an emergency contingency plan. Beginning in 2004 and released in 2005, the State Council, China's Cabinet, created a national plan for emergency responses which became a guide for the prevention and treatment of various incidents. This new general contingency plan formulates an emergency forecast and response mechanism with unified command mandates for rapid reaction and high efficiency.³² The plan grades emergencies into four levels based on their "severity" and "emergency," represented by the colors blue, yellow, orange and red (threat level ranging from the least to the most severe). Emergencies are also categorized into natural disasters, anthropological accidents, public health incidents and social security crises.³³

This initiative serves as an overarching guide for a country-wide emergency response system. It requires that the State Council institute 25 sub-plans for specific emergencies and relevant government industries develop 80 sector-specific plans. Such initiatives prescribe action plans at the local level for municipal government or any enterprise schemes that involve large events.³⁴ The plan increases both the capacity of and coordination among the hierarchy of first-responders. According to the Ministry of Civil Affairs (MOCA), in 2005 the natural disaster reaction systems were activated 30 times, running a total of over 100 days and involving the evacuation of over 16 million victims.³⁵

In addition to the efforts to create an emergency response plan, the Chinese Government has prioritized the development of a permanent emergency management bureau. In December 2005, a national level Emergency Management Office (EMO) was officially established. This office provides a framework for a comprehensive emergency management program that directs planning, preparation, response and recovery.³⁶ The EMO serves as an inter-agency liaison for all emergency management and national security program activities through the State Council, ensuring integrity through the integration of all programs, systems, assets, capabilities, training, and response mechanisms. Permanent emergency management organizations have also been established in place of temporary organizations to coordinate departments at the provincial and ministerial levels. By the end of 2005, emergency response offices had been set up by health departments in 27 provinces, autonomous regions and municipalities across China.³⁷ A number of cities, including Shanghai, Nanning and Shenzhen have also begun operating emergency response centers.

Another initiative of the Chinese government has involved a number of improvements to the legal framework. First, an amendment to China's constitution, replacing the term "martial law" with "states of emergency," allows for a more inclusive legislative context that ensures action for a wider variety of emergency situations including natural, public health and economic crises.³⁸ Under this amendment, the president of the PRC is entitled to declare a state of emergency, increasing opportunities for the allocation of state funding.³⁹ Second, the development of new Chinese legislation has helped to create adequate emergency management system procedures. Both the Temporary Regulations on Dealing with Health Emergencies in 2003, and the Emergency Management Law, scheduled to pass within its current five-year legislative period (2002-2007), are examples of such efforts.⁴⁰

An acknowledgement of the need for an effective communication channel between the government and the public led the government to institute a requirement for all national and provincial departments to establish a "news-briefing spokesperson system." In 2004, up to 70 departments under the State Council and 20 provincial governments had allocated designated spokespeople for press conferences during situations of crisis.⁴¹ Further, as of August 2005, the Chinese government no longer considers natural disaster fatalities to be classified both at the national and provincial levels.⁴² Another important government initiative has been an effort to publicize issues pertinent to emergency management on the government's official website, launched on Jan. 1, 2006.⁴³ Scientific research and technical training programs are also being revamped. First, in 2004, 100 million RMB was allocated to establish a special fund for research projects, including the project "New Infectious Disease Prevention and Control Technology and Its Application."⁴⁴ Second, China's *Eleventh Five-Year Plan* for National Economic and Social Development included the creation of a public safety panel that will work to promote broader public safety education and training initiatives through the media, schools and communi-

Solutions to the many complex problems in this area will require bolder government action then we have seen so far. ties. Such initiatives intend to teach citizens about risk avoidance, disaster prevention and first-aid. A number of programs have been very successful in their development and implementation. Examples include: a program in public primary and middle schools where students are now required to partake in accident prevention drills,⁴⁵ and the educational initiative of the Haidian

Public Safety Museum which is designed to educate citizens about effective crisis response.⁴⁶ Despite such initiatives, more efforts should be put in place to help educate disadvantaged social groups as they are the most vulnerable in society and the most likely to suffer from various unexpected crises.⁴⁷

The Chinese government has taken a more hard-line approach toward the creation of an accountable and transparent government in situations of crisis. In the past three years a number of officials have resigned or been dismissed for their inability to control emergency situations. Most notably, the former Health Minister Zhang Wenkang was fired for covering up the SARS crisis in 2003, and the former Environment Minister Xie Zhenhua resigned in 2005 after the pollution of the Songhua River was realized. While the acknowl-edgement of a lack of accountability is an important first step, the Chinese government needs to develop more initiatives that promote its attainment.

