

# SSQ STRATEGIC STUDIES QUARTERLY

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## **On Great Power Conflict: Entangled or Untangled Alliances?**

An Interview with Charles A. Kupchan

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## **Attrition and the Will to Fight a Great Power War**

Emma Moore

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### **FEATURE ARTICLE**

## **Through the Glass—Darker**

James Wood Forsyth Jr.

Ann Mezzell

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## **Missile Defense for Great Power Conflict: Outmaneuvering the China Threat**

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Rebeccah L. Heinrichs

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## **Ambiguity, Risk, and Limited Great Power Conflict**

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# STRATEGIC STUDIES QUARTERLY

An Air Force–Sponsored Strategic Forum on  
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## POLICY FORUM

### 3 **On Great Power Conflict: Entangled or Untangled Alliances?**

An Interview with Charles A. Kupchan

### 10 **Attrition and the Will to Fight a Great Power War**

Emma Moore

## FEATURE ARTICLE

### 18 **Through the Glass—Darker**

James Wood Forsyth Jr.

Ann Mezzell

## PERSPECTIVES

### 37 **Missile Defense for Great Power Conflict: Outmaneuvering the China Threat**

Henry Obering III

Rebecca L. Heinrichs

### 57 **Ambiguity, Risk, and Limited Great Power Conflict**

Thomas G. Mahnken

Gillian Evans

### 78 **Techniques for Great Power Space War**

Paul Szymanski

### 105 **Minding the Gaps: US Military Strategy toward China**

Derek Grossman

John Speed Meyers

### 122 **Decide, Disrupt, Destroy: Information Systems in Great Power Competition with China**

Ainikki Riikonen

146 *Rising Titans, Falling Giants: How Great Powers Exploit Power Shifts*

by Joshua R. Itzkowitz Shiffrin

Reviewed by Joseph M. Parent

147 *China's Vision of Victory*

by Jonathan D. T. Ward

Reviewed by Lt Col Matthew Tuzel, USAF

148 *US National Security: New Threats, Old Realities*

by Paul Viotti

Reviewed by William E. Kelly

150 *American Power and Liberal Order: A Conservative Internationalist Grand Strategy*

by Paul D. Miller

Reviewed by Lt Col Kevin McCaskey, USAF

151 *The Future of Intelligence*

by Mark M. Lowenthal

Reviewed by Col Jamie Sculerati, USAF, Retired

# On Great Power Conflict: Entangled or Untangled Alliances?

An Interview with Charles A. Kupchan

Senior Fellow, Council on Foreign Relations  
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*Conducted 13 June 2019*

**SSQ:** Can you offer a general historical view of alliances in preserving peace and preventing conflict?

**CAK:** Historically, alliances have tended to be tools of warfare more than they have been tools of deterrence. In that sense, the Cold War may have been a bit of an outlier because war never occurred between NATO and the Warsaw Pact—most likely because of the presence of nuclear weapons. The alliances that formed when Sparta faced off with Athens, the Quadruple Alliance that opposed Napoleon, the Triple Entente in WWI—they were all associated with war. We could likely find other alliances that were not associated with war, but I suspect these would be the exception and not the rule. NATO is an anomaly in another respect: it is still here almost three decades after the end of the Cold War. Most alliances disappear when the threat that brought them into being disappears. But that has not happened with NATO. Because it has been very good at adapting to geopolitical circumstances—such as going out of area, dealing with unconventional threats, and building global partnerships—NATO has been the exception and not the rule.

**SSQ:** Has the historical view of alliances changed since the end of the Cold War?

**CAK:** Especially in the 1990s, NATO viewed itself as a political organization more than as a traditional military alliance. NATO adapted and was no longer focused on territorial defense against an external aggressor. It became more of an all-purpose institution for military and nonmilitary cooperation in Europe and beyond.

One consequence of the changing character of NATO was that it was used as a tool for promoting democracy and helping facilitate reform in the new democracies emerging from the Soviet Union. That role was an appropriate one, but it also entailed the formal enlargement of NATO. Enlargement was, in my mind, a mistake. I was opposed to NATO expan-

sion because of my concerns about its effect on Russia. Alliance decision-makers underestimated the degree to which Russia sees NATO as a threat, as a military alliance encroaching on its sphere of influence. The United States certainly would respond with alarm if Russia formed a military alliance with Mexico and Canada and deployed Russian troops near the US border. As a consequence, we are now in an awkward position where NATO pledged to make Ukraine and Georgia NATO members at its 2008 summit. Some now realize that may not be a wise thing to do. Indeed, Russia now has troops in both countries—in part to block their path to NATO membership. Russia's aggressive behavior has in turn encouraged NATO to focus more on its traditional mission of territorial defense.

**SSQ: In the case of NATO, is the alliance more likely to draw the US into a great power conflict or prevent such a conflict?**

**CAK:** NATO is more likely to prevent a conflict and preserve stability, at least for now. Russia has been probing the gray zones such as Georgia and Ukraine but not NATO territory. The Russians are not going to test Article 5, which serves as an effective deterrent. It is also important not to underestimate the political and social consequences of NATO. It remains the premier institution that binds North America to Europe's democracies at a time when democratic norms and institutions are being tested by the rise of populism on both sides of the Atlantic. NATO plays an important role in consolidating transatlantic solidarity and cooperation. That role is important today in light of illiberal trends among Western democracies and the illiberal agenda of powers like Russia and China. Despite the transatlantic tensions that have emerged during the Trump presidency, the alliance is actually in very good shape. NATO militaries are working together closely, and European defense spending is rising. Publics on both sides of the Atlantic continue to support the alliance. The US Congress has repeatedly made clear its backing of NATO. These are all signs of the health of the alliance at a time of political strain.

**SSQ: If Russia violates Article 5 provisions of the NATO treaty, to what extent should the US react?**

**CAK:** Treaty commitments are sacrosanct. One of the pillars of a rules-based system is for nations to live by their commitments. They do not cherry-pick. They don't only show up on a sunny day and disappear on a rainy day. The US should stand by its Article 5 commitments if the Russians test those commitments whether it concerns Estonia, Latvia, Poland, or any other member. We should lead a coalition to defend the territory of

alliance members. If the US were to fail to uphold its NATO commitments, it would raise doubts about US commitments globally—in Asia, the Middle East, everywhere.

**SSQ: Will US alliances and agreements with Indo-Pacific nations precipitate or likely restrain a great power conflict?**

**CAK:** In the end, US commitments in the Indo-Pacific are a source of stability. The presence of the US in South Korea, Japan, Guam, and other forward locations helps prevent the regional jockeying and balancing that would otherwise occur. The Chinese may complain about the US presence; however, in many respects they benefit from that presence because it helps prevent an arms race in China's neighborhood. Japan and South Korea could seek nuclear weapons in the absence of a US commitment to their security. Over the long term, one would hope East Asia could pursue a self-sustaining regional project of integration that would make it unnecessary for the US to remain the extra-regional guarantor. But this outcome depends a great deal on how China exercises its growing power. If rapprochement and cooperation are to emerge among the region's nations, China's neighbors need to believe that Beijing has benign strategic intentions. That is not now the case. However, it is unlikely that the US will be the strategic guarantor of East Asia indefinitely. A key challenge of our time is managing the relationship between the US and China. America has only one peer competitor on the horizon: China. That makes the US-China relationship a defining one for the twenty-first century.

**SSQ: Are some US alliance agreements in the Indo-Pacific more likely to create the conditions for great power conflict?**

**CAK:** Taiwan has to be on the top of the list of territories in East Asia that could precipitate great power conflict. Some accidental event could precipitate hostilities—for example, a collision between a Chinese vessel and a US vessel in the South China Sea. Of course, there have been airborne incidents already. Other pathways to conflict are increased nationalist sentiment in Taiwan that leads to a formal declaration of independence or events in China that ramp up nationalism and the pressure it exerts on Taiwan. However, today, the likelihood of a deliberate war between China and Taiwan is less likely than hostilities stemming from an inadvertent escalation.

**SSQ: If China forcefully violates a US agreement with an Asian partner, to what extent should the US respond?**

**CAK:** Just as I said with reference to NATO, treaty commitments are sacrosanct. If they start to unravel, the rules-based international system

starts to unravel. It is in the US interest to facilitate conversations between China and Taiwan and to help de-escalate tensions as the two parties search for a permanent settlement. Until that comes about, the US should stand by its commitments.

**SSQ: What do you see as the prospects of a great power conflict in this century?**

**CAK:** The rise of China has considerable potential to lead to the kind of geopolitical tensions that are usually associated with hegemonic transitions. China's push into the South China Sea, trade tensions between the US and China, growing anti-US sentiment in China, and growing anti-China sentiment in the US—there is much to worry about. The bipartisan consensus in the US is to take a hard line against China. In China, the same consensus exists—to stand up to the US on most fronts.

Let me offer two caveats when it comes to the prospect of great power conflict. First, nuclear weapons have so far done a good job of averting great power war; they should encourage caution and restraint in the US-China relationship. The second caveat is interdependence: the US and China are much more entangled economically than the US and Soviets were. That means a stronger mutual interest in containing geopolitical rivalry. On the security front, things will continue to be rocky—even more so than now. The Chinese are uncomfortable with US naval primacy in the Pacific. They are developing capabilities that will test that primacy. The US is likely to hold its ground. The key question going forward is whether restraint or confrontation will prevail. Economic interdependence can help, but the US-China relationship will ultimately turn on the core geopolitical issues in play.

**SSQ: What steps should the US and its international alliance partners take to prevent a great power conflict?**

**CAK:** Transparency and communication are extremely important. I worry about the degree to which Russia's narrative of global affairs is so different than the one that exists in the US and other Western democracies. It is important to agree on a set of shared facts, especially when it comes to Ukraine, Syria, and Russian interference in democratic elections. Those shared facts don't exist right now.

The US should be more sensitive to the realistic and legitimate security concerns of other great powers. As I mentioned earlier, it doesn't make sense for NATO to be expanding into Russia's underbelly. The US and China should similarly look for ways to become more comfortable with



each other's intentions. China's rise does mean that its security interests are expanding. When the US emerged as a great power, it unveiled the Monroe Doctrine and eased the UK, France, Spain, and Russia out of its neighborhood. That is what great powers do as they rise. A broadening of China's ambitions is to be expected. However, China also needs to moderate its ambition so as not to threaten others. Moving forward, the US, China, and other regional players will need to engage in a conversation about security and responsibility in the Indo-Pacific. The best outcome would be an adjustment to the rise of China that occurs in a consensual and peaceful fashion.

**SSQ: What steps should China and Russia take to prevent a great power conflict?**

**CAK:** In the case of Russia, it needs to stop playing the role of spoiler in an effort to undermine a rules-based international system. It works to tear down that system without offering anything in its place. Its actions in Georgia, Ukraine, and Syria; its ongoing interference in democratic elections in other countries; its violation of the INF Treaty—these and other actions give the US every reason to be suspicious of Russian intentions and to behave accordingly toward the Kremlin. Have we made mistakes in our policies and missed opportunities to deepen cooperation with Russia? Yes, we have. But it is Russia that backed away from the “reset” that took place during the Obama presidency. Putin returned to the Russian presidency and has ever since embraced a brand of leadership that relies on standing up to the West as his main source of legitimacy. Instead of governing by manipulating Russian nationalism, he should start investing in the Russian people, building a knowledge economy, and weaning the Russian economy from its dependence on energy revenue. Russia needs to become a stakeholder in the international system rather than a troublemaker.

China has been a more cautious player than Russia. Only recently has China gone from a near-exclusive focus on growing its economy to also pushing out geopolitically. It is too early to tell if China's rise will be accompanied by strategic caution and restraint—or aggressive intent. Bullying of its neighbors over disputed islands and militarization of offshore outposts are not reassuring signs. Ideally, the US and China should find a way to mutually chart a path for China's rise that does not involve confrontation. Strategic restraint by both parties will help.

**SSQ: Should the US seek to deepen our commitments to existing alliances and seek new ones with new partners?**

**CAK:** The US is in retrenchment mode. The political climate moving forward will be to do less, not more, and allies will be pressed to share more of the defense burden. President Obama campaigned on the idea of nation building at home, and President Trump adopted a neo-isolationist agenda. Both have had problems operationalizing retrenchment, but they accurately perceived that the electorate is looking to scale back overseas commitments. “Endless” wars in the Middle East have taken their toll. So expect the US to lighten its footprint abroad. In the first instance, this retrenchment will come not by backing away from existing alliances but by getting out of Afghanistan, Iraq, and Syria. Iran of course is a wild card. President Trump has said he doesn’t want a war with Iran. He prefers to offload commitments, not take on new ones. But tensions with Iran have the potential to escalate and lead to conflict—whether inadvertent or deliberate. The trend line will be an America that does less abroad, but not in a way that compromises treaty-based alliance commitments—at least for now. Perhaps smart diplomacy and processes of rapprochement can over time make at least some alliances unnecessary.

**SSQ: Is it unrealistic to think the US and China or Russia could establish some kind of formal regional or international alliance?**

**CAK:** After WWII, Pax Americana emerged and the US and its democratic partners became the overseers of a liberal international order. After the end of the Cold War, more countries joined that liberal order. Now history seems to be going in reverse. Illiberal forces have been gaining strength in Western democracies, and the rules-based international order is being threatened from within by these forces and from without by Russia and China. It is too early to tell how these trends will play out. I think the top geopolitical priority for the United States and other Western democracies is to get their own houses in order: address economic uncertainty, put in place functioning and effective immigration policies, and restore trust in and the effectiveness of democratic institutions. Otherwise, this illiberal “moment” may last a very long time.

Whether or not the Western democracies recover and reclaim liberal values and practices, the global landscape is fast changing toward multipolarity. As a consequence, for the first time in history, the world will be globalized and interdependent but no longer led by a coalition of liberal great powers. We are headed toward “No One’s World”—a world in which there will be no captain at the helm. Accordingly, the best option for pre-

serving stability and fashioning a new rules-based world may be a global concert of major players. The US, the European Union, Russia, China, Japan, India, Brazil, the Arab League, and the African Union—perhaps an informal grouping along these lines can contribute to efforts to arrive at a cooperative means of managing global affairs.

**SSQ: Do alliances have a future in the liberal international order?**

**CAK:** Yes, I think they do. We still live in a world in which geopolitical threats and uncertainty require the stability and predictability that come with alliance networks. It would be desirable to move to a world in which alliances are no longer needed. President Woodrow Wilson aspired to that world but failed to achieve it. In some ways, NATO began to move in that direction immediately after the end of the Cold War—becoming a vehicle for broad-based military cooperation rather than one focused on collective defense. It has to a certain extent become an all-purpose security organization with partners around the world. Now, however, it has also had to focus once more on its traditional role of balancing against a Russia that has of late demonstrated malign intent. Especially as the world becomes more multipolar and prone to power balancing, don't expect alliances to disappear.

**SSQ:** Dr. Kupchan, on behalf of team *SSQ* and the *SSQ* audience, thank you for sharing your ideas on how alliances may be the deciding factor in a future clouded by the prospect of great power conflict. **SSQ**

# Attrition and the Will to Fight a Great Power War

A nation's capability and will to fight are interdependent critical factors in determining military operational success in conflict. The possibility of a kinetic war, however slight, now occupies the minds of policy makers. As great power competition and worry over potential great power conflict (GPC) increases, it is vital to consider the effects of attrition and the demands such conflict would require. The United States' ability to tolerate manpower attrition and sustain the force in a war against a near-peer competitor is one factor that could determine American will to fight—and ultimate success—in a great power war. Many planners expect conflict to remain in the “grey zone” or the cyber domain with less risk of violence. But what if they are wrong? In the next GPC the nation may be vulnerable to platform and human attrition. The potential of such a conflict ultimately raises questions of the will to fight, reasonable risks, and associated casualties.

Conversations about the military balance tend to focus on projected capabilities and platforms while the need for personnel and possibility of large-scale casualties receive less attention. Planners should seriously consider not just the vulnerabilities of platforms they field but also how mobilization and loss of service members would change national decisions, capabilities, and will to fight. Against a near-peer competitor, what level of attrition can the US tolerate? Will society be willing to engage in a great power war? These are important considerations when assessing US preparedness and should inform talent management, military end strength, and force composition. To understand this argument, one must first consider the context of attrition and then explore the nuances of platform and human attrition.

## Context of Attrition

Planning for the next war requires not only modernization of precision munitions and advanced platforms but also consideration of troop strength and societal stamina. American society has immense confidence in its military, in large part due to its perceived competence and professionalism.<sup>1</sup> However, in the case of GPC, the inability of the professionalized force to achieve victory on a large scale may negatively influence popular

support for the war and civil-military relations. Will to fight is fickle, determined by political, economic, and military factors.

The RAND Corporation developed a model to better understand the contexts and mechanisms that influence will to fight.<sup>2</sup> Strong indicators of a country's will to fight include the government's ability to make political, economic, and military sacrifices; adjust strategy to address changing events and expectations; and take risks. However, war has to be seen as a legitimate use of blood and treasure to be sustained. It is unclear if political leaders would be willing to take the necessary risks. Political reticence and societal apathy to tangential interest areas call into question the willingness to fight over political ideology a world away. How long would the US public be willing to sustain a war in Asia?

Capability and personnel attrition resilience are key in a potential great power war. How the US would mobilize a significant force against its competitor is a primary consideration with a near-peer rival: "Nation-state warfare is mostly an exercise in national attrition. The nation that can mobilize its forces and better bring them to bear on the enemy over time usually prevails."<sup>3</sup> The US national security apparatus has justifiably expressed concern about current planning and thought given to mobilization.<sup>4</sup>

The next great power war will likely be fast, and the US is unlikely to have the lead time to prepare and organize a large force before a fait accompli. Due to its own political and societal will, China will benefit from political sustainment of a regional conflict as well as proximal escalation dominance. Conversely, the US is likely to need to scale quickly—without sufficient training time—and run the risk of unnecessary losses. The US expects to have advantages in the air and space domains, which are easier to mobilize than manpower. The hope is that dominance in air and space would delay or supplant the need for ground troops.

When the armed forces need to grow quickly, training time is cut short and standards are lowered. The low-intensity nature of Iraq and Afghanistan have not demanded scaling beyond the reserve components, though the Army still had to lower enlistment standards to meet end-strength goals. This begs the question, Whom will the military rely on in GPC? The US Army's Bold Shift plan offers pre-mobilization training to the Army Reserve that could shorten training time for units preparing to deploy.<sup>5</sup> Even so, the US has shown widespread inefficiencies in mobilizing troops.

Additional considerations in GPC include the state of civil-military relations and popular support from both the public and allies. An important commonality among these factors is their susceptibility to influence by high casualties or misinformation and disinformation efforts. What

kind of decisions could pull the US into war with China, and what are potential reactions? The RAND model posits that superior military capabilities generally inflict greater casualties on an opponent, negatively influencing an adversary's national identity, political cohesion, or allied support. It indicates that "a government that suffers many casualties over time may lose popular support, allied support, or the economic means to sustain the war, thereby lessening the government's expectation of victory and diminishing its will to fight."<sup>6</sup> What if US capabilities are not superior? Contrary planning demands consideration of the possibility.

### **Platform Attrition**

Most projections of conflict with near-peer competitors assume a technological, information, or economic competition that is regional and limited in scope. War gaming and scenario planning focus more on the multi-domain aspects and platform resilience, primarily concerned with Air Force and Navy capabilities. However, there is a certain irony in the US high-cost, high-technology capabilities. The US is betting on a low number of highly capable platforms—requiring longer training times—that have higher attack ratios. At the same time, the loss of each platform represents a greater percentage of total capability. Particularly acute for the Air Force and Navy, the multimillion-dollar cost of high-priced machines may be at a disadvantage fighting low-cost, highly attritable platforms.<sup>7</sup> Could fear of significant platform attrition self-deter their use? Should a large number of fighter aircraft—or a carrier group—be destroyed, the force would be severely strained.

Despite ongoing technological advancement, ground combat remains a feature of warfare. Past examples of war in the midst of technological development do not tell a story of seamless technological integration into operational/combat scenarios but rather of technological shortcomings. Notoriously, troops were sent into a meat grinder because military leadership failed to understand changing weapons technology.

The success of the revolution in military affairs during the Gulf War is in large part due to US overmatch in platforms but is also attributable to substantial US military training hours and support from allies. Weapons modernization changes in the decades prior to the Gulf War meant the US maintained overmatch against Iraq from the beginning. This advantage demonstrated the synergy between investments in military technology and force professionalization, yet it contributed to a bias toward advanced weapons systems and capabilities away from training and personnel management—limiting military effectiveness in the post-9/11

era. The lack of sufficient training time has led to accidents across the services in recent years.

US adversaries' focus on cyber, electronic, and communication platforms has been of particular interest: the Chinese plan to "attack the American battle network at all levels, relentlessly, and they practice it all the time."<sup>8</sup> Missiles, airpower, and C3 are similarly technologically-minded solutions to confront China's industrial base and mass. As a near-peer competitor that has heavily invested in military modernization and cyber capabilities in recent decades, China is particularly prepared for regional conflict in the South China Sea. While it does not currently outmatch the US, in past years China put extensive effort into building up its cyber, air, sea, land, and personnel capabilities. In recent years the US advantage has eroded across domains, particularly in a Taiwan scenario and in the case of an air base or antisurface warfare scenario.<sup>9</sup>

### **Human Attrition**

The challenge of human attrition has the greatest impact on will to fight, further compounded by the likely decrease in end strength over time, longer replacement times for high-tech weapons expertise, and strains on the force without significant personnel change. So, is the US military bench deep enough to sustain any kind of large strike against it or a prolonged land war?

The US has not had to face a scenario in which it loses significant numbers of military personnel since the Cold War, nor has it had to mobilize outside the professional military since the Vietnam War. Coming out of the wars in Iraq and Afghanistan, the military, the public, and politicians experienced few service member casualties at any given time. Any conflict with China could immediately eclipse casualties of the past 17 years. Since 2001, fewer than 8,000 service members and Department of Defense civilians have died in the combined operations in Iraq and Afghanistan whereas the deadliest battles of WWI and WWII saw tens of thousands dead in a day.<sup>10</sup> The first 48 hours of a hot war—not to mention a prolonged conflict—with China could see the US lose that many or more troops; precision munitions will only increase casualty numbers.

Whether or not the US can sustain high levels of human attrition in GPC is highly dependent on the conflict setting. Political and societal will to continue the fight is the basis for sustaining warfare and can vary dramatically based on the perception of aggression (who started the fight), location of the attack (US overseas base or US territory), level of US casualties, and the level of US interests.<sup>11</sup>

High deployment and unit activity (OPTEMPO), personnel movement (PERSTEMPO), and deployment time during the Iraq and Afghanistan wars created turbulence and strained units, even as the military has become more experienced and professionalized.<sup>12</sup> In addition, the US has maintained an operational reserve through the wars in Afghanistan and Iraq, cyclically drawing on its reserve force for operations support. Yet US posture remains ready to “fight and win the wars of the future” and “preserve peace through strength.”<sup>13</sup> The question becomes whether a highly professional, voluntary, innovative military can overcome huge losses and remain an effective fighting force.

The experienced professionals of recent conflicts—especially since the withdrawal of troops from Iraq and drawdown in Afghanistan—have aged and been broken by years of service. In the next 10 to 15 years, the US military will lose the bulk of this professionalized force to the civilian world, and those with operational knowledge will be hollowed out. The Air Force already experiences a pilot shortage; the training time during mobilization would further strain the force. Similarly, the Navy may not be able to sustain attacks that take out a number of sailors. GPC warfare would further sap the Navy and Air Force of key personnel who are already spread thin across the force and are difficult to grow given training time constraints. Currently a small all-volunteer force, the Army struggled last year to meet its recruiting mission, just as the other services are finding it difficult to recruit specific skill sets. As the force becomes more technical, this trend will only continue. In each of the world wars, the US waited years before entering the conflict and relied heavily on allies to take the brunt of the casualties. In Vietnam, the military slowly grew its presence, only reaching peak strength in 1968—four years after first sending ground troops. Until the advent of the all-volunteer force in 1973, the US had a standing army designed to expand significantly in the event of a crisis. Today, especially in the face of high casualties, it could take years to develop and field a fully competent army.

Expecting public support of the will to fight cannot be assumed. The public understood the whole-of-nation implications of the world wars, but today’s professionalized force distances the public from war. This distance between the American public and its military has grown. Many new recruits join due to exposure: they have a family member who also serves. The development of a “warrior caste” has been cautioned against due to who is relied upon to go to war and how use-of-force decisions may be affected.<sup>14</sup> In a great power war, the warrior caste may affect public standing on going to war and will to fight. Today, the military is out of sight and



out of mind. Many parents and grandparents are tepidly supportive of military service and on the whole would not recommend it to their child or grandchild.<sup>15</sup>


## **Conclusion**

Given current national security and political concerns about great power conflict, political leaders would likely follow in the steps of FDR and push for mobilization to war.<sup>16</sup> The best way for the US government to motivate the public is to clearly define the aggressor. However, diminished public trust and confidence in government bodies is historically low.<sup>17</sup> While FDR's speech after Pearl Harbor was carefully crafted to elicit support for war with the Axis powers, today's public may have less faith in the veracity or motivations of government officials, even in times of conflict. Use of information warfare is on the rise, and adversaries will use their full capabilities to obscure and confuse reality.

Finally, the US goes to war with its allies. What allies would come to play against China? At the moment, the US is leading the charge for competition against multiple great power rivals while much of the world is not as concerned. Traditional support for US conflicts comes from Europe, though NATO will largely be irrelevant in the Pacific theater, with greater pressure on regional allies. Australia is the US's most reliable ally in the Indo-Pacific but finds itself questioning US commitment to the region in light of the US's strained force and other obligations. Economic ties with other nations and regional politics may complicate whether allies in the Indo-Pacific would be willing and able to support US efforts against China.

Because defense spending, training, and experience are not equal across allies, operational-level training could heighten the success of the US against an adversary when deploying with less-prepared allied troops. Years of democratic peace dividends and low levels of defense spending by allies has led to a lack of manpower to support the US in a large-scale conflict. Signaling from the Trump administration has damaged relationships with allies, sparking growing sentiment that our allies cannot rely on the US as they used to.<sup>18</sup> Long-term consequences of the erosion of US credibility call into question which allies would respond to a call for support against China.<sup>19</sup>

Casualties in a great power war would likely be in the thousands—much more than the slow drip of casualties in Iraq and Afghanistan. The public tolerance for casualties may be low compared to twentieth-century conflicts; such losses in a kinetic war with a near-peer competitor are likely to seem excessive by today's standards. RAND's study finds that “superior

capabilities and infliction of greater casualties should lead to victory.” However, when the will to fight is equal, it could lead to stalemate and make considerations of attrition critical to analysis of GPC war.<sup>20</sup> Policy makers and military planners must incorporate will to fight into their analysis and take a hard look at the potential realities of war with a great power rival if the US plans to succeed. 

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**Notes**

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# Through the Glass—Darker

JAMES WOOD FORSYTH JR.

ANN MEZZELL

*The texture of international politics remains highly constant, patterns recur, and events repeat themselves endlessly.*

—Kenneth Waltz

*Theory of International Politics*

## Abstract

In 2007 we argued against what many scholars incorrectly and dangerously assumed was the end of great power wars in the future. Their arguments centered on the power of technology, economics, democracy, or ethical norms to prevent war. However, none of these concepts make great power war unthinkable. While all of these arguments might remain appealing in theory, in practice they are at best optimistic and at their worst dangerous. Should the United States find itself in another great power conflict, capabilities taken for granted today—like air superiority or control of sea-lanes—might not exist tomorrow. The US must think seriously about how a great power conflict could occur, how it could be prevented, and how it would be fought and won. Technology, economics, democracy, and norms play a role in preventing great power war, but they do not make it unthinkable. Thus, great power war has a bright future, however tragic that might seem.

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In the fall of 2007, in its inaugural edition, *Strategic Studies Quarterly* published “Through the Glass Darkly: The Unlikely Demise of Great-Power War.”<sup>1</sup> As the title suggests, the article focuses on the texture of international politics and the tragic, albeit recurring pattern of great power conflict. Essentially, it argues that the contemporary challenges posed by terrorists and insurgents were no match for the real danger that lay ahead: namely, the return of great power war. To be sure, the mood of the day assured everyone that great power war was dead; we were not convinced.

Looking back, some of the popular writing at the time in support of the demise of great power war appears quaint. In *The Pentagon’s New Map*, a book widely read by insiders at the Pentagon and the general public, Thomas Barnett argues that “big wars are out, small wars are in.” He went so far as to conclude that “state-on-state war has gone the way of the

dinosaur.”<sup>2</sup> Similarly, Thomas Hammes in *The Sling and the Stone* makes the case that the “strategic concepts, operational execution, and tactical techniques of fourth-generation warfare require major changes in the way we think” about war and peace.<sup>3</sup> His view of war, which was closer in comparison to a giant versus a pygmy than a new way of war, incorrectly and dangerously assumed away the potential of great power wars in the future. Indeed, both authors believed that the United States would remain, for an indefinite period, hegemonic. No doubt, the United States is a powerful country, and with Canada to its north and Mexico to its south, it enjoys regional hegemony. This hegemony, however, is relative as recent events in Venezuela, other parts of Latin America, and the arctic attest. The uncomfortable fact is that the United States is not as powerful as some presumed, nor is the necessity of its leadership—once deemed “essential” to the world—a universal belief. China, Russia, and India are all appealing in their own way, and this poses challenges to US dominance—which is another way of saying that great power rivalry is back and, with it, competition and perhaps war.

In retrospect, when “Through the Glass Darkly” was published, the arguments used to consign great power war to the graveyard of history rested on a cosmology of interrelated and highly optimistic assumptions regarding the relationship among technology, economics, democracy, norms, and military affairs. It is important to stress that these ideas were not just academic musings. They took hold and formed the backbone of the United States’ transformation efforts—a set of reforms that influenced policy decisions, which will affect the nation for years to come. These reforms helped launch what one analyst called a “radical restructuring of US defense policy that is neither necessary nor desirable.”<sup>4</sup> In December 2004, Secretary of Defense Donald Rumsfeld stated, “You have to go to war with the Army you have, not the Army you might want.”<sup>5</sup> As the 2007 article observed, “The necessity or desire to transform America’s military ultimately rests with policy makers, but it is high time that scholars question what can only be described as a wellspring of belief that the era of great-power war has ended, lest we find ourselves going to war with a military that we do not want.”<sup>6</sup>

It is in that spirit that we return to the original article and assess the veracity of its claims. Like its predecessor, this examination is divided into five sections. The first considers the events of September 11 and the effects they did and did not have on international politics. The second looks at the relationship between technology and deterrence. The third section focuses on the supposed pacifying effect of economics on state behavior, while the

fourth does the same for democracy. Finally, the article considers the trendy notion that great power war is going the way of slavery—that is, war is becoming normatively prohibited. At the outset we should be clear—the question is not whether technology, economics, democracy, or ethical norms put a brake on war. In some cases they do. Rather the issue is, Does any one of these make great power war unthinkable? While all of these arguments might remain appealing in theory, in practice they are at best optimistic and at their worst dangerous.

### **September 11 and International Politics**

The post-9/11 years were largely defined by the claim “We’re living in a whole new world.”<sup>7</sup> When speaking at McChord AFB in 2003, Vice President Dick Cheney acknowledged, “9/11 changed everything for us. 9/11 forced us to think in new ways about threats to the United States.”<sup>8</sup> In 2005, historian John Lewis Gaddis argued that the “surprise attack shattered American assumptions about national security and reshaped American grand strategy.”<sup>9</sup> Yet, just years removed from the terrorist attacks, others began calling for more realistic assessments of 9/11’s impact on international politics. The assumption that the attacks signaled a “great change in the architecture of world politics,” they asserted, was “largely a delusion.”<sup>10</sup> As Robert Kagan wrote in 2008, those who regarded 9/11 and its aftermath as a harbinger of US decline failed to recognize that the US had weathered far more “disastrous” threats to its position, even at the heights of its post-WWII power. China’s fall to communism, the Korean War, Soviet nuclear tests, and nationalist turbulence in Indochina, said Kagan, came much closer to upsetting US relative power than the 9/11 attacks or their fallout.<sup>11</sup>

Thus, the original article’s claims about the effects of the September 11th terrorist attacks were not only well supported at the time of its publication, but continue to hold merit today. The terrorist attacks “killed thousands,” “shocked . . . the world,” and “altered many of the aspects of the way [states] do business.”<sup>12</sup> Yet they did nothing to fundamentally alter the nature of international politics: anarchy remained the defining condition, states remained the primary actors, and states’ impulses to ensure survival under anarchy—by balancing or building against other powerful states—guaranteed that the risk of great power war remained an ever-present reality. Claims that a “whole new world” of international politics had materialized were quickly upset by the reemergence of great power politics. Indeed, as previously mentioned, the return of great power competition is already upon us; the 2018 National Defense Strategy clearly specifies that “inter-

state strategic competition, not terrorism, is now the primary concern in U.S. national security.”<sup>13</sup> And it seems plausible that the resumption of interstate strategic competition may have actually been hastened and magnified by the US responses to the 9/11 attacks.

In retrospect, post-9/11 foreign policies failed to account for the realities of ever-present interstate competition; if anything, they expedited the resumption of great power rivalry. Even in the early days of the coalition war in Afghanistan, strategists questioned the possible fallout from military interventionism. As the Bush administration’s ambitions expanded to include a “global” war on terror, the turn away from restraint and toward primacy prompted noted strategy experts to urge caution. Fifteen years after the attacks, their once subdued calls for moderation had crystallized into open criticism of the United States’ maximalist foreign policies. Crime and terrorism, said John Mearsheimer and Stephen Walt, were certainly vexing problems. But they were “hardly existential threats”; as such, they did not warrant the type of reactions comprising the global war on terrorism (GWOT).<sup>14</sup>

Generally, the displays of American power raised wide-ranging concerns—particularly among potential competitors—about US intentions for employing its extraordinary capabilities.<sup>15</sup> They also provided potential competitors like China and Russia with a crucial advantage: the GWOT “distracted the United States’ strategic focus away from them” and offered an inadvertent strategic edge.<sup>16</sup> America’s long-term distraction with violent extremist organizations arguably stretched its capabilities to the point that the US sacrificed preparation for the challenges of looming great power conflict. Faced with a rising China and a revanchist Russia, the United States and its Western allies now have to overcome the effects—namely, “strategic atrophy”—of their post-9/11 preoccupation with “the wrong kind of warfare.”<sup>17</sup>

The US now finds itself at a disadvantage with respect to China’s ascendance, and this could be problematic. China’s efforts to shape its sphere of influence drew little attention during early post-9/11 US adventurism. Yet China has since lost the ability to “disguise its rise.”<sup>18</sup> Its ambitions for shaping its sphere of influence—and more specifically, for limiting US ability to project power in the Indo-Pacific region—are abundantly evident. Xi Jinping seems far less concerned with keeping a low profile and avoiding entanglement in international conflicts than with advancing China’s assertiveness on the world stage (notably, in the form of the Belt and Road Initiative). China’s ambition risks instilling fear in the United States, creating the possibility that it will react fearfully rather than

rationally. This climate increases the likelihood of a great power war.<sup>19</sup> While the logic might be unduly alarmist, it nonetheless raises the possibility that US “catch-up” responses to the “sudden” rise of China are apt to be viewed as threatening.

### **Technology Will Not Deter Great Power War**

As the article argued in 2007, “technological shifts have continuously altered the methods of war,” but in the end, “political arrangements matter, and the deterrent effect of any weapon should be evaluated within the context of the structure of the international system.”<sup>20</sup> This claim is as true now as it was then. Indeed, one might conclude that structure matters even more now than it did 10 years ago, given the shift to multipolarity.<sup>21</sup> Under “lopsided” multipolarity—where the United States outweighs both China and Russia militarily—it will maintain power advantages on some fronts, but at smaller margins than it did during the unipolar moment when it reigned supreme. Power diffusion, and related great power competition concerns, will be governed by the continued growth of Asian economic and military clout predominantly from China and India and the relative decline of Western economic influence.<sup>22</sup> As China continues to translate economic gains into military modernization, the US will “focus mainly on countering China.”<sup>23</sup> Avoiding the perils of security competition will require that the US be more cautious about exercising its power abroad.<sup>24</sup>

Yet exercising diplomacy and restraint could prove to be challenging. Even scholars who adopt a more circumspect view of emerging multipolarity, and the implications of growing military-technological parity, acknowledge its underlying risks. Barry Posen, who questions the assumption that multipolarity is inherently unstable, nonetheless acknowledges that growing parity will only “mute” great power competition. The diffusion of power will not eradicate “great power adventures.”<sup>25</sup> China’s rise is apt to entail alliance reconfigurations and temptations to employ conventional military power.<sup>26</sup> In fact, just as the original article predicted, the United States and India, Russia and China, and France and Germany have taken steps toward tightening their security relationships. China’s progress toward narrowing its power gap with the US has already met with a return to US defense budget growth and the establishment of new US defense cooperation commitments—notably with India. In parallel, China and Russia have grown closer, with Presidents Xi Jinping and Vladimir Putin meeting three times in 2018 and China sending a “strong supporting contingent” to Russia’s Vostok-2018 military exercises.<sup>27</sup>



Given the complexities and uncertainties of multipolarity, the US arsenal of advanced conventional weapons (and those of other great powers) may not only prove ill suited to deterring great power war but also provide occasion for its inadvertent onset. The stealth, speed, and lethality of advanced conventional technologies—allowing for quick and decisive US victories in the Persian Gulf (1991), Kosovo (1999), and Afghanistan (2001)—have proven increasingly enticing to other great powers. Russia and China drew similar lessons from these conflicts, each embarking on military modernization programs geared toward antiaccess/area-denial (A2/AD) and grey zone strategies.<sup>28</sup> Advanced conventional weapons already undergird Russia's and China's respective salami-slicing campaigns in Eastern Europe and the South China Sea. Russia began modernizing its military following its 2008 war with Georgia, enhancing its ground force readiness and updating its integrated air defense system. The improvements have allowed for significant defensive and force-projection gains (against border states).<sup>29</sup> Though Russia has since dialed back modernization efforts in the wake of its economic downturn, China continues to seek avenues for undermining the United States' conventional weapons edge. The People's Liberation Army (PLA) still trails the United States in the areas of innovation and operational proficiency. Its modernization achievements, though—especially the development of intermediate-range missiles that threaten US forward bases and carrier strike groups—have substantially augmented China's "advantage of proximity in most plausible conflict scenarios."<sup>30</sup>

As great power rivals continue to chip away at the United States' once considerable smart-weapons advantage, national security experts are re-evaluating the viability of deterrence. On this front, the diffusion of capabilities, as well as the expansion of competition to the space and cyber domains, do more than complicate appraisals of the balance of power; they threaten to upend the foundations of deterrence.<sup>31</sup> The arrival of dual-capable hypersonic weapons (and delivery systems)—currently being designed and tested by the US, China, and Russia—will arguably risk jeopardizing strategic stability. Their ultrahigh velocity could reduce warning time to the extent that "a response would be required on first signal of attack"; likewise, their deployment in ready-to-launch mode could trigger preemptive strikes, as others might perceive it as a sign of impending attack.<sup>32</sup> Further, cyber weapons' potential for disabling an opponent's "early warning and command systems" may diminish the expected costs of first strike under crisis conditions.<sup>33</sup> Autonomous weapons also have the potential to fundamentally alter the psychological underpinnings of strategy.

And, as Kenneth Payne notes, there is no “a priori reason” to expect that substituting artificial intelligence (AI) for human intelligence—that rapid, accurate, and unbiased information processing and responses—“will necessarily be safer.” Because AI limits the risks of using force, it could make conflict more acceptable to risk-averse states; because its speed and precision favor the offense, it could prove more conducive to aggression than deterrence; and because it shapes a host of processes and technologies rather than a single weapon or system, its effects on strategy (and the challenges of its regulation) could prove counter to deterrence.<sup>34</sup>

As noted in the original article, nuclear weapons helped sustain the “cold peace” during the Cold War—not because of their awesome destructive power but because that awesome destructive power helped buttress bipolarity.<sup>35</sup> The simplicity of bipolarity and superpower balancing, in turn, limited “the dangers of miscalculation and overreaction.”<sup>36</sup> Multipolarity, though, makes for complexity; additional great power players provide additional opportunities for miscalculation and overreaction. Given these conditions and the perceived “usability” of advanced conventional weapons relative to nuclear weapons, it seems likely that they will fall short of yielding “the kinds of political structures necessary to enhance deterrence.”<sup>37</sup> To counter Posen, the diffusion of advanced conventional technology may well have cheapened the near-term costs and risks of going to war, and particularly engaging in hybrid warfare. Even if the US manages to avoid a direct confrontation with Russia or China, it seems increasingly plausible that it could be dragged into a conflict involving one or more of their allies.

### **Globalization Will Not Bring Eternal Peace**

One of our central claims in 2007 concerned globalization and peace. As the article put it, “Economic interdependence does bring nations close together, but interdependence does not seem to be capable of altering the basic nature of international relations, which deals in the currency of politics, not economics. . . . International peace, which is underwritten by the great powers, produces interdependence—not the other way around.”<sup>38</sup> And indeed, in keeping with the projections of the 2007 article, the “third wave” of globalization, and its disruptive intersection with emerging multipolarity, did little to quell the return to great power competition.<sup>39</sup> Rather, it helped destabilize relations between the great powers, just as the “second wave” did in advance of the First World War. Three items merit attention: the limitations of globalists’ claims about the pacifying effects of economic interdependence; the parallels between historical and contemporary waves

of globalization, which confirm that interdependence ultimately yields fear and insecurity; and the implications of present-day globalization backlash.

With respect to the first point, the original version of this article appropriately lamented the noted globalist claim that “trade promotes peace,” citing the works of Norman Angell and Thomas Friedman. Though Angell’s *The Great Illusion* focuses on the pre-WWI Europe and Friedman’s *The World Is Flat* on the post-Cold War peace, they share a similar position: that economic interdependence, and the gains derived from it, should have a preventive effect on conflict. It is worth noting that neither Angell nor Friedman predicted that globalization would bring an end to war. Both were more circumspect. Angell claimed that globalization should deter war, save world leaders’ “great illusion” that taking up arms could improve a state’s standing.<sup>40</sup> Friedman, in turn, openly acknowledged that he held “no illusions” that “[commercial peace theory] or anything else will stop China from invading Taiwan if Taiwan declares independence tomorrow.”<sup>41</sup> In other words, even the noted globalists of the early twentieth and twenty-first centuries recognized the limits of globalization’s power to transform the course of great power politics.

Second, parallels between the globalization-competition correlations of the early twentieth and early twenty-first centuries bolster the long-held realist position that interdependence ultimately yields insecurity.<sup>42</sup> While Angell and Friedman acknowledge the limitations of globalization, their shared argument—that economic and technological interdependence curb opportunities for conflict—ignores crucial historical realities.<sup>43</sup> As historian Margaret MacMillan aptly notes, “What Angell and others failed to see was the downside of globalization.”<sup>44</sup> Globalization is marked by the increasingly efficient distribution of people, goods, services, and capital. While efficiency creates gains for some, it generates losses for others.<sup>45</sup> As gains and losses are reflected in changes to the balance of power, tensions arise; declining states become fearful of rising states’ intentions and vice versa. Declining states seek to preserve the existing balance of power, and rising powers seek to augment it. Their internal and external balancing behaviors of building arms and building alliances increase the risk of an attendant spiral to war. Simply put, globalization destabilizes, particularly when it advances the transition to multipolarity. The wave of globalization preceding WWI, for example, met with German gains on British economic power.<sup>46</sup> In spite of the fact that they were each other’s chief trading partners, Britain had become increasingly concerned by Germany’s economic ascendance. By the mid-1890s, it had begun to perceive Germany as a competitor for markets and colonies. When Germany

initiated its naval buildup in 1898 to enhance its ability to compete with the UK, Britain responded in kind, kicking off a naval arms race. The consequent security spiral helped pave the way to war.<sup>47</sup> The same pattern is exhibited in Germany's apprehensions of Russia's trading and industrial advances. Most German leaders were dismissive of Russia's military power; they worried, though, that its economic development and its rearmament program could pose future challenges. This fear, in turn, helped accelerate Germany's "rush" to war.<sup>48</sup>

It should come as little surprise that the present wave of globalization—which met with relative gains for China and relative losses for the United States—has contributed to heightened suspicion, tension, and fear between the two powers. The United States' present-day competition with China shares some key similarities with Britain's prewar competition with Germany. Just as Germany lagged behind other European powers prior to the onset of the industrial age, China lagged behind other great power states prior to the onset of the information age. And just as Germany became a leading industrial state within half a century, so too did China. China's integration into the global market, beginning with Deng Xiaoping's economic reforms of the late 1970s, coincided with the onset of the digital revolution. Over the next four decades, China achieved the "fastest sustained expansion by a major economy in history."<sup>49</sup> In 1978, it accounted for less than one percent of world trade; by 2013, it had surpassed the US as the world's largest trader of goods.<sup>50</sup> Much like Britain began to view Germany with suspicion near the beginning of the twentieth century, the US has become far more wary of China than it was in the 1990s. Despite the fact that the US and China are each other's largest trading partners, the growth in trade between the two has done little to subdue mutual reservations.<sup>51</sup> If anything, it may yield an even "scarier" form of globalization backlash than that which preceded the First World War: the UK sought to preserve most of its commercial ties in the early twentieth century while the US appears to be curtailing them.<sup>52</sup> Emile Simpson highlights the stark contrast between American leaders' perspectives on China at the turn of the century and the present day. In the early 2000s, he notes, they praised its participation in the globalist moment; by 2017, the US National Security Strategy decried China's challenges to "American power, influence, and interests" and its efforts to "erode American security and prosperity."<sup>53</sup>

Finally, US forays into countering globalization's unforeseen effects are apt to generate security risks similar to those Britain assumed before WWI. US efforts to shore up waning hegemony by (re)building and exer-

cising its vast power-projection capabilities, reminiscent of Britain's imperial overextension of the early 1900s, could ultimately undermine stability.<sup>54</sup> The United States is still coming to grips with the need to curb China's aims in the Pacific. While the US Navy is "shrunk and overworked," the PLA navy is now the largest (in raw numbers of warships and submarines, though not in tonnage) and fastest growing in the world.<sup>55</sup> Xi Jinping identifies the PLA's naval buildup and modernization as crucial to China's strength, prompting some to draw parallels between Xi and Kaiser Wilhelm.<sup>56</sup> Though China's fleet is far less advanced, it has nonetheless allowed for the expansion of Chinese dominance in the South China, East China, and Yellow Seas. Indeed, the Pentagon's attempt to compensate for two decades of underinvestment during China's military modernization and A2/AD advancements may herald the next phase of a spiral toward conflict. The Pentagon has reportedly assembled war plans to account for a possible confrontation with China. It is also expanding and refurbishing the US fleet and fast-tracking weapons development and acquisition efforts (most notably, for longer-range missiles).<sup>57</sup> Meanwhile, US partners and allies are prodding the United States to play a greater role in the Indo-Pacific region, offset Iran's ambitions in the Middle East, and deter Russian incursions into the Baltics . . . at the same time the US is trying to back away from its role as the global policeman.<sup>58</sup> In other words, the need for US architectural planning—particularly with respect to China—may be disrupted by calls for firefighting. The push to fight fires rather than craft and execute measured plans is problematic; it not only derails the US ability to best prepare for great power competition but also generates the additional risk of stumbling blindly into great power war.

### **Democracies Will Not Guarantee Tranquility**

The positive relationship between democracy and peace held considerable sway in 2007. Although not popular at the time, the article argued that "relations between democratic states are not by default peaceful because democracies are states, and all states, presumably, have interests, not the least of which is survival. . . . When interests compete, as they tend to do, conflict arises—regardless of the form of government."<sup>59</sup> No doubt, the peaceful end of the Cold War sparked new interest in the ostensible "universalization" of liberal democracy as well as its implications for great power state behavior.<sup>60</sup> Scholars drew attention to the apparent correlation between the presence of democracy between states and the absence of war.<sup>61</sup> Influenced by democratic peace scholarship, and the seeming affirmation of the United States' Cold War democratization efforts, policy

makers called for increased efforts toward democracy promotion abroad. Greater numbers of democratic states, they reasoned, would make for greater stability in the international system. Twenty years removed from the “liberal democratic moment,” it seems as clear as ever that states’ domestic politics have little influence on their international behaviors. Persistent questions about the causal links between democracy and peace, coupled with fallout from the US democratization efforts of the 1990s and the early GWOT period, have chipped away at the prevalence of democratic peace studies and policies.

Democratic peace scholars traditionally attribute the absence of war between democracies to two key factors: normative preferences for nonviolent dispute resolution and institutional incentives for foreign policy caution (as risky wars may cost elected leaders their seats). Both claims are widely contested. Democracies are no less war-prone, overall, than autocracies. Indeed, democracies quite commonly violate liberal-humanitarian norms during the initiation and execution of wars.<sup>62</sup> Authoritarian leaders also face domestic constraints on their decisions to go to war; their decisions to use force are typically far less rash than democratic peace theorists allow.<sup>63</sup> Saddam Hussein’s 1990 invasion of Kuwait, for example, was arguably based on a reasoned assessment of Iraqi vulnerabilities following the Iran-Iraq War of 1980–88. His decision to go to war likely had more to do with the balance of power in the Middle East than his institutionally unchecked recklessness.<sup>64</sup> Finally, the “empirical law” that democracies do not go to war with other democracies may be far less concrete than previously acknowledged. As noted in 2007, “a case can be made that the War of 1812, the American Civil War, the Boer War, the Spanish–American War, and even World War II saw democracies fighting against other democracies.”<sup>65</sup> Further, recent research indicates that “the risk of conflict between democracies has increased as the world has become more democratic.”<sup>66</sup>

Academic debates aside, the ramifications of US democratization efforts of the 1990s and early 2000s require serious deliberation. The Clinton and Bush administrations maintained broad faith in the power of democratic ideals and institutions; both upheld democracy promotion as a linchpin of US grand strategy. In the name of shoring up democracy abroad, Clinton expanded foreign assistance to newly independent states in Eastern Europe. Bush, in turn, justified the 2003 invasion of Iraq (in part) as a critical step toward securing democracy in the Middle East.<sup>67</sup> Despite their centrality to US grand strategy, these democratization endeavors yielded unforeseen fallout—chiefly, growing resistance to US interventionism. Russia viewed US assistance to Eastern Europe as a threat

to its own sphere of influence. In 2008, it launched a war to back separatists in South Ossetia and Abkhazia; in 2014, it advanced into Ukraine and annexed the Crimean Peninsula. China, in turn, was initially opposed to the US war in Iraq. It has since exploited instability in the Middle East to its own advantage, forging ties through its Belt and Road Initiative and bolstering its regional presence and access to energy resources.<sup>68</sup> Despite the costly lessons gleaned from its efforts in Eastern Europe and the Middle East, the United States remains, in Stephen Walt's words, famously "bad at promoting democracy" abroad.<sup>69</sup>

Essentially, both democratic peace scholarship and democracy promotion policies are dismissive of "the essence" of great power politics: interests, rather than ideals or institutions, drive state behavior.<sup>70</sup> Regardless of its ordering effect on a state's internal politics, democracy holds no such effect on international politics. Great power states ensure their survival by protecting and pursuing vital interests (by maintaining or building power). That states act on their interests is a constant of international politics; that states may choose to act on their democratic ideals or institutions is a convenience of their position in the international system. Given the realities of emerging multipolarity, the US would do well to curtail ambitions unrelated to power maintenance. As Parag Khanna warns, democratic peace theory and its related policy offshoots may be "inspirational and aspirational," but they offer few practical applications in the contemporary security environment.<sup>71</sup>

## **Norms Are Not Enough**

Lastly, neither democratic norms nor norms broadly writ have a discernible effect on the incidence of great power war. An honest assessment of the historical record reveals that few great power states behave in accordance with the purported standards of good behavior in the international system (unless their relative power allows or calls for it). In response to the carnage of the First World War, great power leaders sought options for guarding against a return to conflict, enshrining norms against aggressive war in the Covenant of the League of Nations and the Kellogg-Briand Pact. The covenant called for steps toward disarmament (the reduction and regulation of armaments) and protections for self-determination, while Kellogg-Briand codified a narrow range of acceptable bases for going to war. Absent a hegemonic rules enforcer, or two powerful blocs balancing "around" the rules, expansionist provocations from Germany, Japan, and Italy went largely unchecked. The tensions and competition inherent

in multipolarity overcame normative impulses against war, paving the way to the Second World War.

Even beyond the realm of war, norms have little influence on great power state behavior. If anything, great powers traditionally exploit norms-based rhetoric to justify their efforts to maintain or maximize power. The British and French defended their colonial exploits as efforts to “modernize” and “civilize” non-European peoples; Americans rationalized their Cold War interventions as attempts to “democratize” developing states.<sup>72</sup> Even at the height of its post-Cold War power, the United States rarely acted against violations of international norms when its interests were not at stake. It intervened in Haiti in 1994 under the guise of “restoring democracy” to the country. Yet policy makers were likely just as concerned with staving off an influx of Haitian refugees as they were with the integrity of Haiti’s political system. The United States did not intervene in Rwanda in 1994. Despite overwhelming evidence that genocide was underway, the US was ill prepared to act in a part of the world where it maintained few vital national interests. When it became clear that the American unipolar moment was waning, US leaders shied away from acting on norms even when US interests were (arguably) at stake. The United States took no action in response to Russia’s 2008 incursions in Georgia or its 2014 annexation of Crimea, as it hoped to avoid triggering conflict with another nuclear-armed state.<sup>73</sup>

The realist tradition embraces this amoral view of international politics; it calls on us to “see the world as it is, not as we would like it to be.”<sup>74</sup> To do otherwise—to act based on abstract values rather than historical truths—risks sacrificing the plausible attainment of security for the implausible attainment of the “absolute good.”<sup>75</sup> Though critics of this perspective claim that it is unduly bleak, noting that states routinely act in accordance with international norms, realists turn to historical precedent. Thus, structural realists warn US national security leaders against forays into normatively inspired adventurism. Efforts to remake the world in accordance with international principles or American values, they note, will do little to stave off threats to vital interests. In fact, they may actually trigger such threats.

Liberal internationalist and neoconservative policy agendas, says Mearsheimer, are far more likely to yield conflict than observance of strategic restraint.<sup>76</sup> In other words, if the US hopes to avoid stumbling into great power war, it would do well to align its behavior with rational assessments of the balance of power rather than with the tenets of international good behavior. Walt and Mearsheimer assert that a rational evaluation of the current distribution of power calls for offshore balancing: encouraging



other states to assume greater responsibility for checking rising powers and exercising US might only when necessary. The strategy does not call for a complete disavowal of an international role for the United States but for focusing action on cases in which American ends are clear and achievable.<sup>77</sup> Such an approach would arguably help to preserve US strength; it would require that leaders prioritize national interests and political realities over moral aspirations. As Walt reminds us, “International politics is a contact sport, and even powerful states must compromise their political principles for the sake of security and prosperity.”<sup>78</sup>

## Conclusions

Contrary to the spirit of 2007, we are not living in a whole new world. The events of September 11 and the wars that have followed have had a pronounced effect on US foreign and defense policy, but they have not done away with the state system. The world is still made up of states—large and small—that must look out for themselves. To pretend otherwise is to neglect history or to fall prey to presentism—something common among pundits but dangerous for statesmen and members of the armed forces. That being the case, it is worth remembering that the most serious threats to the great powers have historically stemmed from other great powers. In the years ahead, as strong challengers emerge, conflicts will arise—making war among the great powers more, not less, likely.

The implications of great power war are easier to grasp than to implement. The US must think seriously about what a great power war would look like, how it could occur and be prevented, and how it would be fought so it can gain some understanding about the equipment and forces needed to fight and win. Thinking about future war does not mean the United States should ignore current threats or overlook the need to relieve misery and suffering around the world. As citizens, we should be concerned with the political and human consequences of poverty, ecological degradation, and population growth. We must also fully address the problem of terrorism. But as real as the consequences of poverty, ecological degradation, population growth, and terrorism might be, it is hard to come up with a realistic scenario involving these tragedies that would alter the balance of power.<sup>79</sup> Put simply, we cannot neglect the basics. Should the United States find itself in another great power war, capabilities taken for granted today—like air superiority or control of sea-lanes—might not exist tomorrow. That technology, economics, democracy, and norms play a role in preventing great power war is not the issue. The issue is whether they

make it unthinkable. Regrettably, they do not. Thus, great power war has a bright future, however tragic that might seem. **SSQ**

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### Notes

1. Author's note: Col Thomas E. Griffith, Jr., USAF, is the co-author of the original article.

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3. Col Thomas X. Hammes, *The Sling and the Stone* (St. Paul, MN: Zenith Press, 2004), 5, passim.