As crises are increasingly expanding beyond national borders, better collaboration with the international community has also been acknowledged as imperative. However, government action has been limited. International health experts have repeatedly complained about China's reluctance to cooperate in the investigation of emerging diseases like the bird flu and SARS, slowing the development of diagnostic tools and vaccines.⁴⁸ Despite this, important steps have been made. First, in January 2005 the Chinese government hosted the China-ASEAN Workshop on Earthquake-Generated Tsunami Warnings.⁴⁹ Then, in 2006, the World Health Organization Collaborating Center on Community Safety Promotion in Shandong Province instituted China's first "international safe community."⁵⁰

Conclusion

While the structural problems remain unsolved, new problems are expected to emerge with reforms and globalization. In the past, when the public channels of information were heavily controlled, the government could ostensibly avert panic in a time of crisis. However, times have changed. There is a fundamental tension growing between a system structured to control and manage the flow of information and a society that is information savvy. Modern technology has revolutionized the free flow of information, making it increasingly difficult for Chinese authorities to manipulate situations of crisis as small events that are fully under control. The Internet is one of the leading juggernauts in transforming the way information is shared in China. Many stories the Chinese government considers sensitive are being reported online. In January 2006, news of the chemical spills in the Yellow River broke out over the Internet with great speed despite government efforts to contain coverage.⁵¹ The government's failure to release information in a transparent and timely manner is not only intensifying the efforts and the impact of nonmainstream media reporting on public events but is making the government more vulnerable to attacks from critics. In order to meet the far more fluid domestic and international political order, reliance on the traditional strategy of "intense inside and relaxed outside" is no longer a panacea, if it ever was. The leadership will have to find new ways to address and deal with various emerging and reemerging crises.

In a rapidly changing society in which concerns about risk, safety and security dominate the public agenda, crisis management constitutes a major challenge in the capacity to govern.⁵² Consequently, it is a profoundly delicate political issue. Compounded by weak institutions, crisis management is vulnerable to disasters, disturbances, and other critical contingencies. China's new leadership seems eager to introduce reforms, and has been exerting its authority to take advantage of crises as a catalyst for change. There are many examples that illustrate the government's determination to tackle the structural inadequacies for dealing with national and local crises. Given its record to date, however, China's efforts to improve its crisis management strategy

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remain inadequate. Solutions to the many complex problems in this area will require bolder government action then we have seen so far.

First, the government needs to shift its approach in crisis management from one of reaction and improvisation toward prevention and the development of a strong structural system. A key to overcoming practices of concealment and denial of crises will be the elimination of both the institutional culture of conformity and the deficiency in responsibility ownership. The Olympics are providing a critical impetus to utilize preparatory and preventative measures as authorities make contingency plans for serious public health incidents during the games.⁵³ The critical elements of a corrective and preventive crisis management system should include thorough risk identification and assessment, risk mitigation and management and open communication on potential risks between the public and decision-makers.⁵⁴ Such a system can only be implemented with robust political support to create an environment whereby all competent authorities, institutions and officials are willing to be accountable for their actions.

Second, China must develop a comprehensive crisis management system that encourages collaboration between multiple levels of government and agencies. The exclusive behavior of many bureaucracies, institutions and government entities makes information gathering and sharing notoriously difficult for governments. A new system of information management ur-

The Olympics are providing a critical impetus to utilize preparatory and preventative measures. gently needs to be created, which will help encourage local governments to be more transparent and accept greater accountability. An increase in the role of a central emergency management agency is necessary, where the leaders of key ministries and commissions are mandated to create emergency plans that

will integrate planning efforts across different government levels and sectors. Bureaucratic reform must go hand in hand with an overall plan. A comprehensive crisis management program will only be as strong as the different links that constitute it: the quality of civil society participation, high political prioritization, effective decision-making and reliable governance. These measures will have to be fortified by legislative and executive reforms, laying out rules and guidelines for crisis prevention, reporting, response and recovery. A third measure toward the promotion of a sound emergency response plan entails building greater social capital. Many of the disasters China is experiencing primarily affect the individual. If citizens are able to participate in crisis management, the net outcome will be a positive "social capital." Through social capital, leaders can mobilize experts and civil society to prevent and respond to crises, where the public will more fully understand the policies and practices that decision-makers have made.⁵⁵

Cultivating an environment that fosters the growth of positive social capital can be done by creating partnerships between social organizations, NGOs, the private sector and government entities and leaders.⁵⁶ Overall institution-

building will rely heavily on the formation of such social and state networks. To date, the potential value of NGOs and other non-official players has largely remained untapped.⁵⁷ Despite the rapid growth of a more robust civil society since the beginning of the reforms in 1978, many

Crises increasingly spill over national borders and affect regional and international actors.

factors, ranging from government policies on NGOs to the characteristics of political participation in China, have prevented NGOs from effectively performing functions that benefit the public.⁵⁸ China needs to utilize such resources to assist in the collection of information at the local level, and to promote communication between the Chinese government and citizens. This will improve the governments' ability to make educated and proactive decisions. Further, such entities can assist in both preventative measures (such as citizen education) and relief measures in emergency crisis situations. The enhanced adaptive capacity of the resulting system will depend on a critical mass of social capital. It will help to create an environment where there is motivation and pressure to design an emergency management system.