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15. G. John Ikenberry, “Strategic Reactions to American Preeminence: Great Power Politics in the Age of Unipolarity,” report to the National Intelligence Council, 28 July 2003, [https://www.belfercenter.org/sites/default/files/files/publication/strategic\\_reactions.pdf](https://www.belfercenter.org/sites/default/files/files/publication/strategic_reactions.pdf).

16. Kagan, “September 12th Paradigm,” 33.

17. Mattis addresses the subject of “strategic atrophy” in the introduction to the *Summary of the 2018 National Defense Strategy*, 1. Jyri Raitasalo suggests that the US preoccupation with the “wrong kind of warfare” has worked to its detriment. See Raitasalo, “Big War Is Back,” *The National Interest*, 8 September 2018, <https://nationalinterest.org/feature/big-war-back-30802>.

18. John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton and Company, 2014).

19. Graham Allison, *Destined for War: Can America Escape Thucydides’ Trap?* (Boston-New York: Houghton Mifflin Harcourt, 2017).

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21. In 1991, China’s GDP totaled \$383 billion and the United States’ totaled \$6.174 trillion; since the end of the Cold War, China’s GDP has jumped to \$12.24 trillion and the United States’ to \$19.39 trillion (2017 figures). While the US annual GDP growth over the 27-year period averaged 2.44 percent, China’s averaged 9.75 percent. China’s military spending, as a percent of GDP, remained relatively steady across the period, hovering around the 2 percent mark (averaging 1.95 percent across the period); US military spending fluctuated in conjunction with the end of the Cold War and the onset of the GWOT (averaging 3.74 percent across the period). China and the United States are set to spend \$178 and \$622 billion, respectively, on defense in 2019; they are projected to spend at roughly equal levels, \$1.270 trillion and \$1.335 trillion, by 2045 (numbers adjusted for purchasing power parity [PPP]). For historical GDP and defense spending data, see World Bank DataBank country indicators, including those available at <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>, <https://data.worldbank.org/indicator/MS.MIL.XPND.CD?view=chart>, and <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?view=chart>. For projected defense spending data, see Ministry of Defence, *Global Strategic Trends—Out to 2045*, 5th ed. (United Kingdom: Ministry of Defence, Strategic Trends Programme, Development, Concepts and Doctrine Centre, 2014), [https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/MinofDef\\_Global%20Strategic%20Trends%20-%202045.pdf](https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/MinofDef_Global%20Strategic%20Trends%20-%202045.pdf).

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23. Walt.

24. Walt.

25. Barry R. Posen, “Emerging Multipolarity: Why Should We Care?” *Current History* 108, no. 721 (November 2009): 350–52.

26. Posen, 350. Also see Walt, “What Sort of World?” Walt contends, “In practice, this will mean maintaining, deepening, and if possible expanding America’s alliance ties there, even as China tries to push the U.S. out and bring its neighbors into its own loose sphere of influence. Maintaining the U.S.’s position in Asia will not be easy[;] because the distances are vast, America’s Asian allies want to preserve their current economic ties with China, and some of those allies don’t like each other very much. Holding this coalition together will require deft U.S. diplomacy . . . in short supply of late, and success is by no means certain.”

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33. Krepinevich, “The Eroding Balance of Terror,” 66.

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35. Forsyth and Griffith, “Through the Glass Darkly,” 101–2.

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37. See VCDNP, event report, Sokov. Also see Forsyth and Griffith, 102.

38. Forsyth and Griffith, 105–6.

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77. Mearsheimer and Walt, "The Case for Offshore Balancing," 70–83.

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79. The exception, of course, is a ballistic missile attack from a nonstate actor. Should, however, any actor—person, state, or otherwise—launch a nuclear missile at the United States, that actor would be targeted and destroyed. What is more, states know this in advance, which is why we will not see anything close to what asymmetric doomsayers claim.

# Missile Defense for Great Power Conflict: Outmaneuvering the China Threat

HENRY OBERING III  
REBECCA L. HEINRICHS

## Abstract

China is modernizing its military to establish regional hegemony in the near term and global preeminence in the far term. The People's Liberation Army's crown jewel is its massive arsenal of missiles capable of ranging the US homeland and critical US bases that underpin US military power projection. To meet this challenge, it is imperative that the United States adapt its missile defense policy and strategy and leverage new technology to increase the capability of US missile defenses, and it must do so with a sense of urgency and purpose.

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China's concerted military ascendance over the past two decades—taken with its provocative behavior in its near-seas region, as well as its moves to become an authoritarian single-party system at home—demonstrates that Xi Jinping is not choosing a future of peaceful coexistence with the United States and our allies. China does not respect the sovereignty of other nations, nor does it share the US and US ally commitment to open access to international waters. Rather, China seeks to gain regional hegemony in the Indo-Pacific in the near term and eventually to replace the United States as the global preeminent power.<sup>1</sup> To implement its national ambitions, China has invested in an array of military capabilities. But the heart of China's military ascendance is its missile force. In 2015, Xi Jinping unveiled the most substantial People's Liberation Army (PLA) reforms in at least three decades. As part of those reforms to make the PLA more lethal, it elevated China's missile force to a full service by establishing the PLA Rocket Force (PLARF).<sup>2</sup>

The PLA has deployed thousands of ground-based ballistic and cruise missiles that can reach US bases and forces throughout the region. Most of these missiles are deployed on the Chinese mainland, but the PLA has

also deployed missiles on China's artificial islands in the South China Sea.<sup>3</sup> Of particular concern, approximately 95 percent of the missiles in the PLARF are in the 500 to 5,500 km range, meaning that critical US bases throughout Japan are within range of thousands of advanced ballistic and cruise missiles and are vulnerable to attack.

Based on these new realities, it is imperative that the United States adapt its missile defense policy and architecture and more heavily incorporate missile defense as we strive to establish effective deterrence and defense should deterrence fail. A missile defense architecture that leverages modern technology and meets the challenges posed by China's current and future missile force must prioritize a substantial increase in the number of air and missile defense systems for the regional context and also include those for defense of the US homeland.

Most importantly, though, the missile defense architecture must thoroughly incorporate the space domain by using not only space sensors to track ballistic and nonballistic missile threats and to enable a shorter intercept time but also a space-based intercept platform to complement—not replace—the spectrum of ground- and sea-based systems. Such an architecture would seek to give the United States a more effective ability to destroy Chinese missiles in their midcourse phase and, for the first time, the means to destroy enemy missiles in their boost phase. Building out these capabilities in the space domain to complement current systems will require leveraging new technologies and investing hefty resources. However, there are promising technologies ready for testing now, and the financial cost, considering its payoff, is entirely reasonable.

Through its missile force, the PRC can coerce and blackmail the United States even in a time of peace. Chinese missiles threaten to push the United States out of the Indo-Pacific region, limit US movement, and preclude certain decisions—including coming to the aid of allies—by raising the cost of defensive military intervention. The Chinese military currently enjoys coercive power over the United States and would otherwise gain should we fail to act. To increase its freedom of action, the United States must seek to close the gaps and vulnerabilities that the PLA has sought to exploit, and it must do so with a sense of clear purpose and urgency.

The United States has come a long way in developing and deploying credible missile defenses against rogue actors and integrating them into our strategic posture. The Trump administration has built onto the work of the Obama and Bush administrations and has sought to elevate missile defense in the context of strategic competition with China and Russia. Despite these improvements, current efforts to meet modern challenges



fall woefully short. The Trump administration's *Missile Defense Review* (MDR) does not specify plans for adapting the missile defense architecture to bolster deterrence against China and defend the interests of the United States and its allies if deterrence fails. Moreover, while the United States has a space-based early warning capability and each of the last five administrations has included a space-based missile-tracking layer in its plans for missile defense, no administration has turned the idea into reality. US officials have repeatedly stressed the need to have a space-based tracking layer if we are to have any serious defense against Chinese missiles. Meanwhile, China continues to take advantage of US inaction.<sup>4</sup>

### **China's Missile Force: Advanced with Strategic Implications**

For decades the United States has enjoyed uncontested military superiority over China in every operating domain. Illustrating this point, in 1996 China fired short-range ballistic missiles (SRBM) into the ocean near Taiwan in an apparent effort to compel Taiwanese voters to elect a government less friendly toward Taiwan independence. The United States signaled its support of Taiwan versus Chinese aggression by dispatching two aircraft carrier battle groups to Taiwan's surrounding waters. The Chinese military was unable to target them. At the time, China had only a small quantity of SRBMs with far more limited accuracy than today. PLA missiles could not reach US bases in Japan.<sup>5</sup> By having the far superior military capability with out-of-reach aircraft carriers and key bases, the United States possessed a more credible deterrent against Chinese aggression. Today, the US ability to deter a Chinese attack is in question. China can reach US forces and has a massive missile force able to accurately range US regional and homeland targets.

US forces in the Indo-Pacific serve US interests in a variety of ways. Almost 30 percent of the world's maritime trade transits the South China Sea each year, including approximately \$1.2 trillion in US imports.<sup>6</sup> The Indo-Pacific region is "a vital driver of the global economy and includes the world's busiest international sea lanes and nine of the ten largest ports. The Asia-Pacific is also a heavily militarized region, with seven of the world's ten largest standing militaries and five of the world's declared nuclear nations."<sup>7</sup> Broadly, US forces in the region provide assurance to allies, deter shared adversaries, and guarantee that the United States maintains its ability to freely access the sea-lanes where so much international trade passes. Now, those US air bases and assets in the Indo-Pacific have become so vulnerable they have perhaps become tempting targets for Chinese attack.

Central to China's strategy to solidify its regional hegemony is its missile force designed to prevent the United States from intervening in the Indo-Pacific. Understandably, this capability is of acute concern to not only the United States but also US allies and partners.<sup>8</sup> In addition to its 90 intercontinental ballistic missiles (ICBM)—which include missiles that can reach most locations in the United States and have a multiple independently targetable reentry vehicle (MIRV) capability—China is fielding a massive, diverse, and technologically advanced regional offensive missile force that can hit US forces, allies, and partners. According to the director of the Defense Intelligence Agency, Lt Gen Robert P. Ashley, Jr., in 2018 “China launched more ballistic missiles for testing and training than the rest of the world combined.”<sup>9</sup>

The PLARF fields missiles with various ranges, including the DF-26 IRBM—capable of conducting precision strikes against targets on land or at sea, potentially as far away as Guam—and antiship ballistic missiles with the ability to hit aircraft carriers. As part of its long-term plans to modernize its “strategic deterrence capability,” the PLARF is developing new types of missiles to evade ballistic missile defenses.<sup>10</sup> Even before any indication of a regional conflict, China is likely to preempt the United States' ability to respond on behalf of a partner or ally by hitting US bases in the region. A preemptive Chinese missile strike against US air bases and assets is consistent with China's missile force doctrine, and satellite imagery seems to show that the Chinese have practiced doing so.<sup>11</sup> Sugio Takahashi, chief of the Policy Simulation Office, National Institute for Defense Studies, and Eric Sayers, adjunct senior fellow at the Center for a New American Security, state,

The result is a China more confident in its conventional military prowess and the continued erosion of regional strategic stability. The United States relies on a series of naval and air bases in Japan at Kadena, Sasebo, Iwakuni, Yokosuka, Misawa, and Andersen in Guam to generate offensive combat power. By targeting these critical nodes and other naval assets in the theater in a quick, sharp strike, China could move to paralyze American power projection and present the United States and the alliance with a *fait accompli*. If this trend continues, Beijing could conclude that [China] can deter U.S. military intervention and may find the option to use force to achieve its objectives in a place like Taiwan, or the Senkakus,<sup>12</sup> more appealing.<sup>13</sup>

Even if the Chinese did not preemptively strike US bases or military assets in the region, with their near uncontested ability, the United States could assess that intervening on behalf of a partner or ally simply would

not be worth the risk and cost—thereby relegating it to a bystander.<sup>14</sup> If left unanswered, the Chinese missile force can prevent the United States from fulfilling its alliance obligations, shut out the United States from critical sea-lanes, and lord this power over the United States to compel Washington to behave in ways that help the Chinese and harm American interests. Put simply, US forces in the Indo-Pacific, like US forces in Europe, undergird America's superpower status. By holding US forces at risk, even China's medium-range conventional missiles—though tactical in nature—have strategic implications.

Most of China's missile investments are in traditional ballistic missiles. As the former Pacific Command chief, Adm Harry Harris, told the Senate Armed Services Committee in March 2018, "We are at a disadvantage with regard to China today in the sense that China has ground-based ballistic missiles that threaten our basing in the western Pacific and our ships. We have no ground-based capability that can threaten China because of, among other things, our rigid adherence, and rightfully so, to the treaty that we sign onto, the INF [Intermediate-Range Nuclear Forces] treaty."<sup>15</sup> Because the INF Treaty prohibited the United States from building that particular capability, it inadvertently contributed to China's incentive to outmatch the United States by amassing a large number of this category of weapons. In February 2019, however, the Trump administration announced that due to Russian noncompliance with that treaty, the United States was suspending participation in the agreement and would formally withdraw in six months. On 2 August 2019 the United States formally withdrew from the INF.<sup>16</sup>

In addition to investing in expanding the number and ability of traditional ballistic missiles, China is devoting considerable work and resources to its hypersonic weapons—including hypersonic cruise missiles and hypersonic glide vehicles (HGV).<sup>17</sup> HGVs travel at a minimum of five times the speed of sound and with complex, unpredictable flight patterns. An HGV is launched high, begins to glide, and then flies lower in the atmosphere as it closes in on its target. Because of their trajectory and size, ground- and sea-based sensors may lose the track of these missiles. Additionally, HGVs can perform sharp maneuvers to remain out of detection ranges of known radar systems, making them a formidable threat for which the United States has no credible defense. In August 2018, China successfully tested the Starry Sky-2 (Xingkong-2), which China described as traveling at hypersonic speeds.<sup>18</sup> The undersecretary of defense for research and engineering, Michael Griffin, told the Senate Armed Services Subcommittee on Emerging Threats and Capabilities last year that

China has fielded or can field, is close to fielding, hypersonic delivery systems for conventional prompt strike that can reach out thousands of kilometers from the Chinese shore and hold our carrier battle groups or our forward-deployed forces on land that we have bases, can hold those power groups at-risk.

We, today, do not have systems that can hold them at-risk in a corresponding manner, and we do not have defenses against those systems.

Should they choose to employ them, we would be, today, at a disadvantage. It is among my very highest priorities to erase that disadvantage, creating our own systems to hold them at-risk and to provide defense.<sup>19</sup>

China's efforts to establish regional hegemony to defend its erroneous territorial claims have chipped away at the US military advantage. Its military capabilities already strain the ability of the United States to operate in certain areas near China.<sup>20</sup> If the United States does not recognize and appreciate the threat China poses with its missile force and fails to work assiduously with allies to regain the strategic advantage before a wartime scenario, it will be too late. The United States is by default ceding to China the ability to deny it access to the Indo-Pacific, therefore forfeiting the mantle of preeminent Pacific power and, with it, global superpower status.

### **Adapting Missile Defenses for Twenty-First-Century Conflict**

The current vulnerability of US bases abroad and of the US homeland is unacceptable and puts the United States at a strategic disadvantage. The United States should seek to correct this, thereby bolstering the credibility of deterrence versus China. Fortifying against threats will require a mix of both defensive and offensive missiles—including deploying ground-launch missiles, which have distinct operational and cost benefits. There is a growing chorus of support for the argument that there is wisdom in the United States deploying intermediate-range land-based missiles from US and allied territory. Thomas G. Mahnken, president and CEO of the Center for Strategic and Budgetary Assessment, suggests that

deploying these missiles will help prevent the nightmares that keep Pentagon officials up at night. Such weapons, capable of denying China the use of littoral waters, would be a powerful deterrent to Chinese aggression. In the event of war, these units should be able to disrupt and delay a Chinese attack long enough for air and naval forces to arrive and stymie the assault. By demonstrating the ability to halt aggression, these forces would deter Chinese leaders from attempting it in the first place.<sup>21</sup>

Offensive capabilities have many advantages, especially when it comes to cost. But the United States must also prudently invest more heavily in

missile defense capabilities to capitalize on technological advances that help meet the security dynamics of the twenty-first century in a way that bolsters deterrence. Missile defense has a large role to play in deterrence. To be clear, it is not necessary to create an impenetrable missile defense shield for defenses to be effective for deterrence. Deterrence by denial requires convincing the adversary that its odds of successfully achieving a desired outcome are too low relative to the cost and risk of launching an attack and failing to achieve the desired military objective. In other words, missile defense need only be effective enough to create doubt in the mind of the adversary about the success of the attack. Of course, the more the United States can convince adversaries that defenses are credible, the more the adversary might hesitate to attack.

Missile defense can also safeguard critical assets, or at least limit the damage of an attempted strategic attack so that a counterstrike is possible. In doing so, it helps to maximize the options for US responses to an attack. Additionally, a more robust defense of strategic assets would raise the number of offensive missiles an adversary would need to get through to its desired target, thereby taking away the “potshot” option, so to speak. Moreover, unlike offenses, US defenses do not have to tailor their military impact to proportionality. The stronger they are, however, the better. If deterrence fails, missile defenses also have value in that they are inherently de-escalatory and contribute to escalation management during a conflict. By having the ability to protect US strategic assets and to limit damage of a potential attack, strong missile defense also gives the US increased decision time when determining a retaliatory response. As so aptly stated by Brad Roberts, director of the Center for Global Security Research at Lawrence Livermore National Laboratory, “Ballistic missile defense helps to put the burden of escalation in an emerging crisis onto the adversary, thus helping to free the US and its allies from escalation decisions that might seem premature.”<sup>22</sup>

We can imagine a plausible scenario in which lacking defenses tempts aggression; if, for instance, the United States does not have the ability to intercept an HGV (and currently we do not), China might calculate that it can attack US assets on Guam with HGVs, thereby successfully hobbling the United States’ capability to intervene in a larger regional war. Consider a Chinese attack on US bombers. China could assess that destroying the deployed US nuclear bombers is an effective way to complicate or even eliminate politically feasible response options for the United States. It might rationalize that without proximate, proportional options that would have a de-escalatory effect, the United States might simply

decide that the best option is to sue for peace. Or China could determine that the United States would respond to a conventional attack against vulnerable strategic targets with conventional weapons against Chinese nonstrategic targets, and that the targets of those attacks are worth sacrificing. It is still possible, however, that the US would respond to a preemptive strategic attack—even if carried out by Chinese conventional weapons—with nuclear weapons. Across Republican and Democratic administrations, the US has conspicuously and correctly reserved that right so as not to communicate to adversaries that the United States is more tolerant of conventional attacks even with strategic consequences, which could inadvertently incentivize one.<sup>23</sup> Still, what matters is what the adversary *believes* the United States would do, setting up a potential Chinese miscalculation that could result in a disastrous conflict. But if the United States has a credible ability to protect carriers and US deployed assets on US territories and in Japan—for example, by intercepting increasingly complex ballistic and cruise missiles and even highly capable HGVs—and China *believes* this, that perception would powerfully contribute to deterrence and defense if deterrence fails. It is one thing to be on the receiving end of a US retaliatory strike after knocking out a crucial target, but it would be another thing entirely to be on that receiving end after having launched an unsuccessful attack against US strategic interests and gaining little or nothing at all.

Likewise, even though a Chinese attack against targets on the US homeland is far less likely than an attack against US forces and assets in the regional context, the advancements of missile defense and modern technology should be leveraged to close vulnerabilities. Building up and configuring the US homeland missile defense architecture such that China would not be sure it could successfully land a few ICBMs on US soil only decreases the likelihood that China would attempt it. Modern missile defense must seek to more thoroughly disabuse China of the notion that it could easily accomplish a successful first strike. If deterrence fails, missile defense will limit the damage of the attack and allow the United States more options to respond with offensive weapons undamaged by the attack and to carry out the military campaign successfully—ending the war on terms most favorable to the United States. A missile defense strategy that rightfully integrates attack operations would then seek to destroy an adversary's missiles or its ability to launch them. If done successfully, this approach gives US defensive systems a greater advantage as they have fewer missiles to track, discriminate, and intercept.

Therefore, both in the regional and homeland contexts, missile defense has a major role in deterrence. For this reason and others, it is also a stabilizing force. This is, of course, not a new idea. A 1989 Department of Defense report said of the Reagan administration's Strategic Defense Initiative, "Strategic defenses, by having the capability to destroy ballistic missiles and nuclear warheads before they reach their targets, would reduce the confidence Soviet leaders have in their ability to launch a first strike and destroy the forces we would use to retaliate. Lacking confidence that they could destroy our retaliatory forces, and faced with the threat of enormous damage to their nation if we retaliate, Soviet leaders would not risk an attack."<sup>24</sup> This concept of bolstering the credibility of deterrence by strengthening defenses has been mostly eschewed in favor of the concept of mutual vulnerability—a Cold War construct based on ideas that do not apply well to the modern, complex threat landscape. Moreover, modern technology now gives the United States greater opportunity to tailor defenses to modern threats. To its credit, the US document that lays out the current missile defense strategy—the 2019 MDR—delineates the stabilizing effect of missile defense and acknowledges the contribution missile defense should make to deterrence. Note, however, that it still falls short of calling for a defense of the US homeland from anything more than rogue states.

Missile defense contributes directly to tailored U.S. deterrence strategies for regional missile threats and for rogue state ICBM threats to the U.S. homeland. Missile defenses can undermine potential adversaries' confidence in their ability to achieve their intended political or military objectives through missile threats or attacks. An adversary's uncertainty regarding the effectiveness of its attack plans, combined with the prospect of an effective U.S. response to aggression, provides strong incentives for adversary restraint if ever contemplating missile attacks. By shaping an adversary's decision calculus in this way, missile defense diminishes the perceived value of missiles as tools of coercion and aggression, thus contributing to deterrence.<sup>25</sup>

### ***Adapting Policy for US Missile Defense***

US national policy is to "maintain and improve an effective, robust layered missile defense system capable of defending the territory of the United States, allies, deployed forces, and capabilities against the developing and increasingly complex ballistic missile threat with funding subject to the annual authorization of appropriations and the annual appropriation of funds for National Missile Defense."<sup>26</sup> Congress amended the 1999 National Missile Defense Act in 2016, clarifying that the United States is to build a robust layered missile defense system rather than a system designed

to defend against a “limited” attack. Seeming to build on the momentum of this more expansive policy directive, the 2019 MDR also broadened the mission of the US missile defense architecture and strategy.

The 2019 MDR, unlike the 2010 *Ballistic Missile Defense Review* (BMDR) *Report*, emphasizes the missile threats from Russia and China with a special focus on their regional missile threats. It notes that the DOD is continuing to upgrade highly capable systems like Terminal High-Altitude Area Defense (THAAD) and the Aegis weapons system and its associated SM-3 interceptors, along with improving variants of the multimission SM-6. Unfortunately, the report leaves out useful details about how the United States intends to build out or configure those systems to handle the increasingly challenging operating environment in the Indo-Pacific region. The BMDR states that the United States still relies on US nuclear deterrence to dissuade a strategic attack from peer competitors.<sup>27</sup> However, it does not preclude the United States from building out the system to also improve homeland defense against Chinese and Russian missiles, thereby strengthening deterrence—an idea the report claims to embrace, even if not explicitly in the context of peer threats against the US homeland. Moreover, as previously discussed, missiles that threaten US forces, assets, and allies abroad—while tactical in kind—still have strategic effect. Because of the nature of the developing missile threat and dynamic US interests, the line between what is “strategic” and “tactical” is increasingly blurred. Additionally, defensive systems that claimed to have merely a regional defensive capability also contribute to homeland defense, and some even outrightly overlap regional and homeland interceptors. One such example is the SM-3 Block IIA missile interceptor—long hailed as able to defend against only medium-range missile threats—that will likely be tested against an ICBM-class target in 2020.<sup>28</sup>

The MDR highlights the importance of US homeland defense and points to the addition of 20 new ground-based interceptors (GBI) that will augment its protection specifically from rogue state ICBMs. The additional GBIs will bring the total of deployed GBIs to 64 as early as 2023. The review also notes that the ground-based midcourse defense (GMD) system, while explicitly scaled to handle the kinds of ICBM threats from North Korea and Iran, will seek to intercept an ICBM “from any source” if the country was under attack.<sup>29</sup> It does not provide a solution to better prepare the homeland defense system to defend against even an accidental or unauthorized attack from China, let alone a plan to scale the system to bolster deterrence when considering the possibility of a Chinese missile raid.



Of particular note, Alaska still has room for 40 more GBIs; the DOD has already conducted environmental impact studies to determine candidate locations for a third interceptor site should the United States decide to increase the capacity beyond 64. The Trump MDR also notes continued investment in GMD to increase its reliability, which includes upgrading the Exoatmospheric Kill Vehicle and improving sensors. The report states that in the event of a crisis, the United States could surge capabilities to provide greater protection. To that end, it lists the possibility of deploying traditionally regional defenses such as THAAD, Patriot, or the SM-3 Block IIA to ease the burden on the GMD system.<sup>30</sup> The MDR also states that the F-35 Lightning II, able to track and destroy cruise missiles today, could be modified with an “interceptor capable of shooting down ballistic missiles in their boost phase.”<sup>31</sup> This concept of operations, however, does not provide a persistent defensive option and should not be considered a replacement for a true boost-phase missile defense component to a layered architecture. Even if the F-35 could fulfill that role, the report does not direct its development, and the concept remains aspirational.

Lastly, and most importantly, the MDR emphasizes the advantages offered by space-based missile defense systems, the space-based threats posed by US adversaries, and how the United States must adapt the space domain to its advantage. It recognizes that, for US defenses, space-based sensors “can monitor, detect and track missile launches from locations almost anywhere on the globe—they enjoy a measure of flexibility of movement that is unimpeded by the constraints that geographic limitations impose on terrestrial sensors, and can provide ‘birth to death’ tracking that is extremely advantageous.”<sup>32</sup> The report rightfully notes their necessity in defending against hypersonic glide vehicles and hypersonic cruise missiles.

Going further beyond the explicit contents of the MDR, President Donald Trump laid out his vision for US missile defense when rolling out the MDR. The most forward-leaning of the president’s remarks was the following:

We will recognize that space is a new warfighting domain, with the Space Force leading the way.

My upcoming budget will invest in a space-based missile defense layer. It’s new technology. It’s ultimately going to be a very, very big part of our defense and, obviously, of our offense. The system will be monitored, and we will terminate any missile launches from hostile powers, or even from powers that make a mistake. It won’t happen. Regardless of the missile type or the geographic origins of the attack, we will ensure that enemy missiles find no sanctuary on Earth or in the skies above.<sup>33</sup>

Notably, the MDR did not state that the goal of the United States is to work toward a capability such that “regardless of the missile type or the geographic origins of the attack . . . enemy missiles find no sanctuary on Earth or in the skies above.”<sup>34</sup> Neither did it state anything that would conflict with that.

Rather, the report specifies that the United States will not permit limits or constraints on “capabilities needed to protect the homeland against rogue missile threats. Accepting limits now could constrain or preclude missile defense technologies and options necessary in the future to effectively protect the American people.” It went on to state that “U.S. missile defense capabilities will be sized to provide continuing effective protection of the U.S. homeland against rogue states’ offensive missile threats. The United States relies on nuclear deterrence to address the large and more sophisticated Russian and Chinese intercontinental ballistic missile capabilities, as well as to deter attacks from any source consistent with long-standing U.S. declaratory policy as re-affirmed in the 2018 NPR.”<sup>35</sup> Also of note, the language about defending the US homeland from a more sophisticated attack does not reject the possibility of establishing a more robust homeland defense against the kind of attack China could launch. The report merely states that the US strategic posture as currently constituted relies on nuclear deterrence.

The president’s remarks, paired with the MDR, raised more questions about the direction the United States was headed. A fair assessment of the MDR is that it lays out a strategy to build on the previous administration’s missile defense architecture. It expands the scope of missile defense in the near term while leaving open the possibility that the United States could make the policy decision to do what is necessary to provide a truly robust capability against, specifically, Chinese missile threats. The president’s budget request followed the MDR and showed that the United States does not plan to make significant qualitative changes to its missile defense strategy in the near term to strengthen deterrence and defend against China (or Russia). While policy documents, reports, and even presidential remarks that call attention to what would be needed to defend against China are welcome, words are not enough. Reports cannot deter attack or intercept missiles. Forward-leaning statements like the president’s can set the tone but are ineffective if the budget does not back those statements. What is required now is a dedicated, sustained, and foreseeable investment to—among other things—adapt and bolster US missile defenses for great power conflict.

## ***Adapting Missile Defense***

It is imperative the United States goes from merely talking about improving missile defense in a new era of competition with China to taking action. It must adapt its missile defense architecture to more adequately defend the US homeland and protect US bases and assets in the Indo-Pacific region from Chinese missiles. The United States must substantially improve the capability and reliability of the current system and build capacity on US territory. It would also be prudent to collaborate with allies to discuss possibilities for expanding missile defense cooperation and building partner capacity.

There are many areas deserving of investment to create a robust, tiered system of systems in the China context including increasing the inventory of THAAD and Patriot. The Aegis weapon system provides especially interesting opportunities for allies to deepen cooperation with the United States and develop a more robust homeland defense architecture. Japan, Australia, and South Korea already have Aegis ships.<sup>36</sup> Additionally, the United States should accelerate investment in a new kill vehicle program for GMD interceptors to increase probability of kill and ensure the testing program continues to prove reliable in increasingly complex threat scenarios. Doing so will bolster defense of the homeland, even against such unlikely but possible unauthorized or accidental launches from peer competitors.

But the program that could give the greatest qualitative boost to US missile defense—across regional and homeland defense systems—is an initial space sensor layer (SSL) that fits into a broader space-based architecture that complements military operations across domains.<sup>37</sup> The SSL would give the United States “eyes” necessary to see our enemy’s missiles from launch and track them until the missiles’ destruction in one form or another. A sensor in space is necessary for improving defenses against traditional threats that even less militarily capable enemies such as North Korea possess. Different sensors are required for ballistic and nonballistic missiles to detect ever-improving new decoys and countermeasures meant to confuse our current missile defense systems and the new Chinese missiles we cannot sufficiently track. With the right sensors, the SSL would immediately leverage the full potential of current US missile defense interceptors, greatly improving the capability of current defense systems against traditional ballistic missiles. While theoretically possible to cover the planet with thousands of better-hardened and defended ground- and sea-based sensors to track missiles and share data, practically, it would be impossible. As explained by Gen John Hyten, commander of US Strategic

Command, “there are not enough islands in the world to build a radar to defend every avenue, therefore, we have to go to space. And we can go to space, now in an affordable way with distributed constellations that can look down and characterize that threat in a global perspective, so we can see them wherever they come from. That’s the direction we need to go.”<sup>38</sup>

Further explaining the utility of a SSL, General Hyten told an audience at the Hudson Institute in 2017 that when he was asked by Congress if we can improve the US missile defense capability he said, “We can do it by improving our sensor capabilities first. I think we need a space-based sensor capability as part of that to provide more ubiquitous global coverage.”<sup>39</sup> Together with a new interceptor, the SSL would offer the United States the ability to defend against HGVs. This is because a SSL would be able to detect and track a Chinese HGV from launch to death. While the United States will be able to rely on ground- and sea-based sensors to handle ballistic missile threats for the near term, it is impossible to defend against HGVs without the SSL.

In the Indo-Pacific, we should expect the Chinese to use electronic and cyber warfare against US radar and use attack operations that include missiles from various angles and with different flight patterns and targeting across domains, including antisatellite systems; therefore, considering how to make the US defensive architecture optimally resilient is key. A satellite layer consisting of many satellites in a variety of orbits contributes to resiliency. These satellites could be made agile and self-protective to increase their survivability. However, once an enemy begins an attack on the satellite architecture, the United States should begin its response and not wait for the entire layer to be destroyed. Additionally, lower orbits embedded with commercial satellites that belong to the United States as well as our adversaries would create a disincentive for a disabling attack since it would be simultaneously damaging to the enemy.

One concept the Pentagon did request that Congress allocate a small amount of funding for is a Defense Advanced Research Projects Agency (DARPA) effort to adapt commercial space technology for military use. DARPA plans to launch a small, experimental constellation of commercial satellites in low Earth orbit (LEO) carrying military payloads. The purpose is to get something deployed quickly, learn from the program, and try to decrease the cost of launch. Launch costs are the bulk of the expense of a space-based sensor layer.

Another promising concept is that of “space enabled intercept” (SEI), which would give a SSL the ability to communicate directly to the interceptor, thereby eliminating the ground station relay. This capability would

allow interceptors to engage at much longer ranges since course corrections can be made beyond the line of sight of ground stations and reduce the time from tracking to intercepting. These features would be valuable in the case of defending against HGVs since interceptors could engage in the HGVs' glide phase and continuously correct for their fast maneuvers. DARPA also plans to explore and prove applications with artificial intelligence or "smart" satellites that can collect, analyze, and disseminate data autonomously. As with the SEI concept, having smart satellites that can cue interceptors directly would dramatically reduce response time to detect and kill an enemy missile.<sup>40</sup>

The advantages of a sensor layer in space are numerous. But it is not a silver bullet and should not be a complete replacement for land- and sea-based sensors. In the near future as well as in the long run, a multidomain suite of sensors is necessary for optimal resiliency and for disincentivizing an attack that targets sensors. Choosing not to move forward with an initial SSL concept in the next few years is choosing to remain blind to Chinese sophisticated missile systems. There is no near-term, more affordable substitute. Regardless of the configuration, if the United States is going to regain the strategic advantage against its enemies, it has to rely much more heavily on space sensors and therefore deploy a SSL.

### ***Space-Based Kill Capability***

In addition to deploying the SSL and exploring the concept of SEI, the United States ought to pursue the ability to destroy enemy missiles from space. This would give it several advantages over the Chinese. Broadly speaking, a space-based kill capability could provide the ability to intercept an incoming enemy missile early in its trajectory, before it could release decoys and countermeasures meant to confuse missile defenses. A space-based kill capability can provide boost and midcourse defense; it just depends on the number of space-based platforms and in which orbits. Because hit-to-kill technology is mature, we recommend pursuing it for space applications. Eventually, the solution to the vexing problem of the expense of missile defense systems relative to the cost of the offensive missiles they kill is leveraging directed energy. Directed energy would essentially allow the United States to engage incoming missiles as necessary and with an inexhaustible magazine, destroying enemy missiles before they reach their intended target. Continued research and development of directed energy in space for missile defense should continue in parallel with a more aggressive pursuit of kinetic intercept from a constellation of orbiting satellites.

A space-based interceptor (SBI) layer would simply add a layer in the already-layered architecture, filling gaps in our ground- and sea-based missile defense and creating depth of fire to protect critical US areas and assets of greatest strategic value and risk of attack. It would substantially augment our current defenses by offering an opportunity to thin an enemy salvo in the midcourse phase of flight before it begins its descent toward the target. Having a space-based missile intercept layer would satisfy the necessary conditions for credibly countering China's most complex missile threats, most of all by complicating the enemy's calculations. Detering an initial act of aggression will always be one of the greatest payoffs from the investment in SBIs.


The concept has been around for decades, as have its critics. But the criticisms of SBI carry much less credibility today compared to when they were offered in the 1980s. For starters, the multipolar threat environment with diverse and complex missile threats unacceptably outmatches US defenses. Moreover, it is now technically feasible for the United States to deploy a test bed in the next several years to prove the concept can be implemented for intercepting various kinds of missile threats. The United States validated technical feasibility in the 1990s, and technology has only gotten dramatically better since. For the most part, even those who oppose the concept do not oppose it based on technical feasibility; rather, one of the main criticisms of SBIs is that the concept is simply "cost prohibitive." Opponents of SBIs often cite the highest cost estimates, in the hundreds of billions of dollars.

In reality, the cost would be much lower. In August 2018 the undersecretary for research and engineering, Michael Griffin, told reporters that the "idea of space-based interceptors has been in some ways the victim of unrealistically high, uninformed cost estimates" and naively judged "to cost much more than I believe that they would cost if one actually got down to business."<sup>41</sup> More recently, he provided an estimate for a space-based layer that would cost in the range of tens—as opposed to hundreds—of billions of dollars. In addition, the technology and manufacturing advances in the last several years would dramatically lower the risk of fielding these capabilities. Leveraging the lower launch costs of today, the use of peer-to-peer networks, and the remarkable advances in artificial intelligence and computer processing would allow a truly robust and more cost-effective space-based capability. The numbers remain theoretical until the United States moves forward with architectural designs and cost assessments.

After cost, the other frequent criticism of SBIs is that they would be “destabilizing” and cause peers to build up their offensive forces to get around the new defensive measures. In fact, reality proves the opposite. We have entered a new missile age where adversaries are heavily investing in missiles to exploit US vulnerabilities to coerce, blackmail, and threaten US freedom of navigation as well as to limit US response options in the event they attack US allies. There is no evidence that the absence of SBIs has dissuaded adversaries from investing in missiles in quantity and sophistication; to the contrary, where there is a thinner layer of defense capability, there is evidence US adversaries are seeking to exploit the vulnerability and are rapidly acquiring missile defense systems of their own. As noted in the MDR,

China is aggressively pursuing a wide range of mobile air and missile defense capabilities, including the purchase of S-400 systems from Russia, each with four interceptor missiles, and is developing additional theater ballistic missile defense systems. China also has announced that it is testing a new mid-course missile defense system. Further, China is developing a suite of antisatellite weapons, continues to launch “experimental” satellites that conduct sophisticated on-orbit activities to advance counterspace capabilities, and has conducted multiple ASAT tests using ground-launched missiles.<sup>42</sup>

In response to the possibility of great power conflict in the twenty-first century, the United States must take a fresh look at its defensive systems. Just as the Chinese have elevated their missile force to the status of their other services, so should the United States elevate the investment and importance of missile defense to reflect the new era of great power competition.

By leveraging new technologies and hit-to-kill technology and investing in directed energy, missile defense will become less costly in the offense-defense comparison. The United States can increase the credibility of its deterrence and defense with a more reliable and capable missile defense architecture, including current sea- and land-based defensive systems complemented by a space-based sensor, space-enabled intercept, and space-based intercept layer. A robust missile defense system that accounts for the Chinese missile threat would help the United States defend its ability to access the Indo-Pacific, cooperate with its allies in enforcing national boundaries, and generally preserve the peace. Failing to do so could, by default, mean forfeiting regional hegemony to China in the near term and the status of global preeminent power in the far term. 

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# Ambiguity, Risk, and Limited Great Power Conflict

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## Abstract

This article investigates how China and Russia are exploiting ambiguity and American risk aversion as part of their nuclear strategies, particularly with respect to the threat of limited nuclear use. Neither China nor Russia actively seeks to engage in a nuclear exchange with the United States, limited or otherwise. However, their efforts to leverage ambiguity within their nuclear policies and force structure may make limited nuclear use more likely, particularly given the resurgence of great power rivalry that makes great power conflict more probable.

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As great power competition reemerged over the past decade, so too has competition within the nuclear domain. After two decades of deemphasizing the role of nuclear weapons in defense strategy, the United States is finally undertaking a broad-based effort that will modernize all three legs of the nuclear triad, nuclear command and control, and the infrastructure that supports the nuclear enterprise. By contrast, over the same two decades, Russia and China remained committed not only to modernizing and expanding their nuclear forces but also to more closely realigning nuclear policies to support their strategic ends.

As Russia and China complete robust nuclear modernization programs, they seek to deter US activity in their respective regions. In their shift toward nuclear competition, nuclear ambiguity has increased. Additionally, the likely dissolution of the US-Russia strategic arms control regime will only hasten and exacerbate this trend. By exploiting a perceived US risk aversion and fear of nuclear escalation, both nations rely on a certain level of ambiguity in their nuclear policies and posture. Their goal is to shape US use of force and convince US leaders that the risks of miscalculation and unintended escalation are too great to pursue regional interests. Particularly, they aim to restrict US operational latitude in Europe and the Indo-Pacific.

This article explores the sources and implications of nuclear ambiguity in an era of potential great power conflict, particularly in the context of limited nuclear war. It compares the relationship between ambiguity and risk aversion in Russia, China, and the United States. Nuclear ambiguity coupled with a high risk tolerance could dramatically increase the possibility of miscalculation and inadvertent escalation to limited nuclear use. Although limited nuclear war is still an improbable event, increasing competition and ambiguity makes intentional or unintentional escalation more likely. Precisely because it is hard to imagine a limited nuclear exchange, it is more important to do so. The article also offers ideas for the United States to mitigate the impact of ambiguity on US strategy and policy. To preserve US interests and maintain security commitments to allies in Europe and East Asia, US policy makers will need to develop strategies for mitigating nuclear ambiguity.

### **Sources and Types of Nuclear Ambiguity**

No discussion of nuclear ambiguity would be complete without briefly recognizing the contributions of prominent theorists on the subject. These ideas form the basis of our argument. The relationship between ambiguity, escalation, and risk underpins deterrence theory, and the twentieth-century scholarship on these topics heavily influences contemporary nuclear strategy and thinking, if not always force structure and plans. Unilateral deterrence is produced by a combination of capability and will to deliver a secure second-strike attack against an adversary. Mutual deterrence, reinforced by the threat of mutually assured destruction, therefore undermines the credibility of a state's nuclear threats by raising dramatically the costs of a first strike. The result is strategic stability among great powers.<sup>1</sup>

Uncertainty and ambiguity complicate this seemingly straightforward calculation. First, ambiguity exacerbates the security dilemma. States naturally take action to provide for their own security, including building military forces. But peer or competitor states cannot be certain that another state's military buildup is intended for purely defensive purposes and will respond in kind with their own investments in security. Uncertainty about states' intent exacerbates international tensions and raises the likelihood of conflict. Robert Jervis argues that security dilemma dynamics are most pernicious when offensive security measures are difficult to distinguish from purely defensive ones (for example, missile defenses) and when states consider investments in offensive capabilities more valuable than purely defensive investments.<sup>2</sup> Jervis argues that spiraling effects of intense

security dilemma dynamics raise the risks of both preventive and preemptive war, particularly amidst changes in the balance of power.

Moreover, uncertainty fuels the brinkmanship that drives nuclear crises and raises the likelihood of miscalculation and accidental war. Thomas Schelling argues that uncertainty is inherent to international security because crises and paths to conflict are “unforeseeable and unpredictable,” and nuclear states often exploit that uncertainty through brinkmanship.<sup>3</sup> Nuclear states will escalate lower-level crises in an effort to coerce adversaries to cede geopolitical objectives rather than risk nuclear exchange. While mutually assured destruction precludes states from credibly threatening a large-scale nuclear attack, they can still pose “the threat that leaves something to chance”—manipulating the risks of unintended escalation and accidental war to compel their adversaries.<sup>4</sup>

### ***Types of Nuclear Ambiguity***

Uncertainty about a nation’s nuclear capabilities shapes nuclear competition, strategy, and decision-making. Three types of ambiguity are evaluated here that, when compounded, may increase the prospect for miscalculation, unintended escalation, and limited nuclear use. First, ambiguity surrounds the size, scope, and scale of a country’s nuclear arsenal. It is impossible to assess nuclear balances without insight into the composition of a competitor’s nuclear forces and an understanding of the strategic impact of any asymmetries between them. Moreover, without certainty about the scope of a competitor’s nuclear arsenal, it is unclear whether that competitor is capable of executing a disarming first strike that would prevent an assured retaliation capability. Ambiguity surrounding a competitor’s capacity to deliver a disarming first strike can drive competition to improve the size and survivability of nuclear forces.<sup>5</sup>

Second, ambiguity surrounds the distinction between a country’s conventional and nuclear forces. Dual-capable systems that support both nuclear and conventional missions make it difficult to distinguish between conventional and nuclear forces and, therefore, between a conventional and a nuclear attack.<sup>6</sup> Dual-use systems include missiles and aircraft that can be armed with either conventional or nuclear warheads as well as enabling systems that support both conventional and nuclear missions, like early-warning satellites and radars. These delivery systems increase the risk of miscalculation, particularly if a conventional conflict is already underway. An attack that seeks only to degrade an adversary’s conventional forces could mistakenly target dual-capable systems integral to the nuclear deterrence mission. An adversary may interpret this as warning of

nuclear escalation or a strategic counterforce attack. When countries complicate efforts to distinguish nuclear from conventional forces, they invite a higher risk of unintended vertical escalation and limited nuclear war.

Third, the strategic conditions and the magnitude of national interests under which countries might consider nuclear use—particularly limited nuclear use—may be ambiguous. Declaratory policy, to include extended deterrence and no-first-use (NFU) guarantees, can shed some light on those policies and provide clarity. However, confidence in a country's commitment to its declaratory policy, particularly in the case of a conventional conflict between great powers, can never be completely certain. As Schelling indicates, the unprecedented nature of a nuclear exchange means that there is no data to suggest how nuclear powers may respond in the case of a large-scale conventional confrontation, and it is difficult to foresee under which circumstances a state might perceive limited nuclear war to be in its interest. Moreover, declaratory policy and state behavior do not always mirror one another. Countries with a restrained declaratory policy may engage in saber rattling, revealing an attempt toward nuclear coercion and brinkmanship to secure geopolitical advantages. Given enduring doubts about the credibility of declaratory policies, states are often forced to infer the intentions of their competitors from other sources, including the size and posture of their nuclear forces and their responses and resolve during crisis situations.

These different types of ambiguities can be mutually reinforcing. On the one hand, the lack of clarity surrounding an adversary's doctrine for nonstrategic nuclear weapons (NSNW) is reinforced by the lack of information that policy makers have about the nature of nonstrategic nuclear capabilities. On the other hand, sources of clarity in any of the above areas can provide useful clues in other areas of uncertainty. Knowing whether new medium- and intermediate-range missiles include nuclear-armed variants would provide finer insight into concepts for employment of nuclear forces and the scenarios in which nuclear use might be thinkable.

Ambiguity can also create leverage vis-à-vis competitors and adversaries who seek to reduce sources of ambiguity and are willing to offer concessions in exchange. North Korea and Iran each extracted concessions from an international community seeking greater insight into and concrete limits on the scope of their national nuclear programs. Similarly, arms limitation agreements coupled with verification measures aim to increase transparency about a competitor's capabilities.<sup>7</sup> Ambiguity and its reverse, transparency, can provide significant benefits, especially if risk-averse competitors are willing to sacrifice to lessen those sources of uncertainty.

## **Russian Nuclear Ambiguity and Risk**

Russia has long leveraged the ambiguity of its nuclear doctrine and red lines to convince the United States to give it an extra-wide berth, particularly on the European continent. Throughout the Cold War, the US government struggled to discern Soviet intentions and doctrine for the employment of the country's nuclear forces. It was clear that Soviet political leaders were willing to resort to nuclear use if necessary, and US policy makers' rejection of Russia's 1982 "no-first-use" pledge as insincere was indeed vindicated when Soviet war plans were later revealed to include the large-scale early use of theater nuclear weapons.<sup>8</sup> For decades Moscow's declaratory policy proved out of sync with its actual calculations for nuclear use, making it difficult for foreign states to discern Russian red lines.

Contemporary Russian nuclear strategy features several ambiguities affecting the potential for limited nuclear war. Decades of bilateral collaboration on strategic arms limitation have provided US policy makers with insight into Russia's strategic forces. The 2010 New START agreement and its verification provisions ensure a relatively high degree of transparency into Russia's strategic forces. However, the scope of Russia's nonstrategic nuclear weapons that is most relevant to a discussion of limited war remains comparatively undefined. Many public estimates suggest that Russia possesses approximately 2,000 operationally assigned nonstrategic nuclear warheads ready for use that include sea-, air-, and ground-launched forces.<sup>9</sup> The number of launchers for these weapons is unknown.<sup>10</sup> The Federation of American Scientists estimates that Russia's navy employs nearly half of these forces, to include both surface and subsurface delivery platforms.<sup>11</sup>

Russia's diverse nonstrategic arsenal includes dual-capable theater- and tactical-range weapons that exacerbate the aforementioned discrimination problem. Pavel Podvig describes the increasingly "blurred" distinction between Russia's nuclear and conventional forces that emerged over the past decade and notes that this kind of ambiguity is a key element of Russia's military posture. Among Russia's dual-capable nonstrategic assets are its Kalibr land-attack sea-launched cruise missile (SLCM) that is not governed by New START limits, its ground-launched variant, and the Iskander-M ground-launched short-range ballistic missile (SRBM) system.<sup>12</sup> As Russia has moved increasing numbers of short-range, dual-capable missile forces into Kaliningrad over the last decade, including the Iskander-M, it is unclear the degree to which it possesses nuclear or conventional warheads. However, it is clear that Russia has undertaken a large-scale overhaul of a nuclear weapons storage site in Kaliningrad close to the Polish border, suggesting the missile forces there are plausibly

nuclear-armed.<sup>13</sup> Given the existence of dual-capable systems in Kaliningrad, which would play a critical role in a potential future conflict in NATO's eastern frontier, uncertainty about the status of weapons that may be involved in the conflict raises the likelihood of a miscalculation that could provoke vertical escalation to the nuclear level.

Finally, Russia's doctrine for employing these NSNWs is widely debated and centers on Russian theories of escalation control, as discussed below. Compared to Russian strategic nuclear forces, there is little transparency surrounding Moscow's NSNW program, including its deployment, targets, operational doctrine, and red lines. Arms control efforts over the past 30 years have sought to increase the transparency surrounding Russia's nonstrategic nuclear arsenal and encourage greater reductions to the arsenal's size, but those efforts have failed to produce any meaningful successes.<sup>14</sup> Many analysts have argued that the intended contemporary purpose of Russia's NSNW arsenal remains obscure and that Russian capabilities are not clearly linked to a well-articulated strategy, either public or classified.<sup>15</sup>

Central to this discussion is Russia's oft-cited "escalate to de-escalate" strategy, alternatively termed "escalate to win" or "escalate to survive."<sup>16</sup> In the wake of the Cold War, Russia leaned heavily on its nuclear arsenal to compensate for the vulnerability of its conventional forces, and this increased emphasis on nuclear use to deter conventional threats was espoused in Russian strategy documents and particularly in declaratory policy. It was in this context that some Russian scholars began advocating a strategy of limited nuclear use to forestall a Russian defeat in an ongoing conventional conflict. By escalating to the nuclear level, Russia might convince an adversary—deeming the potential costs of a protracted nuclear exchange too great—to end the conflict.

Although absent from official Russian military doctrine, a 2003 white paper titled *Important Tasks of the Development of the Armed Forces* by the Russian Ministry of Defense did discuss a strategy of "forcing the adversary to cease hostilities by threatening or actually delivering strikes of various sizes with use of conventional and/or nuclear weapons."<sup>17</sup> A number of Russian government and military officials, including Russia's Security Council secretary Nikolai Patrushev, have since referred to the strategy.<sup>18</sup>

Analysts have suggested that to communicate Russian resolve, an "escalate to win" strategy might be initiated in the form of nonlethal nuclear strikes against uninhabited areas or vacant secondary military targets. A slightly bolder option would involve targeting military infrastructure critical to adversary operations that avoid large-scale human casualties,



which could inadvertently strengthen an adversary's resolve or create pressure to respond in kind. The Zapad-99 military exercise, simulating a limited Russian nuclear strike to stave off defeat by conventional adversary forces, indicates strong consideration of limited nuclear strikes as part of a Russian defense strategy.<sup>19</sup> At the same time, skeptics of the escalate-to-win concept cite Zapad-99 as an isolated example that is two decades in the past, and they note that Russia's official declaratory policy has grown narrower since that period in 2000. Both 2010 and 2014 documents have more restrictive limits on nuclear employment.<sup>20</sup>

In other words, Russia's contemporary nuclear strategy, particularly with respect to its nonstrategic forces, is ambiguous. The frequent saber-rattling by Russian officials that is in direct opposition to Russia's relatively conservative formal declaratory policy shows just how challenging it is to decipher where Russia's red lines for nuclear use may fall. This ambiguity is intentional and benefits Russia, especially were it to convince the United States and its allies to retreat and give Russia an extra-wide berth on the European continent.<sup>21</sup> Prior to a great power conflict, certainty about Russian plans to introduce limited nuclear attacks within the confines of a heretofore conventional conflict would make it easier for US and NATO planners to develop more robust plans to deter, prevent, and—if necessary—limit the damage incurred by a limited Russian nuclear strike. The ambiguity, however, makes it more difficult for US policy makers to take such action, and it fuels debates and internal policy divisions about US overreaction to an unspecified and possible nuclear threat. This ambiguity also affects resource prioritization; without concrete evidence of an escalate-to-win strategy, lawmakers could question the need for new investments that could offset Russia's asymmetric nonstrategic advantages, including new investments in flexible low-yield capabilities.

It is worth noting that an escalate-to-win strategy is inherently risk tolerant, given the potential for rapid and devastating escalation. This risk-tolerant attitude toward the benefits of strategic ambiguity is in line with Russian actions over the past decade, and Putin consistently leverages ambiguity in pursuit of greater status and wider operational latitude on the European continent. Russia's nonattributable gray zone operations in Ukraine are a clear example of Putin's exploitation of ambiguity. His nuclear ambitions and policies are just as stark. Uncertainty about Putin's willingness to use nuclear weapons, combined with considerable uncertainty about which platforms are nuclear capable and support a nuclear mission, magnifies ambiguity. Putin has exploited this uncertainty as part of a brinkmanship strategy that has made US policy makers wary of taking

any action, including conventional, that might be perceived as threatening to the Russian government.<sup>22</sup> Given these overlapping sources of ambiguity, a great power conflict with Russia would imply a decided risk of either intentional or unintentional escalation.

### **Chinese Nuclear Ambiguity and Risk**

China has never entered into any arms control treaties, which contributes to the relative opacity of its nuclear weapons programs. It tends to officially withhold most information about the particulars of its nuclear enterprise. Ambiguity and risk surrounding limited nuclear use in China are of a significantly different character than in Russia. Unlike Russia, China historically has perceived nuclear weapons to be valuable exclusively for defensive purposes against other nuclear powers. It has maintained a policy of no first use, or threats of use, of nuclear weapons against nonnuclear states. The Chinese Communist Party (CCP) has traditionally prioritized a “lean and effective” nuclear deterrent and resisted the pull of Cold War–era arms races and nuclear buildups, instead maintaining a smaller collection of high-yield deterrent forces.<sup>23</sup> As a result, China did not figure prominently into US or Russian decision making during nuclear competition in the twentieth century. In the years since the Cold War, China has maintained a comparatively limited nuclear force structure. However, recent decades indicate that China is thinking more, not less, about its nuclear strategy and the potential use of nuclear weapons during a great power conflict.

Generally speaking, US analysts understand the broad strokes of China’s nuclear capabilities, but achieving high levels of confidence about the numbers and specific characteristics of deployed systems and warhead stockpiles is more difficult. Although the particular composition of China’s nuclear arsenal is somewhat enigmatic, we can be certain of a trend line that projects a nuclear force growing in quality and quantity. However, China’s nuclear arsenal will not approach parity with the United States’ within the next decade without a big change in Chinese behavior. As of May 2019, the Defense Intelligence Agency (DIA) projected that China will at least double the size of its nuclear stockpile over the course of the next decade.<sup>24</sup> Although the size of its arsenal pales in comparison to that of the United States and Russia (China has an estimated 280 warheads, while the United States has roughly 3,800), the increases to the Chinese stockpile puts China on track to surpass France as the third-largest nuclear-armed state.<sup>25</sup> Importantly, China’s warheads are strategic in nature; China does not maintain nonstrategic, low-yield forces. Nongovern-

mental estimates indicate older Chinese missile systems carry multimegaton warheads while newer road-mobile ICBMs have yields in the range of several hundred kilotons.<sup>26</sup> As a result, China might have far more difficulty delivering a one-off limited nuclear strike than would the United States or Russia, which have more flexible low-yield options.

China appears to be developing a more flexible nuclear triad that includes improvements to its ballistic missile submarines and a new air-breathing leg that comprises a nuclear-capable strategic bomber and air-launched cruise missile (ALCM). Many of its advancements have focused on bolstering the survivability of its nuclear forces by expanding road-mobile missile forces and the Jin-class SSBN.<sup>27</sup> The rapid and expansive modernization of China's nuclear arsenal implies an overall greater level of uncertainty as to the size, scope, and specific characteristics of China's nuclear forces, particularly over a 10-year horizon.