Through the development of an international network of contacts, associations and relationships China is becoming part of the global community. As China becomes more involved in regional and international politics and economics, a reality of increased chance for both internal and external crisis emerges. China can learn about emergency management systems from international norms and best practices. As globalization continues to significantly shape domestic governance, China's leadership needs to understand the expectations of the international community and the impacts to domestic governance. The rise of crises means that China's crisis management strategy will be imperative not only now but in the future.

To date, China has made important steps to institute a national crisis management system that integrate social and economic development and encourage local governments to be more transparent and accept greater accountability. The current government actions have been proposed in the context of the ambiguities brought to light in recent situations of crisis. While such steps are integral, it is crucial to go further. Coping with emergencies is a worldwide phenomenon; crises increasingly spill over national borders and affect regional and international actors. China needs to play a more active role in international crisis management, an important part of which will be an understanding of how globalization impacts domestic governance and thus how to best handle emergencies that involve other regions and countries. China needs to rethink its framework for reform both in terms of the domestic and international context, to provide a more robust and more easily adaptable foundation in times of crisis. China's transforming economy, society and environment demands an equally dynamic style of rule to deal with the dramatically shifting issues of risk, safety and security that dominate the public agenda. Current Chinese leaders must work to overcome this significant hurdle in the time ahead. 📾

<u>Notes</u>

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¹ World Economics and Politics organized a conference on "Non-Traditional Security and China" in December 2003, which was the first national academic conference held in China on nontraditional security issues. There were approximately 150 scholars, experts and journalists that participated and nearly 60 papers published at this conference. Some of the papers were published in World Economics and Politics after being modified by authors.

² Jennifer Brower, and Peter Chalk, *The Global Threat of New and Reemerging Infectious Diseases: Reconciling U.S. National Security and Public Health Policy*, Santa Monica, Calif.: Rand Corporation, 2003, pp. 15-30.

³ "A decision-making crisis is a situation, deriving from a change in the external or internal environment of a collectivity, characterized by three necessary and sufficient perceptions on the part of the responsible decision-makers: a threat to basic values, urgency and uncertainty." See, Eric K. Stern, *Crisis Decisionmaking: A Cognitive-Institutional Approach*, Stockholm: Stockholm
University, 1999, p. 8. The challenges of civil crisis management have much in common with those of military crisis management. However, the Chinese government uses the phrase "public emergency management" in the area of civil crises management, and categorizes emergencies into natural disasters, manmade accidents, public health incidents and social security crises. This article focuses mainly on civilian crisis management in China, which also involves civil-military cooperation including NGOs. Civilian crisis management involves government intervention from outside in a humanitarian crisis that threatens or occurs in a state, region or society as a result of a conflict, disaster or environmental catastrophe. It focuses on policing, civil protection, and on strengthening the rule of law as well as civilian administration in situations of crisis. See, "*Civilian Crisis Management*," see: http://www.intermin.fi/siviilikriisinhallinta/pages/indexeng.

⁴ Pu Song, "China: 200,000 People Die Prematurely Each Year Because of the Public Safety Problems," *China News Week*, Feb. 26, 2004.

⁵ See, Aaron Wildavsky, *Searching for Safety*, New Brunswick, N.J.: Transaction Publishers, 1988; Eric K. Stern, Bengt Sundelius, Daniel Nohrstedt, Dan Hansen, Lindy Newlove, and Paul 't Hart, "Crisis Management in Transitional Democracies: The Baltic Experience," *Government and Opposition*, Vol. 37, No. 4, 2002, pp. 524-50.

⁶ Institutional change—major and minor—may necessitate the transfer of power and accountability from one agency to another as well as create a break with prevailing traditions and the habitual local ways of managing societal changes. Despite the highly authoritarian nature of China's political system, most lines of bureaucratic authority are "fragmented" by a complex mix of horizontal and vertical power structures. For a thorough description see, Kenneth G. Lieberthal, and Michael Oksenberg, *Policy Making in China: Loaders, Structures and Processes*, Princeton: Princeton University Press, 1988, pp. 14-23; Kenneth G. Lieberthal, and David M. Lampton, eds., *Bureaucracy, Politics and Decision Making in Post-Mao China*, Berkeley: University of California Press, 1992, p. 8; Kenneth G. Lieberthal, *Governing China: From Revolution Through Reform*, New York: WW Norton & Company, 1995, pp. 157-182.