Additionally, there is considerable ambiguity surrounding which of China's new missile systems are dual-capable. This vagueness appears to be a deliberate strategic decision. China has undertaken a major expansion of its missile forces over the past two decades, developing a range of highly capable medium- and intermediate-range precision-guided munitions that threaten the ability of US forces to project power in the Indo-Pacific region. It is not clear from open source materials whether many of China's newer missiles are dual-capable and, if so, what the ratio between nuclear and conventional variants might be.<sup>28</sup> In particular, China's new DF-26 road-mobile IRBM is believed to be dual-capable, but it is indeterminate as to what portion of the estimated 80 systems now deployed might serve a nuclear mission. Analysts also disagree as to whether China's DF-15 SRBM can carry a nuclear warhead. A 2013 US Air Force Global Strike Command briefing indicated that China's CJ-20 long-range cruise missiles can deliver both nuclear and conventional payloads, an assertion that was not made again publicly until the 2018 Nuclear Posture Review (NPR) reported that China possesses both air- and sea-launched nuclear cruise missiles.<sup>29</sup> China's nuclear and conventionally armed forces are intermingled, which makes discriminating between the two more challenging.<sup>30</sup> If China has large numbers of dual-capable systems, Beijing could significantly influence the nuclear balance during a great power conflict even if only a small percentage were nuclear variants.<sup>31</sup>

Finally, the conditions under which China would consider nuclear use may be less straightforward than its NFU policy implies. A policy against first use would suggest that China would use its nuclear weapons only if attacked first as part of an assured retaliation strategy. Overall, there is

limited evidence of a prospective change to China's NFU policy. Chinese military publications focus exclusively on nuclear counterattack campaigns and do not reference contingencies for first or limited nuclear use.<sup>32</sup> It is more plausible that Russia—which reserves the right of nuclear first use in its declaratory policy—would escalate to nuclear use within the context of a conventional conflict than would China.

The DIA's most recent *China Military Power* report notes that “there is some ambiguity . . . over the conditions under which China's NFU policy would apply.”<sup>33</sup> In some track 2 dialogues, Chinese participants have clarified that “first use” refers exclusively to situations in which an adversary executes a nuclear attack against Chinese targets of any kind; a conventional attack against China's nuclear forces would not permit nuclear retaliation.<sup>34</sup> But the “leanness” of China's nuclear forces raises the marginal cost of any counterforce attack against China. Chinese military analysts have increasingly debated whether a conventional attack on China's nuclear forces or command and control might warrant nuclear retaliation.<sup>35</sup> In private, Chinese officials have said that China would respond with nuclear weapons if its nuclear forces were attacked with conventional weapons, reflecting a much broader interpretation of a NFU pledge as typically understood.<sup>36</sup> Concerns about US global conventional precision strike and integrated missile defenses are driving this particular conversation and could potentially “loosen” the NFU policy while increasing the probability of a great power conflict.<sup>37</sup>

The ambiguity surrounding NFU and the conditions under which China might employ nuclear weapons becomes more problematic when considered in conjunction with the ambiguity around which of China's missile forces are nuclear capable. Particularly in the event of a conventional conflict with China, the uncertainty about China's dual-capable systems introduces opportunities for miscalculation and vertical escalation, especially if China employs a broader definition of “first use” to involve a conventional counterforce attack. The prominence of China's missile forces in its nuclear counterattack plans necessitates their survivability. This is particularly true in the case of a small-scale counterattack that would require China to hold additional forces in reserve if follow-on strikes were required. Because China's nuclear and conventional forces are intermingled, US targeting plans for conventional forces would almost certainly threaten China's nuclear capabilities as well. Accordingly, US efforts to neutralize China's conventional missile forces that destroy nuclear-armed, dual-capable missiles—either intentionally or by mistake—could be perceived as an attempt to undermine China's strategic deterrent.<sup>38</sup>

If the US military is unable to reliably distinguish China's nuclear missiles from conventional weapons, and if policy makers fear that an attack on China's nuclear forces could provoke unintended nuclear escalation and calibrate their decisions accordingly, China can leverage its nuclear ambiguity to restrain US actions in the Indo-Pacific. The ambiguities surrounding China's dual-capable force have a deterrent effect similar to those surrounding Russia's red lines for nuclear use. The United States may be forced to behave in a manner that is extra cautious when engaging China's military forces. During a great power conflict, as China seeks to impede US access to the Indo-Pacific region as part of its effort to establish regional dominance, that extra caution may come at the expense of US interests and regional allies.

### **US Nuclear Ambiguity**

Ambiguity plays a valuable role in US nuclear strategy and hosts the same vulnerabilities as well. However, on balance, US strategy has trended toward increased transparency and less ambiguity during the post-Cold War period. In particular, the United States maintains a much higher degree of transparency with respect to the number and composition of its nuclear forces than do Russia and China. Arms control treaties with Russia have contributed mutual insight into the size and shape of US and Russian strategic nuclear forces. New START's verification and transparency regimes include biannual data exchanges, notification of deployment and basing of strategic delivery vehicles, and pre-launch ballistic missile notification. Nonstrategic weapons fall outside the New START agreement, but the United States has provided significant information and insight into the composition of its nonstrategic forces.<sup>39</sup>

Moreover, the nature of a government that is beholden to an electorate requires US leaders to make a public case justifying new nuclear systems and capabilities. Conversations about appropriate nuclear strategy and resources have been a part of the policy debate for decades, and decisions about new investments are also subject to heavy congressional debate. The broad characteristics of and strategic rationale for new systems, in addition to comprehensive cost estimates and data, are available to the public as a result of US government processes, providing competitors additional insight.

In 2010, the Obama administration declassified the history of the US nuclear weapons stockpile as well as the annual number of nuclear warheads dismantled since 1994 and, in 2014, the number of retired warheads awaiting dismantlement.<sup>40</sup> Greater transparency helped prove the US

commitment to Article 6 of the Non-Proliferation Treaty, requiring nuclear states to work in good faith toward eventual disarmament. However, the Trump administration decided in April 2019 to suspend the public release of US stockpile information, indicating that the United States would share less public information about its nuclear enterprise going forward and thus suspending transparency.<sup>41</sup>

The United States has a limited number of dual-capable platforms, most notably the nuclear-tipped AGM-86 ALCM, which has a conventional variant (CALCM). The long-range standoff weapon (LRSO) in development to replace the ALCM may also have a conventional variant. It is possible that a US adversary would struggle to determine the nature of an incoming CALCM attack, raising the risk of miscalculation and unintended response. It is for this reason that former secretary of defense William Perry has argued against the acquisition of an ALCM replacement, calling the nuclear-armed cruise missile a “uniquely destabilizing type of weapon.”<sup>42</sup> European-based F-16 and F-15E aircraft and most US long-range bombers are capable of both nuclear and conventionally armed payloads.

Non-offensive dual-use systems that support the nuclear enterprise are worth considering as well. James Acton has argued that the dual-use nature of US command, control, communications, and intelligence (C3I) systems—including early warning satellites and ground-based radars and transmitters that enable both nuclear and nonnuclear operations—leaves the United States vulnerable to unintended escalation. In a conventional conflict, it might benefit an adversary to attack dual-use US C3I assets to undermine conventional operations. However, a sufficiently degraded space-based radar capability may be misinterpreted as indication of an incoming nuclear attack, creating incentives for escalation.<sup>43</sup> These ambiguities could nevertheless create a deterrent effect.

But the most prominent example of strategic ambiguity in US nuclear policy is the matter of when the United States might employ a nuclear first strike. The final report of the 2018 NPR echoes decades of US declaratory policy when it asserts, “It remains the policy of the United States to retain some ambiguity regarding the precise circumstances that might lead to a U.S. nuclear response.”<sup>44</sup> From the earliest stages of US nuclear strategy, US policy makers have asserted the right to use US nuclear weapons to deter nonnuclear actions, and as a result, US leaders have repeatedly opted against committing the United States to a policy of no first use. The circumstances that might warrant a nuclear response have shifted slightly across various administrations. Post-Cold War nuclear strategy has re-

served the right to use nuclear weapons to defend against large-scale or “extreme” conventional or chemical and biological warfare (CBW) attacks against the United States and its allies. The scale of a CBW attack that would justify a nuclear response is undefined and intentionally so. The 2018 NPR does somewhat expand the circumstances under which the United States might consider nuclear use to include response to cyber aggression in “extreme circumstances.”<sup>45</sup> Presumably the NPR is conceiving of large-scale cyber attack on strategic targets, including US nuclear or dual-use command and control infrastructure.

The United States does employ strategic ambiguity in its declaratory policy related to the use of nuclear weapons to deter nonnuclear threats. However, US strategy rarely derives the benefits of overlapping ambiguities that Russia and China can exploit. US nuclear strategy leverages ambiguity with respect to declaratory policy, but far less so with respect to the size and composition of US nuclear forces. To communicate a combination of capability and resolve, US extended deterrence commitments necessitate a certain level of transparency about the size, scope, and intended use of the US nuclear arsenal.<sup>46</sup> The US convinces allies that it is both willing and able to defend them from nuclear threats by revealing some of its nuclear strategy, force structure, and posture. Russia and China have not developed the web of extended deterrence commitments like the United States. Without the imperative to reassure allies, both Russia and China can afford to maintain less transparency.

Risk aversion has also influenced the US inclination toward nuclear transparency. The value of risk aversion when considering scenarios as grave as great power nuclear war cannot be overstated. The problem, however, is that deterrence does require some level of ambiguity to be effective. This ambiguity about whether the United States might really be willing to intervene with nuclear weapons on behalf of an ally also extends to adversary calculations, and Russia and China will likely seek to exploit that ambiguity to undermine the credibility of US security guarantees.

### **Mitigating Nuclear Ambiguity**

The reemergence of possible great power conflict has refocused attention on the value of nuclear deterrence within Russia, China, and the United States. As Russia and China execute ambitious nuclear modernization programs, both countries are obscuring information about the size of their nuclear arsenals, the missions assigned to dual-use systems, and the conditions under which nuclear use might be considered. By leveraging a strategy of nuclear ambiguity, Russia and China are seeking to

restrain US actions in Europe and the Indo-Pacific, respectively. Many of these overlapping sources of nuclear ambiguity, however, increase the risks of limited nuclear use and escalation. To defend US interests and allies while simultaneously lowering the risk of limited war, the United States will need to develop strategies for dealing with the increased ambiguity inherent in great power nuclear conflict.

New damage limitation capabilities and more flexible nuclear options involve specific investments the United States could make so its nuclear and conventional force structure is better suited to meeting the challenges of nuclear ambiguity to deter and, if necessary, respond to a limited nuclear attack. With respect to China, the United States could pursue damage limitation capabilities that would reduce US vulnerability to China's nuclear forces and reinforce deterrence by denial. The large imbalance in size between the US and Chinese nuclear arsenals makes this a possible, albeit challenging, option. Damage limitation capabilities might include expanded ISR capabilities that could facilitate identifying and tracking China's mobile nuclear missile forces, improving integrated cruise and ballistic missile defenses, and developing left-of-launch strategies.<sup>47</sup> These technologies would also assist in solving the current nuclear discrimination problem as they would require the ability to distinguish nuclear from conventional forces.

Improved damage limitation would not directly target Russian and Chinese sources of nuclear ambiguity. Even if imperfect, it could reinforce deterrence against limited nuclear attacks—particularly those on US allies—in a few ways. First, Charles Glaser and Steve Fetter note that greater investments in damage limitation capabilities designed to counter China's nuclear forces might signal to China the seriousness of the US commitment to its security guarantees in East Asia.<sup>48</sup> It would, in essence, serve to eliminate ambiguity about whether the United States might really be willing to intervene with nuclear weapons on behalf of an ally. Moreover, a damage limitation capability would make US retaliation after a limited nuclear attack more credible by lowering the costs of escalation that often undermine the believability of US extended deterrence guarantees.<sup>49</sup> Finally, the prospect that the United States might neutralize China's nuclear capabilities in response to a limited attack on a US ally would dramatically lower the attractiveness of executing that limited attack in the first place. The downside, however, is that stronger damage limitation capabilities might incentivize a larger scale nuclear attack along a "use it or lose it" logic, thus creating a security dilemma. Moreover, if US conventional prompt global strike and missile defense forces are already encouraging Chinese strategists to revise the NFU, then doubling down on a strategy



that would render China's nuclear arsenal impotent seems likely to exacerbate those fears and encourage a more expansive Chinese attitude toward nuclear use.

A second option to mitigate the risks of limited war posed by nuclear ambiguity is to develop more flexible offensive options capable of responding in kind to the range of limited nuclear capabilities held by US competitors. The United States has long sought increased flexibility as an antidote to nuclear uncertainty and to hedge against sudden strategic shifts in the nuclear landscape. The flexibility that the triad affords hedges against a competitor's rapid technological developments in a particular area, such as antisubmarine warfare, to ensure the continued viability of the US deterrent. To manage the risks of a limited nuclear strike, US policy makers could pursue nuclear investments prioritizing diversity and flexibility. Doing so would reinforce US credibility to respond in kind to a limited nuclear attack.

The Trump administration is already pursuing more flexible low-yield options for precisely this rationale. The 2018 NPR outlines plans for a new low-yield Trident II D5 SLBM intended to "counter any mistaken perception of an exploitable 'gap' in U.S. regional deterrence capabilities."<sup>50</sup> As the 2018 NPR lays out, new low-yield capabilities might be particularly relevant to a limited nuclear scenario in Europe. The ambiguity surrounding Russia's escalation doctrine poses a particular challenge for US analysts seeking to understand how Russia might employ its sizable nonstrategic arsenal, particularly if engaged in a conventional conflict in Europe. New, more flexible low-yield options could help NATO counter the risks associated with this ambiguity by ensuring that, whatever Russia's concept for employing nonstrategic nuclear weapons, an in-kind nuclear response is possible. NATO's current options include B-2 or legacy fighters equipped with gravity weapons, which may be inadequate facing Russia's advanced integrated air defense systems (IADS). NATO's strategic inventory would fare better against Russian IADS; however, their employment would require more vertical escalation that may not be credible to Moscow, nor preferable to NATO. A wider range of options would provide a hedge against the uncertainty in how Russia might employ its nonstrategic weapons to ensure that, regardless of Moscow's true intent, NATO is capable of responding in a proportional manner.

A third option—new efforts to increase transparency through strategic dialogue—involves political and diplomatic efforts to combat nuclear ambiguity prior to multipolar competition and conflict. This would be a different approach to mitigating ambiguity, leaning on political and diplomatic

levers to enhance transparency through greater engagement with both Russia and China. Bilateral strategic arms control efforts between Washington and Moscow during and since the Cold War fostered predictability in the strategic relationship and, for some periods, managed to remove entire categories of systems from the nuclear balance—including ballistic missile defenses and intermediate-range missiles. Greater transparency can mitigate the tendency to hedge for the worst-case scenario by providing evidence to the contrary.

Even without formal bans or limitations, though, US policy makers could still pursue dialogues with China and Russia to foster better insight into Russian and Chinese perceptions of nuclear balances and attitudes toward nonstrategic weapons and limited nuclear use. Cooperative transparency could include asymmetric exchanges of information based on what might be valuable to each country. For instance, the United States could offer a structured reporting of its strategic forces while China reciprocates with information about its nuclear-capable delivery systems.<sup>51</sup> This type of greater transparency does not necessarily require ambitious treaties, though it is such a departure from China's standard approach to disclosure that there is little cause for optimism. Russia and China made no moves to increase disclosure of their own nuclear forces from 2010 to 2017—when US nuclear stockpile figures were declassified—indicating that unilateral efforts to improve transparency may prove fruitless. Given Russia's reluctance to engage in arms limitation efforts related to its nonstrategic weapons, it is improbable that they will suddenly do so without some kind of major concession from the United States.

Fourth, the United States could adopt a NFU policy in an effort to mitigate the ambiguity inherent to current US declaratory policy. By adopting a NFU policy, the United States would effectively eliminate the most significant ambiguity in contemporary US nuclear strategy, providing competitors insight into the size, posture, and intended use of US nuclear forces. The United States could adopt a NFU policy unilaterally or in exchange for certain commitments or concessions from Russia and China. In the best-case scenario, increased unilateral transparency would mitigate the security dilemma, reduce tensions between the great power competitors, and encourage improved in-kind transparency from Russia and China. It is worth noting, however, that the United States' unilateral deprioritization of nuclear weapons over the past 20 years did not produce corresponding behavior from Russia or China. In other words, recent precedent does not suggest that the United States will necessarily achieve success seeking to ameliorate the security dilemma through unilateral action.

A major challenge would be reinforcing the credibility of a NFU guarantee. The United States has reserved the right to use nuclear weapons in response to nonnuclear threats for as long as it has maintained a nuclear arsenal. Failure to demonstrate enduring bipartisan support for NFU would undercut the credibility of the US commitment to no first use and blunt the improvements to Russian and Chinese behavior that the policy would intend to produce. When Brezhnev announced the Soviet Union's NFU pledge in 1982, US policy makers immediately dismissed it as hollow rhetoric, and the pledge had no real impact on the trajectory of US-Soviet competition or cooperation. It would take skillful diplomacy and tangible action to convince China and Russia of the sincerity of a US NFU pledge. Lastly, a NFU pledge would erode the credibility of US extended deterrence guarantees in Europe and Asia, which could unintentionally incentivize Russian and Chinese risk-taking aggression by lowering the costs of regional aggression and brinkmanship.

Finally, the United States can meet ambiguity with ambiguity and make it more difficult for competitors to exploit the relative transparency of US nuclear forces and doctrine surrounding nonstrategic forces and attitudes toward limited nuclear use. It might entail greater reluctance to engage in strategic dialogues or to offer unilateral sources of transparency. The Trump administration's disinterest in the bilateral US-Russia arms control regime and the renewal of New START is one indication that US policy may already be headed in this direction. At its most effective, a strategy of increased ambiguity might recalibrate Russia and China's risk tolerance and convince them to take steps that reduce sources of ambiguity most relevant to limited nuclear war. By withholding information about its nuclear forces and policy, the United States could create new sources of leverage to secure other strategic objectives.

Multilateral ambiguity involves risks; a lack of information can lead to worst-case thinking, exacerbate the security dilemma, and foment arms races. A multipolar, competitive nuclear landscape faced with a dearth of information could be a dangerous landscape, prone to mixed and unclear signals and a high risk of unintended escalation. This option would also introduce new challenges for extended deterrence given that ambiguity often degrades the credibility of security guarantees. Mitigating ambiguity is thus likely to become one of the central tasks of nuclear policy and strategy in an era of renewed great power competition and may well prevent great power conflict. **SSQ**

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# Techniques for Great Power Space War

PAUL SZYMANSKI

## Abstract

Based on the study of military history for the past 50 years, and direct involvement with space warfare programs for the past 46 years, the author has developed general rules by which the next space war may be conducted. These concepts can lead to a full set of space warfare doctrinal principles, rules, escalation concepts, and termination criteria. This article offers a practical view of space war fighting outside the normal style of *SSQ*. The value of this piece comes from the author's unusually rich experience in space and other military programs and is offered as a chance to spur reader thought and input. Since a space war has not yet occurred, all of these ideas are notional and unproven. Nonetheless, it is productive to better understand how a future great power space war might be conducted to ensure favorable outcomes by analyzing fundamentals of space warfare, rules for its conduct, space war escalation control, and criteria for space warfare termination.

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Space and space warfare compose a somewhat unique domain when compared to terrestrial warfare. For instance, space warfare has global coverage and is responsive within a few hours anywhere on Earth. As well, many countries use commercial and civil imagery and radar satellites that benefit the military and civilian sectors at the same time. Space war can be conducted to heighten emotions and may drive countries to terrestrial conflicts. It is the penultimate expression of unmanned automated systems—with possible weapons.

Contrary to popular belief, space is not a target-rich environment where just about every target is strategic and costs millions of dollars. It is also the most difficult environment for verifying attacks with hostile intent, for subsequently validating which country or entity was responsible, and for determining the impact of space attacks on the final outcomes of terrestrial battles and wars. Further, an adversary's ability to conduct surprise attacks in space is easier than with terrestrial attacks. The significant dif-



ference between space and terrestrial realms is that we have many concrete examples of warfare on Earth, whereas a space war is too conceptual with no real experience on which to ground our frame of reference. In addition, real space warfare may seem like an elaborate video game played by satellite controllers. As a result, even participants in a space war are not as affected by the potential implications of their actions.

Recently, much has been said about a Space Force and the probability of space wars. There is a significant buildup of space warfare capabilities by some major powers who rely on space systems for their defense or perceive that their potential adversaries depend too much on space capabilities. However, because of the lack of extensive experience in this new military domain, it is difficult to fully understand what the best doctrine, strategies, and tactics are to win the next space war. This begs the question, Does the United States have the foundational principles by which future space wars can be won? Future space warfare strategies and tactics for great power conflict in space have not been proven for any country, and yet the future of space warfare is rapidly approaching.

In their book *Chinese Aerospace Power*, scholars Andrew Erickson and Lyle Goldstein find it interesting that Chinese space warfare doctrine closely resembles German strategic doctrine in the twentieth century.<sup>1</sup> The Chinese have the same strategic outlook, as they believe the United States would prevail in any protracted conflict due to superior technology. Thus, the stage is set for space blitzkrieg at the beginning of any great power conflict between China and the United States. Would the Chinese strike our space assets in a lightning-quick surprise attack or simply position themselves to threaten our space assets so we hesitate in our responses and self-deter? If we also position our space control assets that threaten Chinese space systems, does this create an imminent strategic impasse, which can quickly, and inadvertently, devolve into general space war due to poor space situational awareness (SSA)? Does the side that attacks first generally win future space wars? Does all of this sound similar to the risks of nuclear war but without the self-deterrence of mutual mass destruction? The Chinese are starting from scratch in developing space warfare theory and doctrine and are not hindered by long space traditions. Over the past 50 years the United States has not felt the need to develop space warfare doctrine. It might have better and more numerous space forces than any potential adversary, but if the US lacks the proper doctrine, strategies, and tactics, then it is open to defeat by more agile forces. Adversaries may be new to this domain and thus may have more flexible and innovative plans—particularly for surprise attacks. Current space warfare thinking

can be enriched by extending the traditional doctrine, strategies, and tactics of terrestrial warfare into the space environment.

This article sheds light on the issue by exploring the strategies and principles of space warfare. It provides a set of rules for decision makers to prosecute war in space along with ideas on conflict escalation and termination of space warfare. While it may be difficult to determine whether a space anomaly is an intentional attack, unintentional occurrence, or natural cause, understanding potential adversary attack options will help considerably in determining optimal responses.

### **Strategies and Principles of Space War**

Certain strategies, such as surprise or application of mass attacks, are just as applicable today in futuristic space systems as they were 2,500 years ago in a Greek phalanx.<sup>2</sup> How one conducts war (military doctrine) is the key aspect of winning conflicts. There are many examples in military history where one force that appeared superior on paper was summarily defeated by a much “inferior” force because it had better doctrinal concepts and implementations.

Space war fighters usually consider only the tactical level of war and ignore the operational and strategic implications. The deep political nature of space war definitely requires that all operators be fully aware of the repercussions of their actions outside of the tactical realm. Denying the capabilities of a single adversary satellite may also deny the intelligence community’s ability to monitor that threatening space system. Attacking an adversary satellite would directly reveal allied intentions and war plans, imply possible future operations, and expose space capabilities previously unknown to adversaries. An even more critical consequence is the possibility that employment of space weapons will cause allied and adversary political realignments post-conflict.

Many are familiar with the ancient Chinese military scholar Sun Tzu (544–496 BC) and his classic *The Art of War*, which he wrote while studying classical military strategies and tactics. What may be surprising is that these ancient principles are still applicable to today’s space warfare. The infancy of space warfare thinking creates a situation where simply applying these ideas into a space warfare strategy could prove decisive in a future space battle. For example, if predictive battlespace awareness (PBA) techniques indicate a potential adversary is pre-positioning some of his threat assets for some near-future space attack, a good defensive strategy based on Sun Tzu’s principles would be to constantly maneuver your satellites to complicate the adversary’s targeting solutions. One may also ma-

neuver some satellites close to an adversary to threaten and disguise true intentions. The Sun Tzu-derived strategy examples for space warfare are listed below:<sup>3</sup>

- Constantly or intermittently conduct small maneuvers to frustrate an adversary's ability to calculate precise orbital parameters to target allied satellites and prevent it from understanding allied space plans, doctrine, strategies, and tactics.
- Only use space weapons if the effect is commensurate with the political and financial costs, loss of future surprise, and loss of future capabilities (weapon system magazines used up and consequences of adversary responses affecting Blue and Gray systems).
- Study an adversary's space doctrine, strategies, tactics, organizations, and leadership personalities to discover his strengths and weaknesses so you may better catch him off guard during space systems surprise attacks.
- Continually harass the fixed space systems defenses of your adversaries so they are constantly off-balance, more hurried, and less timely in fulfilling their mission objectives.
- Remember, you are not fighting an adversary's forces and machines as much as you are fighting an adversary commander's perceptions, biases, experiences, training, organizational structures, upper military and political superiors, intelligence, mental and emotional strengths, weaknesses, and endurance. The weakest point in a space system may be the human element, including scientists, engineers, technologists, and additional supporting staff.
- Dangle out in front of your adversaries tempting space systems targets to draw out their space control resources, military plans, and intentions.
- Those who start conflicts and attack first know the best place and time of the coming space battle.
- Due to orbital dynamics and continual satellite movement, the place and time of the coming battle is constantly moving and changing. This unpredictability requires different strategic and tactical perspectives than do terrestrial battles and demands unique graphical solutions and highly dynamic computer processing to support battle planning.
- Many times, those who get to the battle the quickest are the winners, not those who wait in order to concentrate the most forces.

- A good space plan requires your adversaries to come at you and use up their maneuvering resources more so than yourself, allowing allied systems to perform more aggressive attacks later on.
- You may sacrifice some space assets to make your adversaries believe in your carefully falsified military objectives.
- Periodically launch new space vehicles to keep your adversaries confused and off balance.
- Launch or maneuver a new, mysterious satellite that comes close to critical adversary satellites to make your adversaries pause in their military execution plans, to show resolve, and to warn them to back down.
- Heavily defend certain orbits to force an adversary's spacecraft to other orbits of your choosing.
- During space conflicts you may decide to trade orbital space for time. In other words, you may give up key orbits and maneuvering room solely because it will take your adversaries some time to fill this void or chase you down, or simply force them to use up valuable satellite fuel, while giving yourself more time to make better counterattack preparations.
- Initiate multiple false starts—threatening space and terrestrial maneuvers, for example—to induce your adversaries to begin constant satellite maneuvering so as to waste their on-board fuel reserves before actual conflict starts.
- The most easily accessed orbits might also be the best killing zones.

### ***Space Centers of Gravity***

Centers of gravity are also important for creating and executing a space warfare strategy. According to Joint Publication (JP) 5-0, *Joint Planning*, a center of gravity (COG) is “a source of power that provides moral or physical strength, freedom of action, or will to act.”<sup>4</sup> This concept applies equally to space warfare and terrestrial operational planning. It is not a concept that is well understood with current space battle management planning. Figure 1 is an attempt to evolve the Centers of Gravity model developed by Col John Warden and extend it to space warfare planning.<sup>5</sup> Figure 2 takes this model a step further and starts to delineate space political/military COGs, along with will and intent, as major factors in an adversary's ability to wage war.<sup>6</sup>

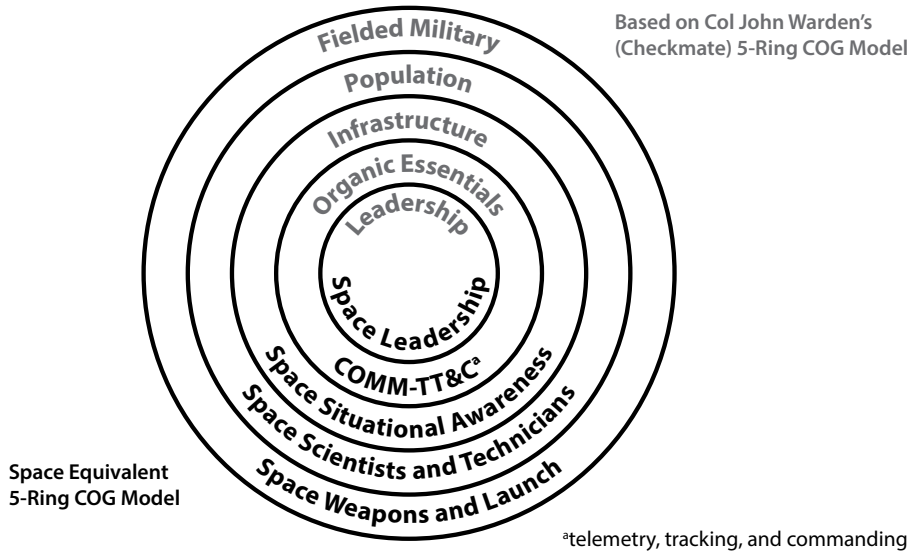


Figure 1. Space Centers of Gravity model

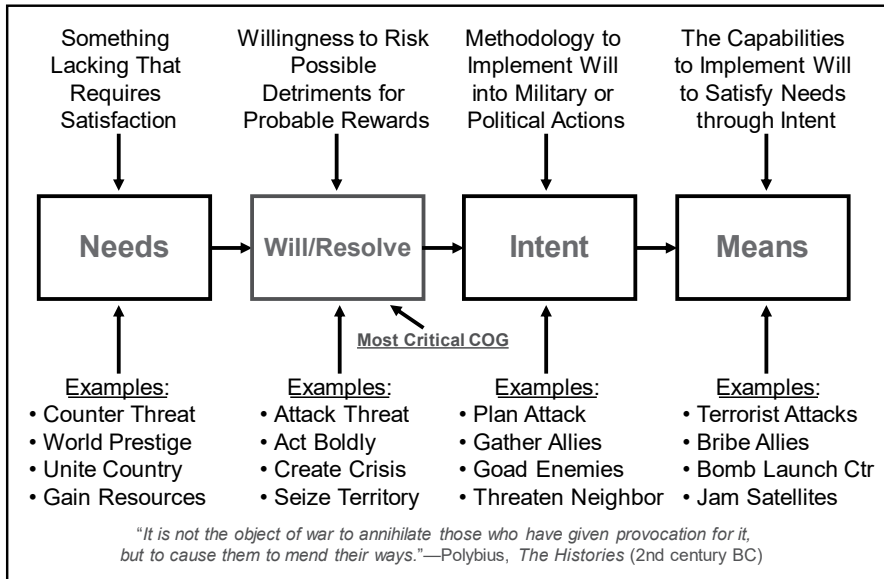


Figure 2. Space political/military COGs

While strategies and centers of gravity are essential for planning to successfully fight a space conflict, time-honored principles of war must also be considered.

## *Principles of Space War*

Classical military principles of war can and should be applied to space warfare. The distinction between terrestrial versus space usage is noteworthy, and the nine principles below are instructive.<sup>7</sup> Whether for space or terrestrial warfare, the principles are the same. However, there are aspects of space that should be better understood when applying these principles. The space principles of war are framed as a series of questions space planners should ask.

- Objective
  - **Terrestrial:** *“Direct every military operation toward a clearly defined, decisive, and attainable objective with measurable effects.”*
  - **Space:** Are your objectives to take out an individual satellite or a total system capability that may be supported by both satellites and ground systems? Will taking out the satellite be decisive in denying that category of information? Does it have a measurable impact on the battlefield? Which military objectives does this system support? Is satisfaction of these objectives achievable?
- Offensive
  - **Terrestrial:** *“Seize, retain, and exploit the initiative.”*
  - **Space:** Is there political will to start a space war at the beginning of a terrestrial conflict and seize the space initiative, or is taking out ground sites supporting space sufficient to achieve objectives? Are we setting the time, place, and terms of the space battle? Does the battle tempo include space attacks on a continuing basis to keep the adversary off balance? Can space weapon systems sustain continuous attacks? Is there a preapproved ramp-up of space attack severity to exploit successes for further gain?
- Mass
  - **Terrestrial:** *“Mass the effects of overwhelming combat power at the decisive place and time.”*
  - **Space:** Are there sufficient weapons to achieve continuous or sustained space control? Can the adversary reconfigure his space systems to avoid attack? Are the space weapons overwhelming to the military function they are trying to deny? Is there political will to implement massed space attack? Can space weapons get into position at the decisive place and time? Do we actually know the decisive place and time for space weapons application? Can multiple space weapons be synchronized for employment simultaneously and coordinated with terrestrial attacks?

- Economy of Force
  - **Terrestrial:** *“Employ all combat power available in the most effective way possible; allocate minimum essential combat power to secondary efforts.”*
  - **Space:** Are all space control efforts and weapon systems integrated into one deployment/employment plan? Is the target list optimal with minimal weapons use? Are different phenomenology weapons attacks integrated (e.g., cyberattack synchronized with laser combined-arms attacks)? Are the results of space control decisive to the battlefield? Are all space control systems employed purposefully at all times of the conflict—even in delay, limited, or deceptive kinds of attacks that focus the adversary’s attention away from the main space attack?
- Maneuver
  - **Terrestrial:** *“Place the enemy in a position of disadvantage through the flexible application of combat power.”*
  - **Space:** Have space weapons been deployed in optimal positions and time-space phasing? What is the effect on the adversary of space weapons use? Has the “high ground” of space above the battlefield been won? Are there critical orbits/time phasing/launch corridors/communications paths around the world contributing to the battlefield that need space superiority consideration? Has access to space been denied to the adversary and his allies and optimized for the Blue side and allies? Has Blue freedom of action been maximized while minimizing Red freedom of action in space? Are points of application of space control weapons constantly shifted to confuse adversary response and also avoid predictable patterns of operation for survivability reasons? Have critical space superiority systems been serviced with maneuvering fuel prior to space conflict?
- Unity of Command
  - **Terrestrial:** *“For every objective, seek unity of command and unity of effort.”*
  - **Space:** Have space control, information war, and air/ground attack plans been integrated with each other and with intelligence collection requirements? Does the “classic” target allocation process give sufficient consideration to space/info targets? Is there adequate space/info war delineation of chain of command and decision responsibility? Are space target lists traceable back

to objectives (both Red and Blue)? Do Blue and Red terrestrial commanders appreciate the importance of space to their conduct of the war? Since space is global, have Blue allies been part of the space warfare decision-making processes?

- Security
  - **Terrestrial:** “*Never permit the enemy to acquire unexpected advantage.*”
  - **Space:** Are space forces, including weapon systems, survivable in the battlefield environment? Have operations security (OP-SEC) and fratricide concerns been met? Have Blue space choke points (orbits/time phasing/launch corridors/communications paths), centers of gravity (telemetry, tracking, and commanding [TT&C] and launch sites), logistics, and command structures been identified and protected? Does Blue have alternative space-related sensor, processing, command, and communications paths? Are Red space strategies, tactics, doctrine, organization, commanders, and intentions assessed?
- Surprise
  - **Terrestrial:** “*Strike the enemy at a time or place or in a manner for which he is unprepared.*”
  - **Space:** Does the adversary know that space control weapons exist or that they have been deployed to the theater? Do these weapons have covert war operating modes to surprise the enemy? Are there a series of surprise space control weapons that can be alternated to maintain cover? Is the use of these weapons detectable or attributable to a specific country by an adversary? Timing and tempo of space weapons use can also surprise, even if their existence is known. Threats of weapon use, even if the weapon does not currently exist, can effectively surprise.
- Simplicity
  - **Terrestrial:** “*Prepare clear, uncomplicated plans and concise orders to ensure thorough understanding.*”
  - **Space:** How complex are space weapons, and are the effects of their use easily understandable by non-space Blue and Red commanders (do they know they’ve been hurt bad)? Are there branches and sequels to space control operations if they fail or if they are successful?



## **Rules for Conducting Space Warfare**

Strategies and principles are underlying determinants of success in space warfare. However, certain rules will be essential once the fighting begins. Such rules could be the difference between victory and defeat. These rules are the key elements of how to fight and win the next space war.<sup>8</sup> Most importantly, before any major military conflict is initiated on the Earth, a smart adversary would likely position threatening space assets at key locations in space to better enable surprise attacks while minimizing maneuvering fuel requirements. If countries invest in space situational awareness networks (radar, optical, and intelligence) on the ground and in space, they can be prewarned of impending space attacks and confront the adversary—possibly averting both terrestrial and space conflicts.

**1. *Satellite Posture:***

Dominating and survivable preconflict satellite positioning and extensive satellite on-board maneuvering fuel are of prime importance.

**2. *Space Awareness:***

Perceptive SSA and predictive battlespace awareness will dominate any offensive weapons capabilities.

**3. *Doctrine and Will:***

Effective doctrine and decisive political will are most necessary to counter adversary military actions in the space environment.

**4. *Maneuver:***

A satellite's ability to frequently conduct large, small, or continuous maneuvers—especially just before and during a space conflict—might be the best capability to keep your adversaries guessing as to your space control intentions and planning (besides complicating their targeting solutions), especially when they may lack worldwide space surveillance sensor coverage.

**5. *Unusual Orbits:***

Unusual orbits increase the difficulty of your adversaries in determining your intentions or targeting you quickly.

**6. *Pre-conflict Positioning:***

Since it is very difficult to change orbits at the last minute (especially changing orbital inclination), immediate space combat can only be fought with the current resources on hand in the local area. There will be no trans-conflict redistribution of space forces to help those forces under immediate attack. Thus, pre-conflict positioning

of space assets is possibly the most important aspect of space strategies. This principle is related to the other fundamental principle of maximizing high-maneuvering abilities of space assets.

**7. *Value of Space:***

Due to the newness of space warfare, your adversary probably does not fully understand the true value of space both to himself and to his opponents. This complicates his ability to prioritize his targeting plans and may contribute to him wasting precious maneuvering fuel and limited “shots” from space weapons, along with ceding time and tempo advantages to the other side.

**8. *Political Consequences:***

Due to the newness of space warfare, our adversary and probably we do not fully understand the political, diplomatic, economic, and international ramifications of employing space weapon systems, especially for post-conflict impacts.

**9. *Effective Doctrine:***

Due to the newness of space warfare, our adversary and probably we do not fully understand the best theory, doctrine, strategies, tactics, and techniques for conducting optimized space warfare. Big mistakes will be made by both sides.

**10. *Mistakes Will be Made:***

Due to the newness of space warfare, most carefully laid plans, doctrines, strategies, tactics, and techniques as well as political, technological, and correlation of forces assumptions will prove false and be immediately thrown out (or worse, be so dearly held that they lead to immediate defeat). This rule applies equally to both sides of the conflict unless one side is lucky enough to have gotten space doctrine slightly more correct than the opposing side.

**11. *Vary Space Weapon Types:***

Due to the newness of space warfare, it might be best to possess different phenomenology space weapon systems with varied basing options. Doing so will increase the chances that you developed your preplanning and space doctrine correctly for a type of conflict that has never occurred before. Remember, in all previous wars the first casualties were primarily the pre-conflict plans.

**12. *Define Winning:***

The concept of “winning” in space warfare is not clearly defined. Its definition may be created by political leaders with limited tech-

nological or military knowledge and be based on purely political, propagandistic, or failed doctrinal principles. Your adversary will certainly have a very different definition of winning, which means both sides may perceive they have “won” the space conflict and derive quite different conclusions that will dominate their military, political, diplomatic, and economic (commercial and procurement strategies) thinking for decades to come. To be in a favorable position post-conflict, a nation should consider these factors in the space strategies it employs during a conflict, the future political effects, and adversary and allies’ post-conflict reactions.

**13. *Space Debris:***

Creation of too much space debris during space conflicts may make losers out of all sides after the conflict in the long term.

**14. *Future Political Effects:***

You may be assured that after the conduct of a major space war, national and international protocols, treaties, rules of conduct, and alliances will be radically changed for space.

**15. *Adversary Post-conflict Reactions:***

You may be assured that after the conduct of a major space war, your adversaries, and other nations, will learn from this war and probably build up their own space weapon capabilities—even if necessarily covertly.

**16. *Space Escalation Ladder:***

Due to the remote nature of space systems, the world’s populace may be kept in the dark (especially for low-level space conflicts) about what is truly happening, which provides additional, more subtle rungs on the conflict escalation ladder, allowing nations to privately exhibit resolve and to send determined political messages.

**17. *Space Warfare Inherently Conflict Destabilizing:***

Because a small, relatively inexpensive space mine can take out a large billion-dollar satellite critical to the conduct of your military operations, and actual satellite point defense is problematic due to possible antisatellite (ASAT) hypervelocity closing speeds, offense is probably better than defense in space warfare, making it inherently unstable for conflict escalation control.

**18. *Quick Space Attacks Possible:***

Due to the remote nature of satellites in space, small-scale space attacks may be initiated, executed, and completed before the

recipient even knows it is under attack, who is attacking, what the attack strategies and goals (end states) are, and when an uncomprehending senior political leadership can validate the attack and respond in a military, political, diplomatic, or economic manner. Large-scale space attacks may be initiated, executed, and completed within 24–48 hours. Without adequate and timely SSA and determined and decisive political will, an adversary can easily get within your observe, orient, decide, act (OODA) command and control loops for space and subsequently shock and confuse you.

**19. *Space Exhibits Escalation Imbalances:***

Due to the remote nature of satellites in space and the difficulty for space surveillance assets to determine the true nature of space attacks, and because space attacks may be initiated, executed, and completed within 24–48 hours, there is a good chance that the side that initiates space attacks first will be the side that wins the space war.

**20. *Covertiness and Surprise of Prime Importance:***

Due to the remote nature of satellites in space and the difficulty for space surveillance assets to determine the true nature of space attacks, and because space attacks may be initiated, executed, and completed within 24–48 hours, covertness and surprise will significantly contribute to winning the space war.

**21. *Joint Military and Commercial Space Use:***

Mixing military and commercial systems on the same satellites increases the chances of space conflict escalation due to the general populace immediately becoming aware of the effects of satellite loss, subsequently creating pressure on political leadership to take precipitous actions. Thus, the nuances of steady and reasoned escalation control are lost.

**22. *Space Only Benefits Terrestrial Systems:***

Space conflict is all about denying satellite support to military forces or civilian populations on Earth, not simply the elimination of satellite systems for destruction's sake or as a space war "scorekeeper."

**23. *Small Space Forces Can Beat Larger Ones:***

As in many other conflicts past and present, having space forces that appear superior in numbers and technological quality on paper does not guarantee a win under all circumstances. There are many examples throughout thousands of years of military history of nu-

merically inferior forces beating their “betters.” Many times, it is the forces with better doctrine, planning, morale (political will), or positioning that win. This can only be truer for a new area of conflict in space that has little, if any, past military examples and experiences.

**24. *Decisive Political Will:***

Having space forces that are superior in numbers and technological quality are useless if there is not the decisive political will to fully and quickly employ them. This principle may imply that dictatorships are more at an advantage than democracies. Hesitation and uncertainty can rapidly lead to failure in outer space warfare.

**25. *Space Situational Awareness and Weapons Range:***

It does not matter how plentiful or how brilliant your adversary's space weapon systems are if they cannot find or reach your critical space systems. If you are constantly maneuvering so that the adversary cannot find you, your satellites are in hard-to-reach orbits or have low observables, or you possess many believable satellite decoys, then he can never dominate you.

**26. *Public Opinion Will Limit Military Options:***

Even though space wars entail very few, if any, human casualties, international public opinion values space wars as more politically unacceptable compared to terrestrial destruction and loss of human life from traditional warfare on Earth. In addition, space wars will fire the imaginations, good or bad, of your citizens, along with much of the rest of the world that is not actively participating in the conflict.

**27. *Allies Count Little Militarily for Space Wars:***

Due to the limited number of countries with future space weapons systems and their attendant need for covertness, along with international political sensitivities, each adversary will probably have to go it alone, and its allies cannot or will not significantly help it openly in the coming space conflict.

**28. *Space Treaties Will Be Violated:***

Most space treaties will be violated in the first few hours of the coming space war. International treaties have usually been violated in most previous major terrestrial conflicts and, due to the remoteness of space, treaties concerning the military use of space are

easier to ignore—especially when the world populace may not even be aware of this ongoing space conflict and treaty violation truth will be hard to come by.

**29. *Data Relay Satellites Are Prime Targets:***

Possibly the most important space targets will be satellites that relay data and commands directly to other satellites in remote orbits, making them choke points for critical space systems. This is particularly true for those countries without extensive worldwide satellite ground control stations.

**30. *Defense versus Offense:***

Nations that have more space systems being used by their military also have more space systems to defend—and probably must emphasize defense over offense in their technology developments and military planning. If your adversary has few space systems, then there are fewer targets for your offensive space weapons, and you must emphasize defense. This is the case unless you believe that you have perfect SSA and know all of your adversaries' and their allies' offensive space weapons. You must also believe that you can target and neutralize these weapons early in the space conflict before adversaries can fully implement their offensive space warfare plans. In past military history, overconfidence in the ability of intelligence collections assets has led to certain defeat.

**31. *Space Situational Awareness Is Prime:***

Because of the inherent instability of offense versus defense in space warfare, the most essential tool for senior military and political space leaders is space surveillance and identification sensors with corresponding automated assessment algorithms, particularly those that provide PBA.

**32. *Space Warfare Systems Are Untested:***

If your adversaries have space warfare systems untested in real, sustained combat, then their true abilities against you are uncertain and probably possess “cracks in their armor.” Unfortunately, the same is probably true of your space warfare systems (whether you believe this or not), but the true vulnerabilities and failure

points of both sides may not be obvious or believable. However, due to the new nature of space warfare, be assured that they do exist in plenitude.

**33. *Differing Cultures and Military Traditions:***

Because your adversaries probably come from different cultures and military traditions than your own, their differing perspectives allow them to have a higher probability of detecting your space warfare systems' nonobvious "cracks in their armor" than you do, and vice versa.

**34. *You Are Always Vulnerable:***

As in all military matters since time immemorial, due to the cleverness of human beings especially under stressful combat conditions, your adversaries will ultimately find your vulnerabilities and get through any defenses you may fool yourself into thinking are invulnerable.

**35. *Decisive Commanders:***

For those countries at war with roughly equal space warfare forces, the main decisive factor could be which country may be lucky enough to discover and believe in the one decisive commander who is a genius in space warfare organization, doctrine, strategies, and tactics. This premise would hold especially true for the non-traditional nature of space warfare. In addition, those countries with the least meddling in military matters by their politicians might be the decisive factor in winning the war (though possibly "losing" the peace afterwards).

**36. *Little to No Human Casualties:***

Because space warfare involves little to no human casualties, commanders can be particularly decisive and cold-hearted in their planning and execution compared to terrestrial warfare. As Lt Gen Roger G. DeKok, a former US Space Command vice commander,

stated, “Satellites have no mothers.”<sup>9</sup> In addition, morale and courage on the battlefield are of less importance, though command decisiveness remains a critical factor.

**37. *Low-Cost Offensive Weapons:***

Due to the hypervelocities of space orbits, one cannot adequately armor spacecraft, and a small, relatively inexpensive space mine can take out a large billion-dollar satellite critical to the conduct of your military operations.

**38. *Space “Fog of War”:***

The potential for confusion known as the “fog of war” is well documented for terrestrial battlefields. It will be even worse for space warfare due to the newness of this theater for conflict, the tremendous distances involved, and the global nature of space.

**39. *Commercial Satellites Are on Their Own:***

Commercial satellite operators whose expectations are that the military will protect their space systems during conflicts will have a rude awakening.

**40. *Checklist Vulnerability:***

Operators trained to respond to unusual situations by checklist actions can be easily spoofed and manipulated by a clever adversary, especially in a contested environment with denied or degraded communications to higher headquarters.<sup>10</sup>

## **Space Conflict Escalation Control**

General escalation in space can intensify or even initiate conflict on Earth. A critical aspect of space warfare is limiting the conflict to specific levels of weapons employment in specific theaters of operation. At the same time, space provides additional rungs on the conflict escalation ladder, enabling countries to show resolve. Senior leaders in Washington would likely require absolute proof of who the attacking country is when our satellites are destroyed before they would allow any counterstrikes. Since attacking ASAT systems do not have big red stars painted on their sides and are likely constructed of Western parts, quick attribution is quite problematic. It may essentially cause self-deterrence and paralysis of national leadership decisions. Currently, if a satellite stops working, determining the cause takes weeks and months and is ultimately only a guess since these space systems cannot generally be directly imaged. US adver-



saries do not seem to practice self-deterrence. As a result, the space war may well be over before the United States even knows it began.

The following tables give a preliminary basis as to which actions in space may cause potential adversaries to respond in an escalatory manner. Table 1 depicts what kinds of attacks may be permitted according to the current level of conflict. In other words, if potential adversaries are generally at peace with allied nations, then there are more restrictions on weapons types that can be employed than if conventional war has already broken out. Possibly only probing and reversible cyber-type attacks would be allowed in peacetime, but more permanent, damaging attacks could be executed in general wartime situations.<sup>11</sup> Also note that this table distinguishes between general terrestrial and space conflict as execution of space conflicts might be hidden from the general population. Finally, weapons release authorization levels are only for satellites that cover and support the area of Earth currently in conflict, making them legitimate targets. Satellites outside the conflict zone might have more limited weapons release authorities.

**Table 1. Weapons release rules of engagement**

Rules of Engagement (ROE)					
<i>Level of War</i>	<i>Deception</i>	<i>Disruption</i>	<i>Denial</i>	<i>Degradation</i>	<i>Destruction</i>
Peace	Yes	Maybe	No	No	No
Space Crisis	Yes	Yes	Yes	No	No
Conventional Terrestrial	Yes	Yes	Yes	No	No
Conventional Terrestrial & Space	Yes	Yes	Yes	Yes	Yes

Table 2 shows notional weapons release authorization levels for different levels of conflict. The weapons release authorization levels are defined in the appendix and are based on air warfare doctrine.<sup>12</sup> Table 3 offers the probability of conflict escalation if more severe weapons are employed than necessary for that particular conflict level. Note that these are perceived conflict levels and weapons' severity of effects, and your adversary may be living by an entirely different rule book when it comes to space warfare. This is even truer for space conflicts, as the vast distances involved increase the ability to employ plausible deniability of any knowledge of what happened to a satellite.

**Table 2. Potential conflict escalation.** (Assumes satellite does support area of responsibility [AOR] of current concern or conflict.)

Weapons Release Authorization Level					
Level of War	Space Positive Control	Space Autonomous Operation	Space Weapons Hold	Space Weapons Tight	Space Weapons Free
Peace	Yes	No	No	No	No
Space Crisis	Yes	Maybe	Maybe	No	No
Conventional Terrestrial	Yes	Yes	Yes	Maybe	No
Conventional Terrestrial & Space	Yes	Yes	Yes	Yes	Maybe

**Table 3. Probability of conflict escalation.** (Gives the probability that weapons use will increase conflict level.)

Weapons Release Authorization Level					
Level of War	Space Positive Control	Space Autonomous Operation	Space Weapons Hold	Space Weapons Tight	Space Weapons Free
Peace	0%	10%	20%	80%	90%
Space Crisis	0%	20%	30%	90%	90%
Conventional Terrestrial	0%	30%	50%	100%	100%
Conventional Terrestrial & Space	0%	20%	30%	40%	50%

Finally, table 4 shows a potential space conflict escalation ladder that is linked to a terrestrial escalation ladder.<sup>13</sup> This array illustrates how space and terrestrial conflicts can influence each other and possibly spill over from one domain to another. While space wars may occur without corresponding terrestrial conflicts, unnecessary escalation of space conflicts may lead to the start of or escalation of terrestrial war. Additionally, this space conflict escalation ladder is not necessarily sequential as conflict may erupt at any rung of the ladder. It is conceivable that in the future, the country that loses the space war may not even fight a terrestrial conflict and simply capitulate.

**Table 4. Proposed space conflict escalation ladder**

<b>Terrestrial Campaign Phase</b>	<b>Space Campaign Phase Full Name</b>	<b>Escalation Level</b>	<b>Escalation Effects</b>
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase A – Pre-conflict Deter	Pre-conflict Deter	Deter, Deny
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase B – Pre-conflict Persuade	Persuade	Deter, Deny
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase C – Pre-conflict Hide	Covert	Deter
Phase I: Deployment/Deterrence (Deter)	2nd Wave Attacks – Trans-conflict Deter	Trans-conflict Deter	Deter, Deny, Disrupt
Phase II: Halt Incursion (Seize Initiative)	3rd Wave Attacks Phase A1 – Terrestrial-to-Space Partial Temporary Effects	From Terrestrial Partial Temporary Kill	Delay, Deny, Disrupt
Phase II: Halt Incursion (Seize Initiative)	3rd Wave Attacks Phase A2 – Terrestrial-to-Space Total Temporary Effects	From Terrestrial Total Temporary Kill	Disrupt
Phase III: Air Counteroffensive (Dominate)	3rd Wave Attacks Phase B1 – Space-to-Space Partial Temporary Effects	From Space Partial Temporary Kill	Delay, Deny
Phase III: Air Counteroffensive (Dominate)	3rd Wave Attacks Phase B2 – Space-to-Space Total Temporary Effects	From Space Total Temporary Kill	Disrupt
Phase IV: Joint Counteroffensive to Restore Friendly Pre-conflict Status (Stabilize Borders)	4th Wave Attacks Phase A1 – Terrestrial-to-Space Partial Permanent Kill	From Terrestrial Partial Permanent Kill	Degrade
Phase IV: Joint Counteroffensive to Restore Friendly Pre-conflict Status (Stabilize Borders)	4th Wave Attacks Phase A2 – Terrestrial-to-Space Total Permanent Kill	From Terrestrial Total Permanent Kill	Destroy
Phase V: Joint Counteroffensive to Capture Adversary Capitol (Enable New Civil Authority)	4th Wave Attacks Phase B1 – Space-to-Space Partial Permanent Kill	From Space Partial Permanent Kill	Degrade
Phase V: Joint Counteroffensive to Capture Adversary Capitol (Enable New Civil Authority)	4th Wave Attacks Phase B2 – Space-to-Space Total Permanent Kill	From Space Total Permanent Kill	Destroy, Deter
Phase VI: Defend against Adversary Counterattacks against Friendly Homeland	5th Wave Attacks – Space-Manned Permanent Kill	Space-Manned Permanent Kill: Kill Adversary Astronauts	Degrade, Destroy
Phase VI: Defend against Adversary Counterattacks against Friendly Homeland	6th Wave Attacks – Space-to-Earth Permanent Kill	Space-to-Earth Permanent Kill	Degrade, Destroy
Phase VII: Defend Military against Adversary Use of Nuclear Weapons in Space	7th Wave Attacks – NBC Use - Space	NBC Use – Space	Degrade, Destroy
Phase VIII: Defend Military against Adversary Use of NBC against Friendly Military Targets	8th Wave Attacks Phase A – NBC Use - Space & Terrestrial - Military Targets	NBC Use – Space & Terrestrial	Degrade, Destroy
Phase IX: Defend against Adversary Use of NBC against All Friendly Targets (Military & Civilian)	8th Wave Attacks Phase B – NBC Use - Space & Terrestrial - Civilian Targets	NBC Use – Space & Terrestrial	Degrade, Destroy
Phase X: Post-hostilities (Reconstruction & Stabilization)	9th Wave Attacks – Post-conflict Deter	Post-conflict Deter	Diplomatic Actions

Below are the space weapons types permitted for each escalation level in the ladder:

- ***1st Wave Attacks Phase A – Pre-conflict Deter:***  
Overt Weapons Testing and Deployment; Treaties; Saber Rattling; Space Alliances; Normal Space Surveillance, Tracking and Reconnaissance Activities; Satellite Close Inspectors.
- ***1st Wave Attacks Phase B – Pre-conflict Persuade:***  
Diplomatic Requests and Démarches; Economic Actions; Embargos; Legal Actions; Administrative Actions; Transmitting Propaganda Broadcasts; Jamming Propaganda Broadcasts; Increased Spying and Surveillance; Unusual Increases in Space Surveillance and Tracking Activities; Threaten Allies of Your Adversaries; Maneuver to Avoid Attacks.
- ***1st Wave Attacks Phase C – Pre-conflict Hide:***  
Camouflage; Stop Activities; Mobility; Covert Technology Developments; Small Covert Special Operations Forces (SOF) Attacks; Cyber Attacks; Covert Actions in Violation of International Treaties; Cutoff Diplomatic Relations; Inspire Social Disruptions and Agitation; Employ Lethal Force against Your Own Citizens (dictatorships); Mobilize Forces; Increase Military Alert Level (DEFCON); Maneuver Close Enough to Adversary Satellites to Purposely Appear as a Threat; Reveal Covert Programs to Appear Threatening; Enter into War-Reserve Modes (or Hide) for Critical Satellites; Hide Senior Leadership; Increase Radiation Environment in Orbits Used by Adversaries; Initiate Satellite Defensive Measures; Employ Nation's Astronauts on International Space Station for Military Reconnaissance and Surveillance; Spoof and Falsify Worldwide Distribution of Satellite Location Orbital Tracking Data.
- ***2nd Wave Attacks – Trans-conflict Deter:***  
Provocative but False Attacks; Linked Attacks; Demo Attacks; Alternate Country Attacks; Blockades; Major Covert SOF Attacks; Terrorist Attacks; Summarily Execute Saboteurs; Seize and Sequester Suspected Terrorists; Alert Anti-satellite Systems; Arm Satellite Self-Defense Mechanisms; Alert Anti-missile Defenses; Alert Antiaircraft Defenses; Arm Allied Astronauts on International Space Station.