⁷ Below the central government there are 31 provincial level units (42 million people on average), 331 prefecture level units (3.7 million people on average), 2,109 counties (580,000 people on average), and 44,741 townships (27,000 people on average). Furthermore, there are about 730,000 more or less self-governed villages in rural areas below the township level. See, World Bank, *China National Development and Sub-national Finance: A Review of Provincial Expenditures*, Washington, D.C.: World Bank, 2002.

⁸ "Speech at the International Conference on Avian Influenza," *Xinhua News Agency*, Nov. 7, 2005.

⁹ "Chinese Cities Preparing Emergency Plans," China Daily, March 23, 2004.

¹⁰ "Cover-up Can't Hide Murky Water Truth: Commentary," *China Daily*, Nov. 25, 2005.

¹¹ Li Zhidong, and Tan Wenxiang, eds., *Encyclopedia on the State Secrets Law of the PRC*, Changchun: Jilin People's Publishing House, 1999, pp. 372-74, jointly issued Jan. 23, 1996, by MOH and the State Bureau for the Protection of State Secrets.

¹² The Law on the Prevention and Control of Infectious Diseases, which was enacted by the National People's Congress on Feb. 21, 1989, and effective Sept. 1, 1989, classifies infectious diseases into three types (A, B, C) by severity of epidemic impact; urgency of institutional response; and rigor of government prevention, monitoring, and control measures. Only the State Council is empowered to stipulate and declare what Type A infectious diseases are, while MOH is authorized to stipulate and declare the Type B and Type C infectious diseases. For more details on China's classification and policy treatment of infectious diseases, see James Tong, "Editor's

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Introduction," *Chinese Law and Government*, Vol. 39, No. 2, March/April 2006, pp. 3-11. This issue explores seven central government laws and regulations that constitute the core policy framework for managing the outbreak of epidemics. All except one predate the eruption of SARS in early April 2003. In combination, they form a comprehensive framework to deal with the prevention, control, and elimination of the eruption and diffusion of epidemics in China.

¹³ There are exceptions. For example, since 1987 almost all village heads in China are democratically elected, although their election process is still far from perfect (due to the efforts of the Standing Committee of the National People's Congress). There are even some instances of elections at the township level. See Shi Tianjian, "Village Committee Elections in China: Institutionalist Tactics for Democracy," *World Politics*, Vol. 51, No.3, April 1999, pp. 385-412.

¹⁴ "A Courageous Voice for a Greener China," *Business Week*, July 11, 2005. Dexter Roberts, "China: Choking on Pollution's Effects," *Business Week*, Nov. 29, 2005.

¹⁵ Tony Saich, "The Blind Man and the Elephant: Analyzing the Local State in China," in Luigi Tomba, ed., *On the Roots of Growth and Crisis: Capitalism, State and Society in East Asia.* Milan: Annale Feltrinelli, No. XXXVI, 2002, pp. 92-96.

¹⁶ Tsui Kai-yuen, and Wang Youqiang, "Decentralization with Political Trump: Vertical Control, Local Accountability and Regional Polarization," Hong Kong: Department of Economics, Chinese University of Hong Kong, Working Paper, No. 145, 2002.

¹⁷Joan Kaufman, Anthony J. Saich, "*Financial Reform and the Impact on Reproductive Health Care Provision: Evidence from Three Rural Counties Rural Townships*," paper presented at the Conference on Financial Sector Reform in China, Kennedy School of Government, Sept. 11-13, 2001. See: http://www.ksg. harvard.edu/m-rcbg/Conferences/financial_sector/FinRfrmPovertyandImpactonReprodHlth. pdf.

¹⁸ Hu Angang, "Correctly Know SARS Crisis," Democracy & Science, No. 3, 2003.

¹⁹ John Wong, and Zheng Yongnian, "SARS and Governance in China," in John Wong, and Zheng Yongnian, eds., *The SARS Epidemic: Challenges to China's Crisis Management*, Singapore: World Scientific, 2004, pp. 110-122.

²⁰ Stephanie Buss, Lindy M. Newlove, and Eric K. Stern, eds., *Value Complexity in Crisis Management: The Lithuanian Transition*, Stockholm: Swedish National Defense College, 2005, p.15.

²¹ According to the 1984 PRC's *Military Service Law*, "The PRC defense mobilization [system] adheres to the principle: Uniting the military and civilians, treating the peace time as war times, and training soldiers out of civilians." In order to integrate the chain of command and strengthen the management of mobilization, China established a national committee on defense mobilization in 1994. In March 1996, the Chinese Communist Party (CCP)'s Central Committee re-assigned "the People's Armed Department" to be under the command of the General Staff Department and commissioned the chiefs and commanders military ranks to strengthen the local mobilization and management and training for the militias and reservists. See, "University to Train Government Trouble Shooters," *Xinhua News Agency*, Oct. 26, 2003. and "Republic of China 1998 National Defense Report," see: http://www.fas.org/nuke/guide/china/doctrine/part1-3.htm

²² Eric K. Stern, et al., "Crisis Management in Transitional Democracies: The Baltic Experience," *Government and Opposition*, Vol. 37, No. 4, 2002, pp. 524-550.