- ***3rd Wave Attacks Phase A1 – Terrestrial-to-Space Partial Temporary Effects:***  
Delay, Deny, Covertly Assassinate Adversary Diplomatic Ambassador; Temporarily Blind Adversary Astronauts with Laser Dazzler; Openly Conduct Electronic Warfare against Adversary Satellite Systems.
- ***3rd Wave Attacks Phase A2 – Terrestrial-to-Space Total Temporary Effects:***  
Disrupt Space Systems (temporary impairment of the utility of space systems, usually without physical damage to the space segments).
- ***3rd Wave Attacks Phase B1 – Space-to-Space Partial Temporary Effects:***  
Delay or Deny Space Systems (temporary elimination of the utility of the space systems, usually without physical damage).
- ***3rd Wave Attacks Phase B2 – Space-to-Space Total Temporary Effects:***  
Disrupt Space Systems (temporary impairment of the utility of space systems, usually without physical damage to the space segments).
- ***4th Wave Attacks Phase A1 – Terrestrial-to-Space Partial Permanent Kill:***  
Degrade Space Systems (permanent impairment of the utility of space systems, usually with physical damage).
- ***4th Wave Attacks Phase A2 – Terrestrial-to-Space Total Permanent Kill:***  
Destroy Space Systems. Also includes Destroying Space-Related Terrestrial Sites and Destroying Direct-Ascent ASAT Missiles with Anti-missile Weapon Systems.
- ***4th Wave Attacks Phase B1 – Space-to-Space Partial Permanent Kill:***  
Degrade Space Systems; Declare Martial Law; Bomb Adversary Populations.
- ***4th Wave Attacks Phase B2 – Space-to-Space Total Permanent Kill:***  
Destroy Space Systems; Threaten to Arrest Adversary Astronauts on International Space Station.
- ***5th Wave Attacks – Space-Manned Permanent Kill:***  
Degrade, Destroy, Arrest Adversary Astronauts on International Space Station.
- ***6th Wave Attacks – Space-to-Earth Permanent Kill:***  
Degrade, Destroy Terrestrial Systems.
- ***7th Wave Attacks – NBC Use – Space:***  
Degrade, Destroy, Alert Nuclear Forces for Defensive Preparations.

- **8th Wave Attacks Phase A – NBC Use – Space & Terrestrial – Military Targets:**  
Degrade, Destroy Space and Terrestrial Systems.
- **8th Wave Attacks Phase B – NBC Use – Space & Terrestrial – Civilian Targets:**  
Degrade, Destroy Space and Terrestrial Systems.
- **9th Wave Attacks – Post-conflict Deter:**  
Diplomatic Requests, Economic Actions, Legal Actions, Administrative Actions, Jamming Propaganda Broadcasts, Forced Population Resettlements.

### **Space Conflict Termination Criteria**

JP 5-0 mandates that the first step of any operations planning is to delineate what the war termination (surrender) criteria must be.<sup>14</sup> This success criteria informs later operational art, including military objectives, effects, tasks, and courses of action. For terrestrial operations, conflict termination criteria are more straightforward, such as seize and hold territory, depose dictators, and destroy military capabilities. However, for space wars these criteria are not so obvious. Can one seize territory in space, effectively deny employment of space weapons, or restrict access to certain orbits?

While not exhaustive, the list below gives some examples of possible space war termination criteria.<sup>15</sup> Space war fighters may adopt these criteria based on political realities and how determined the allies are in preventing additional near-term space conflicts.

1. War political goals are met.
2. Red space force capabilities reduction goals are met.
3. Red space disarmament occurs.
4. The balance of power in space between Red and Blue is sufficient to deter Red from any near-future space attacks for the next 10 years.
5. Red maneuvers satellites outside immediate threat zones that endanger Blue critical space assets.
6. Red cannot image battlefield with less than 1-meter resolution.
7. Red is open to inspection of space launch sites, rocket-fuel production facilities, and space research facilities.
8. All Red terrestrial ASAT sites and programs are revealed.

9. Red provides war reparations for Blue and Gray space systems permanently degraded/destroyed.
10. Red develops program to clean up space debris caused by its military actions.
11. Control of Red inspector satellites is handed over to Blue.
12. Red surrenders some of its internationally assigned geosynchronous orbital position slots.
13. Red establishes a hotline connection between its space command centers and Blue space command centers.
14. Red provides 30 days' notice of all planned future space launches.
15. Red does not approach any Blue critical satellites within 100 meters.
16. Eighty percent of Red satellite refueling on-orbit depots and servicing satellites are shut down.
17. Embargo is established against Red import of sensitive space technologies and subsystems.
18. Red is required to place tracking beacons on all future launched satellites. Blue establishes declaratory policy to immediately neutralize any Red satellites without these tracking beacons for the next 10 years.
19. Red must formally state the mission of each newly launched space object for the next 10 years. The mission is subject to verification by Blue and will be neutralized if any satellites with surreptitious missions are discovered

## **Conclusion**

In military history there are many examples of a military force that appeared superior on paper being defeated by a technically inferior force that is more flexible and with superior doctrinal concepts on how to conduct warfare. This concern can only be amplified by the remoteness of satellites that make it very difficult to verify what attacks are being set up, by whom, and to what purpose. In addition, this new region of warfare has yet to prove the correct doctrinal concepts for efficient execution of commander's intent.

The United States should establish a new organization that will develop advanced outer space warfare theory, policy, doctrine, strategies, and tactics that support the new space force much like Project Air Force and the Arroyo Center. It should be the premier center for understanding the methods

and techniques for conducting military operations in space. What is required is a new theory on space power in the same manner as classical air and sea power theory developed by Mahan, Douhet, and Mitchell or even Sun Tzu and Clausewitz. To be useful, these new concepts must influence the overall command and planning structures in the United States for space and terrestrial warfare planning staffs. Some suggested means for this new organization to accomplish this task include the following:

- Develop models and simulations that test new space doctrinal concepts.
- Sponsor lectures and symposia on critical space warfare subjects.
- Sponsor and fund further research on these topics by commercial contractors and other government agencies.
- Sponsor prizes for the best research papers on space warfare.
- Participate in and/or fund space-related war games, including space impacts on terrestrial war games.
- Provide teaching materials for military space courses.
- Publish papers in military and space journals.
- Fund space chairs at military schools.
- Sponsor student participation in space symposia.
- Provide analyses and briefing material for Congress.
- Support inclusion of space warfare concepts into military doctrine documents such as JP 5-0 and JP 3-14 (*Space Operations*)—both are insufficient for space warfare and require more decisive guidance.
- Assure allied participation in this organization to maximize new ideas, especially in a joint and combined environment such as NATO.

This new space doctrine think tank can be small at first, with only a core group of analysts and some modeling and simulation staff. Prominent space and military experts can be temporarily engaged as consultants and part-time advisors. These advisors can be senior retired officers, government administrators, diplomats, intelligence staff, political experts, and possibly international partners.

For many years the author has been proposing that the Department of State (DOS) be included in any long-range architecture planning for theoretical space weapons technology and system architecture studies. The military can spend years and billions of dollars developing certain types of weapon systems, only to have the DOS prevent their use. If the DOS is involved early in the development cycle, then any diplomatic sensitivities



can be addressed early in the design or choice of weapon phenomenology before spending much time and treasure. The DOS can also recommend when new space treaties need to be developed and old ones renegotiated.

The initial think tank cadre should include not only space experts but also non-space personnel with extensive experience in terrestrial combat operations to assure the widest possible freethinking and integration with terrestrial planning. The core staff can develop new concepts and doctrine for the US Space Force.

The future of space warfare is upon us, but the theory, doctrine, strategies, and tactics are uncertain. Whether you believe in space warfare or are desperately trying to prevent it, conflicts in space will happen nevertheless because space is too important to remain a sanctuary while great power conflicts are raging on Earth. Space remains too connected to the ultimate outcome of the terrestrial battlefield, and conflicts in space may indeed produce fewer casualties than extended conflicts on the ground. **SSQ**

### **Paul S. Szymanski**

Currently president of the Space Strategies Center, the author has 46 years' experience in space and missile systems development for the United States Air Force, Army, Navy, and Marines. This includes outer space warfare theory, policy, doctrine, strategies, and tactics and techniques in addition to space battle management and war gaming, space situational awareness, space survivability/resiliency, and space predictive battlespace awareness. He has worked with the Air Staff at the Pentagon (Secretary of the Air Force, SAF/AQS), the Space and Missile Systems Center (SMC/ASP) in Los Angeles, and the Air Force Research Labs (AFRL/RV/RD/RI/RH) and has experience in operational field-testing of missile systems at China Lake, California. LinkedIn Profile: [www.linkedin.com/in/PaulSzymanski](http://www.linkedin.com/in/PaulSzymanski).

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6. View a detailed list of possible strategic, operational, and tactical space COGs in app. 2 of this article. The appendices for this article are available online only at [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13\\_Issue-4/Szymanski Appendices.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13_Issue-4/Szymanski%20Appendices.pdf).

7. In 1981, the author conducted a study of classical military principles of war (United States tri-service, British, and Russian) that were combined, summarized, and updated for

space warfare. The US Joint Chiefs of Staff commissioned this study when they were trying to decide whether to establish a Space Command or a Continental Defense Command.

8. The author developed these rules based solely on his 46 years' experience in this field.

9. Stated in discussion with author.

10. This rule was suggested by Paul Day, Space Command and Control Requirements Lead, Headquarters Air Force Space Command, Peterson AFB, Colorado.

11. See app. 3, "Space Glossary List," for definitions of the differing levels of space attacks. The appendices for this article are available online only at [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13\\_Issue-4/SzymanskiAppendices.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13_Issue-4/SzymanskiAppendices.pdf).

12. The appendices for this article are available online only at [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13\\_Issue-4/SzymanskiAppendices.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13_Issue-4/SzymanskiAppendices.pdf).

13. The author developed the information in this table 10 years ago.

14. JP 5-0, *Joint Planning*, IV-19–IV-20.

15. The complete list is in app. 1. The appendices for this article are available online only at [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13\\_Issue-4/SzymanskiAppendices.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-13_Issue-4/SzymanskiAppendices.pdf).

# Minding the Gaps: US Military Strategy toward China

DEREK GROSSMAN  
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## Abstract

China's ongoing military modernization efforts aimed at countering US intervention in a range of scenarios, particularly involving Taiwan or disputes in the South China Sea, have prompted the US national security community to debate the proper military response. Unfortunately, many aspects of the debate remain unresolved. Enduring analytical gaps include an inability to determine which military strategy will best deter Chinese adventurism, an incapacity to evaluate theater-level combat outcomes, little understanding of security dilemmas or competitive strategies, and difficulty in comparing costs across strategies. However, there has been some analytical progress on the risks of nuclear escalation during a US-China conflict. If analysts writing on US military strategy toward China want to improve the public debate, these analytical gaps must be filled.

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China's ongoing military modernization efforts, aimed at countering American intervention in any conflict related to Taiwan or disputes in the South China Sea, have prompted the US national security community to debate the military strategy required. These discussions have focused on ways to deter aggressive Chinese behavior and, if necessary, to prevail in a conventional armed conflict. Unfortunately for Washington, the prospects of achieving either are increasingly at risk. Research conducted in the past few years at the RAND Corporation has found that while the US continues to maintain important military advantages in a Taiwan or South China Sea scenario, China's People's Liberation Army (PLA) has rapidly caught up in many operational domains.<sup>1</sup> For instance, the improving accuracy and expanding coverage of the PLA's precision-guided munitions will likely force the US to harden its bases,

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disperse its forces, and deploy additional missile defenses to maintain a forward-deployed presence. If we don't adjust to this trend (not to mention several others), the entire modern American way of war might be at risk.<sup>2</sup> China's dramatic military improvements compound its geographic advantage: Beijing's close proximity to the potential areas of conflict enable it to bring more of its forces to bear more quickly in any future conflict with the United States.

In response to this shifting military balance, the debate about US military strategy toward China has solidified around three strategies: mainland strikes, distant blockade, or maritime denial. Unfortunately, unclassified comparisons of the costs and benefits of each strategy have been marked by several analytical gaps: an inability to compare the deterrence potential of competing military strategies, an incapacity to evaluate theater-level combat outcomes, little understanding of security dilemmas or competitive strategies, and difficulty in comparing costs across strategies. Only on the topic of the risks of nuclear escalation during a US-China conflict has there been any analytical progress.

Filling these analytical gaps in the debate presents an opportunity, while closing these gaps in public understanding could bolster support for the military expenditures these strategies require. It could also provide a better foundation for classified analysis by ensuring the broader strategic studies community scrutinizes assessments of US military strategy toward China.<sup>3</sup> Any improved understanding could translate into more support in Congress.

This article describes the three contending military strategies: mainland strikes, distant blockade, and maritime denial. It then assesses existing analytical gaps and the notable progress on the risks of nuclear escalation. The article does *not* close these gaps, an important task left to future efforts. Instead, it frames the debate over US military strategy toward China as a series of unanswered analytical questions.

### **Contending US Military Strategies toward China**

The military strategies below each represent potential US operational- and theater-level military goals for a conflict with China and the means and ways of achieving them. None of these theater military strategies ought to be viewed as a grand strategy given the exclusion of economic and other political considerations.<sup>4</sup> But they should be regarded as ideal types where policy makers and analysts may combine elements of each strategy. Finally, these options focus on US-only military strategies.

America's allies and partners can adopt other military strategies for which the US military will play only a supporting role.<sup>5</sup>

### ***Mainland Strikes***

A mainland strike strategy calls for deterring China by designing US forces that can penetrate Beijing's antiaccess/area denial (A2/AD) defenses promptly in a conflict and conduct conventional strikes throughout the Chinese mainland.<sup>6</sup> This strategy would be undergirded by operational concepts such as those from the 2010 Center for Strategic and Budgetary Assessments (CSBA) report *Air-Sea Battle*.<sup>7</sup> The defining feature of a mainland strike strategy is its identification and targeting of military assets on the Chinese mainland to eliminate the PLA's operational center of gravity. This strategy views striking Chinese radars, air bases, surface-to-air missiles, command centers, intelligence centers, antisatellite weapon launch sites, and many other target categories as essential for operational success in a potential future US-China armed conflict. Consequently, a mainland strike strategy emphasizes developing the intelligence, surveillance, reconnaissance, and attack capabilities to promptly strike targets with nonnuclear weapons throughout China. A mainland strike strategy generally prioritizes further investment in stealth, supersonic, farther-ranging, and longer-loitering weapons systems. Though this strategy emphasizes air and naval assets (and to a lesser extent space and cyber assets), a mainland strike strategy also leaves room for the other services in challenging China's defenses.<sup>8</sup>

### ***Distant Blockade***

A second option is for Washington to coerce Beijing by implementing a distant blockade of seaborne commercial traffic. Many experts have discussed this possibility, sometimes labeling it simply as naval blockades.<sup>9</sup> Regardless, the idea calls for the US, in concert with its allies and partners, to coerce China by choking off its imports and exports. This blockade would not be conducted near China—avoiding Beijing's considerable military power near its shores and airspace—but instead at distant straits and chokepoints, intercepting all or select ships bound for China via international sea lines of communication. The US could intercept and board all China-bound ships or, in a more aggressive scenario, disable or sink them. Proponents of the plan believe Beijing is particularly susceptible to this strategy because it maintains an export-led economy and imports about 80 percent of its oil from the Middle East through the Malacca Strait.<sup>10</sup>

## ***Maritime Denial***

The third potential strategy focuses on directly attacking China's power projection forces operating beyond China's land borders.<sup>11</sup> Maritime denial would primarily rely on US undersea capabilities to avoid direct engagements with China's surface-, air-, and shore-based A2/AD defenses but could also emphasize antiship attacks launched from American combat aircraft. Rather than simply establishing a blockade, the US and its partners would seize the initiative and use offensive means to pressure Beijing to end the conflict. These operations might include, but are not limited to, antisubmarine warfare, antisurface warfare, and large-scale mining operations. This strategy construes its objectives as directly and narrowly as possible by emphasizing the denial of Chinese military objectives. The desired endstate here would be to deny Beijing's objectives by increasing the costs of Chinese action.

## **Beware the Analytical Gaps**

Unclassified analyses that evaluate and compare these military strategies toward China have had to cope with four important analytical gaps. These gaps all have implications for developing US military strategy toward China.

## ***Which Strategy Best Deters China?***

Analysts have spent more than a few pages arguing about which military strategy is more likely to deter a large-scale Chinese military attack on an ally or partner. Avoiding war is certainly superior to fighting one, and so determining the deterrence potential of each strategy has been central to the debate. Many appear to believe that the mainland strike strategy is the surest deterrent.<sup>12</sup> These same strategists also often denigrate the deterrence potential of a distant blockade.<sup>13</sup> Skeptics of mainland strike strategies have not addressed these charges.<sup>14</sup> This axis of debate suffers, however, on three counts.

First, claims about which strategy deters more often amount to no more than theoretical logic without supporting evidence or appeals to scholarly authority. Aaron Friedberg suggests that the promise of denial, the potential for punishment, and—borrowing from Thomas Schelling—the “threat that leaves something to chance” could work simultaneously to make mainland strikes the strategy with the most deterrence potential.<sup>15</sup> On the last point, Friedberg theorizes that the threat of conventional strikes on the Chinese mainland, which might force Beijing to consider nuclear es-

calation, could strengthen conventional deterrence because Chinese leaders will not want to breach the nuclear threshold.<sup>16</sup> In other words, Chinese leaders might foresee that their aggression would lead to a nuclear war and would therefore avoid it in the first place. But the debate on this point never moves beyond theoretical speculation.<sup>17</sup>

Second, our own and others' reviews of the empirical scholarly literature on conventional deterrence lead to only one consistent finding, and it does not discriminate between mainland strike and maritime denial strategies.<sup>18</sup> These reviews have found that superiority in the local military balance and the ability to deny an adversary a rapid, decisive *fait accompli* are helpful attributes of a conventional deterrence strategy.<sup>19</sup> As a result, the most that can be said on the deterrence potential of these competing military strategies is that a distant blockade—because it only seeks to punish Chinese aggression and not deny any military gains—does appear to be the weakest deterrent option while the other two are similar. Of note, no empirical evidence supports the supposed ability of a mainland strike strategy to better deter large-scale aggression.

Third, factors beyond military strategy may be relatively more significant in determining deterrence success and failure. RAND senior political scientist Michael Mazarr and his coauthors—after completing a literature review on interstate deterrence, a quantitative analysis, and four case studies—found that aggressor motivations, more so than any other factor, “serve as the first, and in some ways decisive, variable for interstate deterrence outcomes.”<sup>20</sup> Jack Levy's review of the quantitative international relations scholarship on deterrence outcomes finds that doubt exists in the belief that military strategy is the primary determinant of deterrence outcomes.<sup>21</sup> A number of other empirical articles also suggest that military strategy and posture only weakly determine deterrence patterns.<sup>22</sup> It could therefore be that the effect of military strategy on deterrence outcomes is minimal.

In sum, the existing evidence casts doubt on the deterrence utility of a distant blockade. Scholars will have to redouble their efforts, however, if there is to be any evidence related to conventional deterrence that separates mainland strikes from maritime denial.

### ***Problems Measuring Theater-Level Military Outcomes***

More elusive than a judgement about the deterrence potential of each strategy is a systematic analysis of prospective theater-level combat outcomes for each strategy. Without such analysis, making a judgement about the superiority of one strategy over another is analytically premature.

Existing unclassified US-China military balance research and its limits is instructive here.

There has been theater-level analysis of US-China conflict in East Asia, but none of these efforts compare the effectiveness of alternative strategies like mainland strikes and maritime denial. For example, RAND's *A Question of Balance* report from 2009 examines Chinese short-range ballistic missile strikes on Taiwanese air bases and the outcomes of an air-to-air battle. However, evaluating alternative strategies like maritime denial or mainland strikes was beyond the scope of that report.<sup>23</sup> Similarly, RAND's *US-China Military Scorecard* report analyzes the US-China military balance across 10 operational domains, but it focuses on time trends of the balance and not comparative analysis of American strategies.<sup>24</sup> Other efforts, notably one by Michael Beckley, have focused on the China-Taiwan military balance or the China-Japan military balance.<sup>25</sup> Beckley argues that his China-Taiwan military balance analysis suggests that "launching massive strikes on the Chinese mainland" is unnecessary and the United States would only have to "tip the scales of the battle" in a US-China conflict.<sup>26</sup> This important argument, which we view as excessively optimistic given his assumptions about the ability of Taiwanese air defense to survive Chinese attack, does not directly compare the utility of alternative American military strategies.<sup>27</sup> Another recent article does, however, address the military utility of mainland strikes. David Ochmanek writes, "Gaming of future hypothetical conflicts with China suggests strongly that using limited US forces to attack assets well inland is generally not the best approach to defeating China's aggression."<sup>28</sup> But his analysis does not provide evidence beyond an unspecified reference to past classified war games.

Stephen Biddle and Ivan Oelrich most comprehensively address the relative military merits of different strategies toward China.<sup>29</sup> Through an exploration of underlying physics principles and trends in military technology, these scholars find that there exist fundamental limits on the technologies, especially radar, that enable A2/AD strategies. In fact, they argue that the effective range of China's A2/AD will likely only extend out 400–600 kilometers, the limit of airborne radar.<sup>30</sup> These constraints, according to Biddle and Oelrich, render mainland strike strategies less necessary than often believed. But their analysis is largely based on an assessment of long-term trends, not a specific, detailed conflict scenario. Without an in-depth analysis, their evidence can only cast a modest amount of doubt on the necessity of mainland strike strategists. And it should be noted that their key finding will provide cold comfort to Taiwan and any



US military force coming to aid Taiwan given the island's location of 160 kilometers from the Chinese mainland.<sup>31</sup> In short, their analysis rightly points out the limitations of China's A2/AD strategy, but the theater-level combat outcomes generated by different military strategies—especially mainland strikes versus maritime denial—are still left unanswered at the end of the article.

Analysts and, more importantly, policy makers are therefore without unclassified analysis about whether different military strategies toward China lead to different combat outcomes. The American public and even congressional leaders cannot do cost-benefit calculations about various strategies if one of the primary benefits of a military strategy—its contribution to theater-level combat outcomes—is unknown. To resolve this deficit, the security studies community will need to consider reviving the practice of theater-level combat modeling, an analytical practice that last received serious scholarly attention in the 1980s debates about the US-Soviet military balance.<sup>32</sup> High-level metrics such as impact on operational timeline, US attrition, and the likelihood of China achieving key military objectives will need to be used to compare strategies. The model will also need to integrate war fighting across different operational domains; for instance, the impact of Chinese missile attacks on American forward bases will need to be combined with models of China-US air-to-air combat outcomes. Only with a theater-level model can analysts develop answers to the questions about the contribution of each strategy to theater-level combat outcomes.

### ***Little Knowledge about Peacetime Competitive Dynamics***

Additionally, strategists have little knowledge about the effects of different military strategies on the US-China peacetime competitive dynamics, especially the security dilemma and so-called competitive strategies. In particular, whether each strategy exacerbates or ameliorates a security dilemma between the United States and China, or which strategy productively channels Chinese military investments, are judgements that lean on a meager base of evidence.

To be sure, there is a tremendous amount of scholarly literature on security dilemmas, a pattern in which two states—in an anarchic environment characterized by mistrust—each embrace defensive measures that the other side perceives as offensive threats. These precautionary steps lead to a ratcheting effect, increasing tensions and reducing security.<sup>33</sup> This body of work deals mostly with prior periods of international competition. Unfortunately, whether the US and China are currently trapped in a security

dilemma and whether any particular military strategy improves or worsens the security dilemma is simply unclear. Recent survey evidence of the Chinese and American public suggests that the mistrust emphasized by security dilemma theorists does characterize crisis situations, but this same work does not directly examine whether the security dilemma operates in the larger US-China relationship and what American policy makers should do if it does.<sup>34</sup>

Another article by Adam Liff and John Ikenberry directly addresses whether security dilemma dynamics explain modern US-China relations. But its relatively brief empirical investigation does not match its theoretical rigor: the authors are unable to dismiss the possibility that recent American policy makers, instead of being caught in a security dilemma, are merely responding to the rise of an assertive Chinese foreign policy based on aggressive intentions.<sup>35</sup> Meanwhile, Thomas Christensen's body of scholarship also engages the debate over the existence of a US-China security dilemma, though he profitably reframes the debate as an attempt to balance the twin goals of credible deterrence and reassurance.<sup>36</sup> Whether any particular military strategy achieves this balancing act, however, is beyond the scope of his work. Military strategists are therefore left without much solid evidence about the effect of military strategy on security dilemma dynamics—a pity given the importance often accorded to the potential for a security dilemma.

Even less is known about the efficacy of any particular military strategy as a competitive strategy. Competitive strategies refer to conscious attempts to shape an adversary's peacetime military procurement toward investments that are less threatening to the United States. The only recent scholarship on this idea mostly assumes, though never demonstrates, that competitive strategies actually accomplish their demonstrated objectives.<sup>37</sup> Consequently, strategic leaders have to rely on intuition more than solid evidence when judging the relative contribution of any particular US military strategy vis-à-vis China toward the goals of a competitive strategy.

Friedberg has argued that any strategy prioritizing penetrating Chinese airspace excels as a competitive strategy since China is then forced to make large investments in air defense.<sup>38</sup> But other authors have pointed out how the claim that any given American military investment imposes costs on China relies on assumptions about Chinese behavior that are difficult to assess.<sup>39</sup> For instance, Jacob Heim analyzes the potential for US theater ballistic missiles to impose costs on the Chinese military; he notes that China, instead of increasing investment in ballistic missile defense, could switch to an offense-dominated strategy, disperse or harden

assets, or not respond at all. He concludes, “Predicting the PLA’s likely reaction is difficult, especially without a detailed understanding of its assessments, the standard operating procedures of its constituent organizations, and the proclivities of key decisionmakers.”<sup>40</sup>

### ***Comparing Costs***

A comparison of alternative strategies toward China also requires estimating the budgetary cost of each strategy. But this analytical task has been done inadequately—if it has been done at all. One of the more widely cited, and now dated, estimates comes from a private firm. Its 2013 estimates suggest additional costs of \$50 billion per year for an Air-Sea Battle–like strategy.<sup>41</sup> But this analysis appears to treat particular weapons programs—like the F-35—as if they can be entirely attributed to Air-Sea Battle, an obvious analytical shortcoming.<sup>42</sup> Other analyses treat the financial costs of strategy toward China even more casually, either de-emphasizing the issue or treating Air-Sea Battle as the obviously more expensive alternative.<sup>43</sup>

Broadly speaking, these strategic accounting analyses fail to clearly define alternatives and then determine the marginal cost of each strategy. Attributing the costs of F-35 to a single strategy is symptomatic of this larger issue. A future analysis of American military strategy toward China will need to dig deeper by testing military alternatives and assessing their implications for procurement. A recent exemplary strategy-level cost analysis of conventional land-based missiles in Asia performed by the CSBA suggests that rigorous strategic accounting is possible and useful.<sup>44</sup> Until there is broader use of comprehensive strategy-level cost estimates, decision-makers will be left with only vague guidance about the financial costs of alternative military strategies toward China.