²³ "Unit" is an important concept to understand China, and the concrete effects of the unit are much more far-reaching. For more information on China's unit system, please refer to Lu Feng, "Unit: A Special Organizational Form," *China Social Science*, Vol. 1, 1989, pp.71-73. And, Li Hanlin, et al., "Unit Phenomena and System Reform in China," *China Social Science Quarterly*, Vol. 5, 1994, pp.5-16. ²⁴ Wang Shaoguang, "Regulating Death at Coalmines: Changing Mode of Governance in China," *Journal of Contemporary China*, Vol. 15, No. 46, February 2006, pp. 1-30.

²⁵ Susan Jakes, "Beijing's SARS Attack," *Time*, April 8, 2003.

²⁶ Frank Miller, and Andrew Scobell, "Decision-making Under Stress or 'Crisis Management'?: In Lieu of a Conclusion," in Andrew Scobell, and Larry M. Wortzel, eds., *Chinese National Security Decision-making under Stress*, Carlisle, Penn., Strategic Studies Institute, U.S. Army War College, 2005, pp. 229-248.

²⁷ Tony Saich, "China's Chernobyl or Much Ado about Nothing?" in Arthur Kleinman, and James L. Watson, eds., *SARS in China: Prelude to a Pandemic?* Stanford: Stanford University Press, 2005, pp. 71-104.

²⁸ Andreas Lorenz, "*License to Spill*," Nov. 30, 2005, see: http://archive.salon.com/news/feature/2005/11/30/china_spill/index.html.

²⁹ The Chinese government used to heavily control the public channels of information despite different exterior impressions. Party insiders described the heightened controls as *neijin waisong*, meaning "tight inside while appearing lax from the outside." See, Anne-Marie Brady, "Treat Insiders and Outsiders Differently': The Use and Control of Foreigners in the PRC," *The China Quarterly*, No. 164, December 2000, pp. 943-964.

³⁰ For example, Premier Wen Jiabao explains in the context of the mining industry, "It [sufficient safety measures in the mining industry] is an important guarantee to national security, social stability and people's interest." See, "More Measures Urged to Improve Coal Mine Work Safety," *Xinhua News Agency*, March 11, 2005, and "China Builds Emergency Response System," *People's Daily Online*, Feb. 3, 2005.

³¹ Chinese Premier Wen Jiabao and State Councilor Hua Jianmin delivered a speech during the first and second working meetings held on July 7-8 and 22-23, 2005. See, "Premier Wen Calls on Stepping up Emergency Management," *Xinhua News Agency*, July 24, 2005; "Chinese Government Asks Better Emergency Response as Flood Season Comes," *Xinhua News Agency*, July 8, 2006.

³² After a year of effort, the general emergency response plan was endorsed in principle at a conference of the State Council chaired by Premier Wen Jiabao on Jan. 26, 2005. China's official media reported that "this signifies China has primarily established a framework of emergency response plan." See, "China Builds Emergency Response System," *People's Daily Online*, Feb. 3, 2005.

³³ According to the new general contingency plan, natural disasters include: typhoons, rainstorms and high temperatures; manmade accidents include traffic accidents, fires, and serious environmental pollution; public health incidents include food poisoning and infectious diseases; and social security incidents include significant criminal activities.

³⁴ "Good Planning Helps Cope with Emergencies," *People's Daily*, Jan. 10, 2006.

³⁵ The statistics were made public by Deputy Civil Affairs Minister Li Liguo at a briefing in Beijing on Jan. 5, 2006. For more information on MOCA's work on disaster reduction in 2005 released by Vice Minister Li Liguo during the briefing, see: http://www.xinhuanet.com/zhibo/20060105a/ zhibo.htm

³⁶ "Shanghai Sets up Emergency Response Center," *People's Daily*, Oct. 13, 2004. And, see the website of Nanning City Emergency Response Center, www.nncerc.com; "Shenzhen Prepares for Emergencies," *Shenzhen Daily*, March 17, 2005.

³⁷ "Health Ministry Urges Timely Report of Emergency Response," *Xinhua News Agency*, July 14, 2006.

³⁸ This was the fourth amendment to the 1982 Constitution of the People's Republic of China,

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passed during the 10th National People's Congress (NPC) in March 2004. The previous three amendments were made in 1988, 1993 and 1999, respectively. See, "Chronology of China's Constitutional Amendments," *Xinhua News Agency*, March 8, 2004.

³⁹ Formerly, the constitution stated that the NPC Standing Committee, the country's top legislative body, has the power to declare a state of emergency throughout the country or in particular provinces, autonomous regions, or municipalities, under the auspice of the central government. See Article 67 of the 1982 constitution. The constitution also stipulates that the State Council has the power to proclaim a state of emergency in sectors of provinces, autonomous regions and municipalities directly under the administration of the central government in accordance with the provisions of law. See "State of Emergency Law to Set Basic Rights," *China Daily*, April 5, 2004. ⁴⁰ "Legislature to Make More Laws This Year: NPC Chairman," *Xinhua News Agency*, March 10, 2004. And "China mulls emergency management law," *Xinhua News Agency*, June 26, 2006.

⁴¹ The State Council Information Office (SCIO) gave 60 press conferences, 20 more than in 2003. Minister of SCIO Zhao Qizheng made the remarks during an interview. See "New Directions in Public, Media Relations," *mm.china.org.cn*, April 5, 2005.

⁴² "Natural Disaster Toll No Longer State Secret," Xinhua News Agency, Sept. 12, 2005.

⁴³ See: http://www.gov.cn/yjgl/index.htm

⁴⁴ "Epidemic Detection Plan Launched," *www.china.org.cn*, Jan. 19, 2004.

⁴⁵ In March 2004, China's MOH and the Central Committee of the Communist Youth League of China launched a joint program to help school kids improve their self-protection capacities, which involved simulations of real scenarios like robbery and fire. See "Public Security Education," *China Daily*, Dec. 5, 2005.

⁴⁶ "Natural Disaster Game Educates Museum Visitors," China Daily, June 17, 2005.

⁴⁷ For example, school education should highlight safety. According to a 2004 survey conducted by the Ministries of Education and Public Security in 10 localities including Beijing, Shanghai and Tianjin, more than 40 primary and middle school pupils die from road accidents, food poisoning, drowning or other accidents every day. Road accidents, for example, are killing more than 18,500 children under 14 years old in China each year. See, "School Education Should Highlight Safety, Lawmaker," *Xinhua News Agency*, March 13, 2005.

⁴⁸ Many suspect that the Chinese government could be hoarding information in order to make bundles of money off of novel H5N1 vaccines customized to new strains of the bird flu virus. See, "WHO Blasts Chinese Government for not Sharing Samples of New Bird Flu Strain," *International Herald Tribute*, Nov. 1, 2006.

⁴⁹ "China-ASEAN Workshop on Earthquake-Generated Tsunami Warning," *Xinhua News Agency*, Jan. 26, 2005.

⁵⁰ "China's First 'International Safe Community' Born in Shandong," *Xinhua News Agency*, March 1, 2006. 'Safe Communities' are communities that meet a set of 12 criteria (later changed to six indicators) as defined by the WHO Collaborating Centre (WHO CC) on Community Safety Promotion at Karolinska Institute in Stockholm. Communities may apply to the WHO CC to become official members of the WHO International Safe Community Network. The movement asserts that the people who live, learn, work and play in a community best understand the specific problems, needs, assets and capacities of that community. The involvement and commitment of community members are seen as critical in the identification and mobilization of the necessary means to create effective, comprehensive and coordinated action in times of crisis. See, Rahim Y, "Safe community in different settings," *International Journal of Injury Control and Safety Promotion*, Vol.12, No.2, June 2005, pp.105-112.

⁵¹ Todd Bullock, "Internet Transforming China's Economy, Society, Experts Say," U.S. Policies & Issues, March 15, 2006. And, Jim Yardley, "China Chemical Spills Spur Plan to Guard Water Supply," New York Times, Jan. 12, 2006.

⁵² Paul 't Hart, Eric K. Stern, and Bengt Sundelius, "Crisis Management: An Agenda for Research and Training in Europe," *Cooperation and Conflict*, Vol. 33, No. 2, 1998, pp. 207-224.

⁵³ "Beijing Prepares Emergency Health Response for Olympics," *Xinhua News Agency*, May 19, 2006.

⁵⁴ One example here is the growth of NGOs in HIV/AIDS prevention in recent years. Several volunteer groups dedicated to AIDS prevention among homosexuals in Beijing, Shanghai, Guangzhou and Chongqing have been set up. Ortwin Renn, *White Paper on Risk Governance: Towards an Integrative Approach*, Geneva: IRGC (International Risk Governance Council), 2005.

⁵⁵ For example, the China Rainbow Organization, based in Chongqing, plays an important role in preventing the spread of HIV with financial help from the British Barry & Martin Trust Fund. See, "China Encourages NGO's Participation in Fight Against AIDS," *Xinhua News Agency*, March 23, 2006.

⁵⁶ Organization for Economic Cooperation and Development (OECD), *Emerging Risks in the 21st Century: An Agenda for Action*, Paris: OECD Publications Service, 2003, p. 6.

⁵⁷ Rong Jinben, et al., *The Transformation from a Pressurized System to a Democratic Cooperative System*, Beijing: the Central Compilation & Translation Press, 1998.

⁵⁸ Tony Saich, "Negotiating the State: The Development of Social Organizations in China," *The China Quarterly*, No. 1, March 2000, pp. 124-141.

Situation Report

Coal bed Methane: Vision for Clean Energy

China's appetite for energy is creating both unpleasant realities and unexpected opportunities. With an oil and gas bill of \$82 billion USD, China upped its dependence on imported energy. The country's reliance on coal also continues to grow, with a consumption increase of 120 million tons. Total carbon dioxide emissions reached 150 million tons last year alone. Concurrently, business prospects for renewable energy remain limited due to infrastructural, policy and investment constraints. This energy climate is a driving force behind the quest for new alternative opportunities to alleviate increasing demand, reduce dependence on foreign sources and prevent environmental degradation. Coal bed methane gas holds significant potential as an alternative energy source to meet China's energy challenges in the decades ahead.

What is Coal bed Methane?

Coal bed methane (CBM) naturally exists as a gas absorbed in coal deposits. While the coal mining industry in China began to extract CBM in the 1950s, the vast resources of the fuel remain largely untapped and underutilized. To date in coal mining production, the most common practice has been to disregard the value of CBM by merely pumping it directly into the atmosphere. In actuality, extracting CBM prior to coal mining offers many important benefits to China including its utilization as a new and viable energy



Fig.1 Coal Bed Methane Production

source. Pumping CBM before mining coal significantly reduces outflux volumes of gas during production by 70-85 percent, allowing for a significant reduction in greenhouse gas emissions and increased safety conditions in coal mines.

A Burgeoning Industry Ready for Investment

In recent years, increased international efforts to reduce greenhouse gas emissions and promote human rights initiatives - prompted by increased energy crises - and technological advances in CBM extraction methods have led to a shift in attitudes toward the importance of CBM. There are great prospects in China for its widespread extraction and processing, which are beginning to be widely acknowledged, sending CBM into a new stage of commercialization. In the next 15-20 years, the CBM industry has the potential to flourish. In addition to the vast abundance of CBM resources in China, major coal mines currently have the ability to develop recoverable resource reserves. Further, an increased demand for energy and continually rising prices of natural gas will promote its development as a viable alternative energy source.

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Abundance

China has the third largest CBM deposit in the world and has been proven to have an abundance more than double that of conventional natural gas. Estimates show that there are a total of 14 basins with a recoverable CBM resource volume of over 500 billion m³ each, a volume comparable to the current total annual consumption of natural gas in China! There are many large-scale CBM fields distributed along the East-West gas transmissions pipeline, such as Qinshui and Lianghuai, containing rich resources.



Fig.2 Distribution of CBM Resources in China

Safety

The extraction of CBM significantly increases the safety of coal miners as it reduces the amount of gas in mine shafts, thus preventing explosions. When it is not extracted separately from coal, CBM is the number one cause of death in the coal mining industry in China, accountable for 5,000 miners' lives or 80 percent of mining accidents every year.

Environment

Methane is one of the six greenhouse gases defined in the UN Climate Change Framework Convention. Its greenhouse effect is 21 times that of CO₂ and its destruction to the ozone layer is seven times that of CO₂. Largely due to underutilization of CBM in China, it is the world's number one emitter of methane, accounting for one-third of all coal mine methane emissions. Estimates show that each year China emits some 15 billion m³ of methane into the atmosphere through the extraction, processing and transportation of coal. The pollutants generated from the pumping and utilization of CBM are far less than that of both oil and coal (approximately 1/40th of pollutants generated by oil; and 1/800th generated by coal).

International Pressure

Increased environmental protection standards and pressures on China to join global climate change treaties bring new opportunities to develop the CBM industry. China is an important player in global efforts to reduce greenhouse gas emissions. According to the Clean Development Mechanism in the Kyoto Protocol, developing and utilizing CBM has many economic advantages for business. For example, an enterprise with a methane-fueled electricity generating device with an installed capacity of 2×1200kw can reduce 80,000 tons of CO2 equivalent emissions every year. With an average international price of \$7.5 USD/ ton for reduced CO2 emissions, this would increase earnings by 4.8 million RMB.

In December 2005, the World Bank Carbon Funds subsidized an emission reduction project headed by the Jincheng Anthracite Mining Group that involves the production and utilization of CBM. Under the signed contract, the Jincheng Anthracite Mining Group will reduce CO₂ emissions by six million tons and will receive an emission-reduction benefit of \$27 million USD. The World Bank Carbon Funds is currently negotiating with the Jincheng Anthracite Mining Group, Shanxi Energy Industry Group Ltd and Jincheng Coal bed Gas Comprehensive Utilization Co. Ltd. for future projects.

CBM Reaches Commercialization

While the entry of multinational companies to the Chinese coal mining industry initiated the large-scale development of CBM development in the 1990s, the CBM industry reached a stage of commercialization in 2003. Today, China's CBM industry is teeming with hotspots. In 2005, Chinese coal mines utilized over 1 billion m³ of CBM from the 2.3 billion m3 that was extracted. Also in 2005, 328 new CBM wells were constructed in China, exceeding the previous combined total number of 287 wells that were functional at the end of 2004.

But there are still too few participants in China's CBM industry to meet economy of scale thresholds and make a significant dent in CO2 emissions. China United Coal bed Methane Co. Ltd, China National Petroleum Corporation, Jincheng Anthracite Mining Group, and some local mining bureaus are the main entities engaged in CBM extraction and exploration in China. China United Coal bed Methane Co. Ltd. is the primary CBM enterprise in China. Established in 1996 with approval from the State Council, it functions under State planning and seeks to explore, develop, produce, sell and utilize CBM resources. Since it's founding, it has drilled 85 percent of China's CBM wells and has formed partnerships with almost two dozen large foreign companies.



Fig.3 Nine Coalmine Areas with the Largest Extracted CBM Volume in China (10⁸ m³)

The Government Urges Investment

China is vigorously pursuing CBM industry potential. The *Eleventh Five-Year Plan* for Coal bed Methane Development was adopted by the National Development and Reform Commission in July of 2006. The plan outlines the goal to more than double CBM extraction by 2010 (from 4 billion m³ in 2006 to 10 billion m³ in 2010), which will give a utilization rate of over 50 percent. A separate directive specifies safety and extraction regulations alongside favorable incentive policies for CBM development. The overall goal is to foster a surge in CBM industrialization.

Government policy initiatives include both restrictive and incentive components. These compulsory measures and preferential provisions will play an important role in promoting the development of the CBM industry.

Restrictive policies include:

i) supervision and administration of CBM exploration and extraction;

ii) minimum inputs to exploration;

iii) a reduction of CBM content per ton in the coal to pre-determined levels prior to coal extraction;

iv) integration of gas and coal extraction processes;

v) clarity on the legal status of coal and CBM resources; and

vi) formulation of specific criteria for emissions from CBM production.

Incentive and support policy aspects include:

i) grant land allocation priority to CBM projects;

ii) subsidize CBM enterprises in well construction;

iii) integrate CBM to the natural gas pipeline and the urban public gas supply pipeline network;

iv) encourage CBM for electricity generation;

v) ensure price options for CBM-generated electricity;

vi) reduce or exempt user-fees for explo-

ration and mining rights for CBM enterprises; and

vii) provide fund subsidies or loan interest discounts for CBM projects.

Foreign Investment

The government has also stressed the inclusion of preferential policies for foreign capital to enter the CBM industry. In order to promote foreign investment, preferential tax rates have been instituted, including low VAT and exemptions from enterprise income tax for the first two years, and a reduction by half for the subsequent three years. Also, imported items for CBM exploration and extraction are exempt from import tariffs and regulatory taxes. With these incentives, foreign companies have now signed contracts with over 25 regions in China and invested over 1.2 billion RMB in CBM exploration and extraction.



Fig.4 CBM Extraction in Shanxi Province

Challenges Ahead

While CBM offers important advantages to China's energy market such as safety customs and efforts to lower greenhouse gas emissions, a number of drawbacks remain.

The social benefits of developing and utilizing CBM are far greater than their economic benefits. Despite recent government action to introduce preferential policies, economic viability remains uncertain. This is particularly true in the early development stages of the industry. The government must explore more measures to further encourage CBM projects and work to eliminate the obstacles. For example, conflicts between enterprises and regulatory bodies undermine supportive state policies in electricity generating CBM projects.

Another challenge for the CBM industry is the lack of constructive relations between coal and gas extraction enterprises. To date, their relationship remains troubled. The CBM industry has largely been at the mercy of the powerful coal mining industry. Further, as the CBM industry is still in its infancy, an effective legal framework has not yet been established, leading to ambiguous property rights for CBM projects. The State Ministry of Land and Resources effort to categorize CBM and coal as separate resources has helped to ensure the former industry's legal rights, but a sound system is far from complete.

Weak infrastructure to transport CBM makes market and end-user access difficult. CBM enterprises will need to construct internal pipeline networks and consider long-term transmission pipeline network construction. Investment requirements for such needs are high, serving to discourage potential enterprise interest and limiting enterprise access to the CBM industry.

Future Potential

To sum up, the development of the CBM industry will be increasingly important to China in the future. There are numerous obstacles before this market matures. If the government steadily introduces beneficial policies, the CBM industry will expand rapidly, providing improvements to the environment, safety practices and the diversification of China's energy supply.

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Editorial Policy

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