### ***Analytic Progress on Nuclear Escalation***

In contrast to the lack of mature analysis on US military strategy vis-à-vis China in the conventional domain, analysis of what works in US-China nuclear deterrence has progressed beyond its early stages. In particular, participants in the strategic debate have long disagreed about the likelihood that mainland strikes would lead to Chinese nuclear escalation; several recent articles narrow the debate or at least provide grist for a substantial conversation.<sup>45</sup>

T. X. Hammes and Elbridge Colby first addressed this issue in the aftermath of the Air-Sea Battle debates. Hammes, along with Joshua

Rovner and others, argued that nuclear war could result if the US embraced a mainland strike strategy.<sup>46</sup> Conventional strikes on targets of the homeland of a nuclear power, these escalation pessimists contend, could lead to Beijing's nuclear use should Chinese leaders come to fear American destruction of China or its nuclear weapons.<sup>47</sup> Another school of thought, largely implicit in the writings of the CSBA—though more fully articulated by Colby—takes a more optimistic view: the prospect of mutually assured destruction ensures that a US-China conventional war will stay conventional.<sup>48</sup>

The first important contribution to this debate can be found in the scholarship of Fiona Cunningham and Taylor Fravel.<sup>49</sup> Through interviews with Chinese military and civilian experts who work on nuclear strategy and an examination of open-source Chinese military literature, they find that Chinese strategists are relatively optimistic about the potential to avoid either intentional or unintentional nuclear escalation in a US-China war. Their Chinese interlocutors believe that a clear firebreak between the use of conventional and nuclear weapons, and the tight control likely to be exercised in a crisis—among other reasons—reduces the probability of nuclear war. Given that it is arguably in the interest of Chinese strategists to emphasize nuclear escalation in the name of deterring US intervention and mainland strikes, these statements are all the more credible. Cunningham and Fravel's findings consequently cast some doubt on the worries of escalation pessimists who view Chinese nuclear escalation as likely during a war.

Caitlin Talmadge has also taken up this debate and shed some much-needed light on the topic in an article that addresses the extent to which mainland strikes on conventional targets would inadvertently threaten Chinese nuclear assets, especially Chinese command and control facilities, and would affect Chinese perceptions during such a war. She argues that although US military strikes would “erode” some Chinese nuclear-relevant capabilities, mainland strikes would be “extremely unlikely to inadvertently eliminate China's nuclear arsenal outright.”<sup>50</sup> This technical point, which bolsters the argument of escalation optimists, is overshadowed by her next claim though. She theorizes that the “fog and suspicions of a major war” could lead Chinese leaders to believe that Washington was waging a counterforce campaign against Chinese nuclear weapons—even if the United States was not actually executing such a campaign—and to conclude that nuclear escalation was the least bad option.<sup>51</sup> Talmadge posits that the failure of Chinese nuclear weapons “to deter the onset and escalation of a massive conventional war on one's home territory,” combined with

limited situational awareness, will shock Chinese leaders out of the relaxed peacetime nuclear views described by Cunningham and Fravel.<sup>52</sup> Her analysis of Beijing's behavior in the 1969 Sino-Soviet War is consistent with her worries about the potential for Chinese nuclear escalation. Chinese leaders dramatically updated their peacetime beliefs on nuclear weapons mid-crisis, displayed paranoia toward the possibility of a surprise Soviet nuclear attack, and even readied their country's nuclear arsenal for use.<sup>53</sup>


The final contribution to this debate comes from James Acton in an article that combines theoretical logic with technical analysis to demonstrate that “entanglement” between nuclear and nonnuclear capabilities, including command and control, creates the potential for inadvertent nuclear escalation during a great power war.<sup>54</sup> In a US-China conflict, Acton argues that crisis instability, false alarms, and the need for damage limitation—in combination with American nonnuclear strikes on entangled systems—could lead to a Chinese decision to use nuclear weapons.

These articles, while not definitive, add important evidence to the debate about the potential for nuclear escalation. Cunningham and Fravel, by employing interviews with Chinese experts, show that the Chinese view, which is presumably better informed about likely Chinese actions, expresses considerably less alarm about the potential for Chinese nuclear escalation. Talmadge and Acton's work suggests the dangers of a mainland strikes strategy. There is ample room, they argue, for misperception and crisis instability to turn nonconventional strikes on Chinese mainland targets into a nuclear exchange. To increase knowledge in this area, future research could also focus on the effects of strategic culture and nationalism on potential Chinese responses to mainland strikes or other potential US military strategies toward China.<sup>55</sup>

### **Concluding Thoughts**

This article has tried to demonstrate that there are enduring analytical gaps in unclassified scholarship on US military strategy toward China. The current public analysis that assesses and compares potential US military strategies toward China—defined as mainland strikes, distant blockade, and maritime denial—could be improved if there was additional research on conventional deterrence, theater-level combat outcomes, competitive dynamics, and the marginal costs of each military strategy. Improving the reliability of these assessments will become even more important as the US appears poised to deploy ground-based conventional missile systems in the Asia-Pacific region since its withdrawal in August 2019 from the Intermediate-Range Nuclear Forces Treaty with Russia.

Scholarship on this subject is only just beginning and will require rigorously derived answers to all of our identified gaps, and perhaps to new ones as well.

Admittedly, we have done the easy part here by critiquing the current strategic landscape. It will be much harder of course to close these gaps, which will not simply be an academic exercise. Less uncertainty in these areas could increase public and congressional support for the military expenditures that these different strategies require. Furthermore, additional unclassified analysis that closes these gaps could also improve classified analysis by ensuring that the broader strategic studies community scrutinizes assessments of US military strategy toward China. 

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### Notes

1. Eric Heginbotham et al., *The U.S.-China Military Scorecard: Forces, Geography, and the Balance of Power, 1996–2017* (Santa Monica, CA: RAND Corporation, 2015), <https://www.rand.org/>; and David A. Shlapak et al., *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute* (Santa Monica, CA: RAND Corporation, 2009), <https://www.rand.org/>.

2. Alan J. Vick, *Air Base Attacks and Defensive Counters: Historical Lessons and Future Challenges* (Santa Monica, CA: RAND Corporation, 2015), 32–37, <https://www.rand.org/>; and Evan Braden Montgomery, “Contested Primacy in the Western Pacific: China’s Rise and the Future of U.S. Power Projection,” *International Security* 38, no. 4 (Spring 2014): 115–49, <https://www.mitpressjournals.org/>. The American way of war can be summarized briefly as the ability to marshal forces in a sanctuary close to the operational theater and then to deploy them offensively at a time and place of American choosing. For a recent description of the American “way of war” and a broader exploration of this concept, see Christopher M. Dougherty, *Why America Needs a New Way of War* (Washington, DC: Center for a New American Security, 2019), 7–8, <https://www.cnas.org/>.

3. For an article that captures the importance of creating a coherent strategic concept to garner lasting public support for military expenditures, see Samuel P. Huntington, “National Policy and the Transoceanic Navy,” *Proceedings* 80, no. 5 (May 1954): 483–93, <https://www.usni.org/>.

4. We even concede that “military strategy” might be too broad of a term for these three alternatives, but we found other options, such as “strategic concepts,” lacking.

5. Eric Heginbotham and Richard J. Samuels, “Active Denial: Redesigning Japan’s Response to China’s Military Challenge,” *International Security* 42, no. 4 (May 2018): 128–69, [https://dspace.mit.edu/bitstream/handle/1721.1/118651/isec\\_a\\_00313.pdf?sequence=1&isAllowed=y](https://dspace.mit.edu/bitstream/handle/1721.1/118651/isec_a_00313.pdf?sequence=1&isAllowed=y); and Jim Thomas, Iskander Rehman, and John Stillion, *Hard ROC 2.0: Taiwan and Deterrence through Protraction* (Washington, DC: The Center for Strategic and Budgetary Assessments, 2014), <https://csbaonline.org/research/>.

6. Analysts might wonder whether a mainland strike strategy is best characterized as a “punishment,” an “attrition” strategy, or a “denial” strategy. Because these terms are ambiguous and are not salient in the writings of those persons who described this strategy, we do not take a stand on whether a mainland strike strategy fits these definitions.

7. Air-Sea Battle sometimes refers to the Air-Sea Battle Office, a Pentagon outfit charged with implementing cross-service responses to A2/AD challenges. The moniker also sometimes refers to two 2010 reports by analysts at the Center for Strategic and Budgetary Assessments. Both of these references are too narrow for the analytical purposes of this article. See Jan van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept* (Washington, DC: The Center for Strategic and Budgetary Assessments, 2010), <https://csbaonline.org/>; and Andrew F. Krepinevich, *Why AirSea Battle?* (Washington, DC: The Center for Strategic and Budgetary Assessments, 2010), <https://csbaonline.org/>. The military services later wrote documents and created an organization to implement “AirSea Battle,” but it is not clear that this version of AirSea Battle was what the authors at the CSBA had in mind. See Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access and Area Denial Challenges* (Washington, DC: Department of Defense, Air-Sea Battle Office, May 2013), <http://archive.defense.gov/pubs/ASB-ConceptImplementation-Summary-May-2013.pdf>. For more information on Air-Sea Battle from then-chief of naval operations and then-chief of staff of the Air Force, see Adm Jonathan W. Greenert and Gen Norton A. Schwartz, “Air-Sea Battle,” *The American Interest*, 20 February 2012, <https://www.the-american-interest.com/>.

8. Michael E. Hutchens et al., “Joint Concept for Access and Maneuver in the Global Commons: A New Operational Joint Concept,” *Joint Force Quarterly* 84 (1st Quarter 2017): 135–39, <http://ndupress.ndu.edu/>; Terrence Kelly et al., *Employing Land-Based Anti-Ship Missiles in the Western Pacific* (Santa Monica, CA: RAND Corporation, 2013), <https://www.rand.org/>; and Jim Thomas, “Why the U.S. Army Needs Missiles: A New Mission to Save the Service,” *Foreign Affairs* 92, no. 3 (May/June 2013): 137–44, <https://www.foreignaffairs.com/>.

9. There are many versions of this strategy. See, for example, T. X. Hammes, “Offshore Control: A Proposed Strategy for an Unlikely Conflict,” Institute for National Strategic Studies (INSS), *Strategic Forum* 278, June 2012, <http://ndupress.ndu.edu/Portals/68/Documents/stratforum/SF-278.pdf>; and Sean Mirski, “Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China,” *Journal of Strategic Studies* 36, no. 3 (2013): 385–421, <http://www.tandfonline.com/doi/abs/10.1080/01402390.2012.743885>.

10. Sara Hsu, “China’s Energy Insecurity Glaring in South China Sea Dispute,” *Forbes*, 2 September 2016, <https://www.forbes.com/>.

11. Jeffrey E. Kline and Wayne P. Hughes, “Between Peace and the Air-Sea Battle: A War at Sea Strategy,” *Naval War College Review* 65, no. 4 (Autumn 2012), <https://>

digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1490&context=nwc-review; Eric Heginbotham and Jacob L. Heim, "Deterring without Dominance: Discouraging Chinese Adventurism under Austerity," *Washington Quarterly* 38, no. 1 (Spring 2015): 185–99; and Andrew S. Erickson, "China's Naval Modernization: Implications and Recommendations," Senate Armed Services Committees on Seapower and Projection Forces, 11 December 2013, <http://docs.house.gov/meetings/AS/AS28/20131211/101579/HHRG-113-AS28-Wstate-EricksonA-20131211.pdf>. Also see his adapted article at Andrew S. Erickson, "Deterrence by Denial: How to Prevent China from Using Force," *The National Interest*, 16 December 2013, <http://nationalinterest.org/>.

12. Aaron Friedberg, *Beyond Air-Sea Battle: The Debate over US Military Strategy in Asia* (New York: Routledge, 2014). Caitlin Talmadge has also identified the existence of this strain of strategic thinking among American officials. Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 41, no. 4 (Spring 2017): 91–92, <https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/b/1590/files/2018/08/Would-China-Go-Nuclear-ry6vut.pdf>.

13. Friedberg, *Beyond Air-Sea Battle*. Also see David Ochmanek, "Sustaining U.S. Leadership in the Asia-Pacific Region: Why a Strategy of Direct Defense Against Anti-Access and Area Denial Threat Is Desirable and Feasible" (Santa Monica, CA: RAND, 2015), 10, <https://www.rand.org/>.

14. Hammes, "Offshore Control"; and Jeffrey E. Kline and Wayne P. Hughes Jr., "Between Peace and the Air-Sea Battle: A War at Sea Strategy," *Naval War College Review* 65, no. 4 (2012), <https://digital-commons.usnwc.edu/>.

15. Friedberg, *Beyond Air-Sea Battle*.

16. Friedberg.

17. Scholars might perceive our argument as unfair. Given that nuclear weapons have only been used in World War II, how can the effect of nuclear weapons be studied? We think that a recent renaissance in nuclear studies suggests that scholarly progress on the role of nuclear weapons in international politics is possible. Scott D. Sagan, "Two Renaissances in Nuclear Security Studies," in H-Diplo/ISSF Forum 2, "What We Talk about When We Talk about Nuclear Weapons," 15 June 2014, <https://issforum.org/forums/>.

18. Michael S. Gerson, "Conventional Deterrence in the Second Nuclear Age," *Parameters* 39, no. 3 (Autumn 2009): 32–48; and Jonathan F. Solomon, "Demystifying Conventional Deterrence: Great-Power Conflict and East Asian Peace," *Strategic Studies Quarterly* 7, no. 4 (Winter 2013): 117–57, [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-07\\_Issue-4/2013winter-Solomon.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-07_Issue-4/2013winter-Solomon.pdf). For an unpublished review of the empirical literature on conventional interstate deterrence, contact the authors.

19. See John J. Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983); Paul Huth and Bruce Russett, "What Makes Deterrence Work? Cases from 1900 to 1980," *World Politics* 36, no. 4 (July 1984): 524, <https://www.cambridge.org/>; Paul Huth and Bruce Russett, "Deterrence Failure and Crisis Escalation," *International Studies Quarterly* 32, no. 1 (March 1988): 38, <https://www.jstor.org/>; and Michael J. Mazarr et al., *What Deters and Why: Exploring Requirements for Effective Deterrence of Interstate Aggression* (Santa Monica, CA: RAND, 2018), 24–26, <https://www.rand.org/>.

20. Mazarr et al., xiii, 17–21.



21. Jack S. Levy, "When Do Deterrent Threats Work?," *British Journal of Political Science* 18, no. 4 (October 1988): 490–94, <https://pdfs.semanticscholar.org/0b6f/3438a7d13405cc9e9854c09e16af7a3f4d80.pdf>.

22. Janice Gross Stein, "Extended Deterrence in the Middle East: American Strategy Reconsidered," *World Politics* 39, no. 3 (1987): 351; Huth and Russett, "Deterrence Failure and Crisis Escalation"; and Paul Huth and Bruce Russett, "General Deterrence between Enduring Rivals: Testing Three Competing Models," *The American Political Science Review* 87, no. 1 (March 1993): 69–70, <https://www.jstor.org/>. For an argument that emphasizes the importance of politics over technology in international relations, see Keir Lieber, *War and the Engineers: The Primacy of Politics over Technology* (Ithaca, NY: Cornell University Press, 2005).

23. Shlapak et al., *A Question of Balance*.

24. Eric Heginbotham et al., *The U.S.–China Military Scorecard*.

25. Michael Beckley, "The Emerging Military Balance in East Asia: How China's Neighbors Can Check Chinese Naval Expansion," *International Security* 42, no. 2 (Fall 2017); Michael Lostumbo et al., *Air Defense Options for Taiwan: An Assessment of Relative Costs and Operational Benefits* (Santa Monica, CA: RAND, 2016), [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR1000/RR1051/RAND\\_RR1051.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR1000/RR1051/RAND_RR1051.pdf); and Heginbotham and Samuels, "Active Denial."

26. Travis Sharp and John Speed Meyers, "Correspondence: Will East Asia Balance against Beijing?," *International Security* 43, no. 3 (Winter 2018/19): 194–97, <https://www.mitpressjournals.org/>.

27. Sharp and Meyers, 194–97.

28. Ochmanek, "Sustaining U.S. Leadership in the Asia-Pacific Region," 12.

29. Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, U.S. AirSea Battle, and Command of the Commons in East Asia," *International Security* 41, no. 1 (Summer 2016): 7–48, [https://www.belfercenter.org/sites/default/files/files/publication/003-ISEC\\_a\\_00249-Biddle\\_cx.pdf](https://www.belfercenter.org/sites/default/files/files/publication/003-ISEC_a_00249-Biddle_cx.pdf). For a correspondence on this article, see Andrew S. Erickson et al., "Correspondence: How Good Are China's Antiaccess/Area-Denial Capabilities?," *International Security* 41, no. 4 (Spring 2017): 194–97, [https://www.mitpressjournals.org/doi/abs/10.1162/ISEC\\_c\\_00278?mobileUi=0&journalCode=isec](https://www.mitpressjournals.org/doi/abs/10.1162/ISEC_c_00278?mobileUi=0&journalCode=isec).

30. Biddle and Oelrich, "Future Warfare in the Western Pacific," 13, 24, 28, 29, 33.

31. Biddle and Oelrich, 41.

32. Barry R. Posen, "Measuring the European Conventional Balance: Coping with Complexity in Threat Assessment," *International Security* 9, no. 3 (1984): 47–88, <https://www.jstor.org/>; Joshua M. Epstein, "Dynamic Analysis and the Conventional Balance in Europe," *International Security* 12, no. 4 (Spring 1988): 154–65, <https://www.jstor.org/>; and John J. Mearsheimer, "Assessing the Conventional Balance: The 3:1 Rule and Its Critics," *International Security* 13, no. 4 (1989): 54–89, <https://www.jstor.org/>.

33. This definition draws from Thomas J. Christensen, "China, the U.S.-Japan Alliance, and the Security Dilemma in Asia," *International Security* 23, no. 4 (Spring 1999): 50, <https://www.mitpressjournals.org/>. For the classic statement of the security dilemma, see Robert Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976). For more recent scholarship, see Joshua D. Kertzer, Ryan Brutger, and Kai Quek, "Strategic Empathy and the Security Dilemma: Cross-National Experimental Evidence from China and the United States," Working paper,

2019, [http://people.fas.harvard.edu/~jkertzer/Research\\_files/SCS\\_KQB\\_Web.pdf](http://people.fas.harvard.edu/~jkertzer/Research_files/SCS_KQB_Web.pdf); Shiping Tang, "The Security Dilemma: A Conceptual Analysis," *Security Studies* 18, no. 3 (September 2009): 587–623, [https://www.researchgate.net/publication/242166630\\_The\\_Security\\_Dilemma\\_A\\_Conceptual\\_Analysis](https://www.researchgate.net/publication/242166630_The_Security_Dilemma_A_Conceptual_Analysis); Evan Braden Montgomery, "Breaking out of the Security Dilemma: Realism, Reassurance, and the Problem of Uncertainty," *International Security* 31, no. 2 (Fall 2006): 151–85, <https://www.mitpressjournals.org/>; and Robert Jervis, "Was the Cold War a Security Dilemma?," *Journal of Cold War Studies* 3, no. 1 (Winter 2001): 36–60, <https://academiccommons.columbia.edu/doi/10.7916/D8XD1CBZ/download>.

34. Kertzer, Brutger, and Quek, 2019.

35. Adam P. Liff and G. John Ikenberry, "Racing toward Tragedy? China's Rise, Military Competition in the Asia-Pacific, and the Security Dilemma," *International Security* 39, no. 2 (Fall 2014): 52–91, <https://www.mitpressjournals.org/>.

36. Thomas J. Christensen, "Fostering Stability or Creating a Monster? The Rise of China and U.S. Policy toward East Asia," *International Security* 31, no. 1 (2006); Thomas J. Christensen, "The Contemporary Security Dilemma: Detering a Taiwan Conflict," *Washington Quarterly* 25, no. 4 (2002); Thomas J. Christensen, "Theater Missile Defense and Taiwan's Security," *Orbis* 44, no. 1 (Spring 2015); and Christensen, "China, the U.S.-Japan Alliance and the Security Dilemma in East Asia."

37. Thomas G. Mankhen, ed., *Competitive Strategies for the 21st Century: Theory, History, and Practice* (Stanford, CA: Stanford University Press, 2012).

38. Friedberg, *Beyond Air-Sea Battle*.

39. Kenneth P. Ekman, *Winning the Peace through Cost Imposition* (Washington, DC: The Brookings Institution, 2014), <https://www.brookings.edu/>.

40. Jacob L. Heim, *Missiles for Asia? The Need for Operational Analysis of U.S. Theater Ballistic Missiles in the Pacific* (Santa Monica, CA: RAND Corporation, 2016), 6–7, <https://www.rand.org/>

41. *Air-Sea Battle FY2014: Concepts, Key Programs, and Forecast*, G2 Solutions LLC Proprietary, December 2013, cited in Eirik Torsvoll, "Detering Conflict with China: A Comparison of the Air-Sea Battle Concept, Offshore Control, and Deterrence by Denial," *The Fletcher Forum of World Affairs* 39, no. 1 (Winter 2015): 59n37, <https://static1.squarespace.com/static/579fc2ad725e253a86230610/t/57ec710537c5810dbd7ad89/1475113231950/Torsvoll.pdf>.

42. Tim Watson, "G2 Solutions Issues Air-Sea Battle Spending Forecast," *Gov IT Blogosphere*, 19 December 2013, <http://www.cloudcomputingexpo.com/node/2905374>.

43. Jan van Tol et al., *AirSea Battle*; and Biddle and Oelrich, "Future Warfare in the Western Pacific."

44. Thomas G. Mahnken et al., *Tightening the Chain: Implementing a Strategy of Maritime Pressure in the Western Pacific* (Washington, DC: The Center for Strategic and Budgetary Assessments, 2019), 59–68, <https://csbaonline.org/>.

45. A reader might believe that we have incorrectly separated relevant nuclear escalation scholarship from security dilemma scholarship and are therefore overemphasizing a lack of progress on the security dilemma. We agree that both areas of scholarship focus on leadership misperception, but the former scholarly works focus on wartime dynamics of unintentional escalation and the latter on peacetime perceptions of threat perception. We have made the analytic judgement that these are separate areas of inquiry.

46. Hammes, "Offshore Control"; Joshua Rovner, "AirSea Battle and Escalation Risks," Study of Innovation and Technology in China—Naval War College Policy Briefs, *Policy Brief 12* (La Jolla, CA: UC San Diego Institute on Global Conflict and Cooperation, January 2012), <https://escholarship.org/uc/item/08m367zt>; and Thomas J. Christensen, "The Meaning of the Nuclear Evolution: China's Strategic Modernization and US-China Security Relations," *Journal of Strategic Studies* 35, no. 4 (2012): 447–87, <https://www.tandfonline.com/doi/abs/10.1080/01402390.2012.714710>.

47. Talmadge, "Would China Go Nuclear?," 53–55. See also Caitlin Talmadge, "Beijing's Nuclear Option: Why a U.S.-Chinese War Could Spiral Out of Control," *Foreign Affairs*, November/December 2018, <https://www.foreignaffairs.com/articles/china/2018-10-15/beijings-nuclear-option>; and Dennis C. Blair, Caitlin Talmadge, "Would China Go Nuclear?," Letters to the Editor, *Foreign Affairs*, January/February 2019, <https://www.foreignaffairs.com/>.

48. Jan van Tol et al., *AirSea Battle*; and Elbridge Colby, "Don't Sweat Air-Sea Battle," *The National Interest*, 31 July 2013, <https://nationalinterest.org/>.

49. Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015): 7–50, [https://www.mitpressjournals.org/doi/pdf/10.1162/ISEC\\_a\\_00215](https://www.mitpressjournals.org/doi/pdf/10.1162/ISEC_a_00215).

50. Talmadge, "Would China Go Nuclear?," 51.

51. Talmadge, 51.

52. Talmadge, 88.

53. Talmadge, 88–90.

54. James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security* 43, no. 1 (Summer 2018): 56–99, <https://www.mitpressjournals.org/>.

55. For scholarship that could help illuminate such an approach, see Andrew Scobell, *China and Strategic Culture* (Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, May 2002), <https://ssi.armywarcollege.edu/pubs/display.cfm?pubID=60>.

# Decide, Disrupt, Destroy: Information Systems in Great Power Competition with China

AINIKKI RIIKONEN

## Abstract

Technologies for creating and distributing knowledge have impacted international politics and conflict for centuries, and today the infrastructure for communicating knowledge has expanded. These technologies, along with attempts to exploit their vulnerabilities, will shape twenty-first-century great power competition between the US and China. Likewise, great power competition will shape the way China develops and uses these technologies across the whole spectrum of competition to make decisions, disrupt the operational environment, and destroy adversary capabilities.

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**T**he 2018 US National Defense Strategy (NDS) cites Russia and the People's Republic of China (PRC) as "revisionist powers" that "want to shape a world consistent with their authoritarian model—gaining veto authority over other nations' economic, diplomatic, and security decisions."<sup>1</sup> It describes these countries as competitors seeking to use "other areas of competition short of open warfare to achieve their [authoritarian] ends" and to "optimize their targeting of our battle networks and operational concepts."<sup>2</sup> The NDS assesses that competition will occur along the entire spectrum of statecraft from peace to open conflict and that Russia and the PRC will align their foreign policies with their models of governance. If this assessment is correct, and if technology plays a significant role in international politics, then technology will affect the whole spectrum of great power competition and conflict. Information architecture—the structures of technology that collect and relay information worldwide—is innately connected to power projection. The PRC has been innovating in this area, and its expanded information capabilities—and risks to US capabilities—will shape competition in the twenty-first century. Likewise, this competition will influence how the PRC develops and

uses communications technologies before, during, and after the threshold of a potential conflict.

The PRC has, in its short 70 years of history, matured from a fledgling postrevolutionary state to an impressive near-peer competitor with a global vision for foreign policy. Xi Jinping has touted a “community of common destiny” as the PRC’s foreign policy vision.<sup>3</sup> This concept predates Xi, as do many other Chinese Communist Party (CCP) concepts. While leadership personalities change, the PRC has demonstrated a great deal of continuity in its approach to foreign policy, including an emphasis on strategic information support, information operations, and shaping adversaries’ actions below the threshold of open conflict. Even as the PRC grows in its ambitions and capabilities, these concepts can inform an understanding of its activities and the ways it seeks to accomplish its objectives.

The CCP’s drive to mitigate existential threats to its leadership underlies PRC foreign and domestic policy and informs PRC efforts to build an international environment open to CCP influence.<sup>4</sup> The CCP envisions an international environment where it can be a guiding force in a “community of common destiny.” On its surface, the community of common destiny is about cultivating mutual interests and shared responsibilities between the PRC and other states.<sup>5</sup> In practice, it seeks to generate a “global network of partnerships centered on China” to render the international environment “compatible with China’s governance model and emergence as a global leader.”<sup>6</sup> For these objectives, the PRC will weaponize connectivity and employ technologies that maximize the CCP’s agency over the availability and flow of information. Agency over information architecture is a potent tool for states in understanding and shaping the international environment and in winning both political and military confrontations. The technologies for producing, sharing, and policing knowledge are global and are an area of interest for the CCP before the outset of conflict. Technologies relating to connectivity are equally important for military operations, including global command, control, and communications (C3). This tech-enabled connectivity is part of the backbone of US military superiority, and its vulnerabilities are therefore an area of priority for the PRC. At the heart of the PRC’s competition to grow power and expand its influence is access to information, manipulation of the information space, and denial of critical US communications capabilities in the event of a conflict. Current, emerging, and future technologies will be vectors for building and combating state power.

The ability to access and influence information as well as to neutralize an opponent’s use of information informs the way technologies will be

used in twenty-first-century great power competition and potential conflict. These technologies fit into three broad categories. First are technologies of decision advantage, the tools for understanding the environment and analyzing information to support state decision-making. Second are technologies of disruption, those that can influence the information space to shape the environment and extend state power. Third are technologies of destruction, designed for fighting and winning by paralyzing the enemy. This article overviews relevant PRC doctrine for each technology category to provide context for technology objectives. Next, it offers examples of established technology use cases to ground the discussion of known practices. Finally, it highlights emerging technologies and speculates about future trends.

### **Technologies of Decision Advantage**

Information superiority can create advantages for states by preventing strategic surprise or by folding opponents into the inside of a “decision loop,” rendering them prone to outmaneuver. The CCP regards strategic information support as “a key enabler, providing both the avenues and intelligence necessary for well-timed political and operational decisions and action.”<sup>7</sup> It has combined technology with institutional innovations to set the foundation for information support in the form of a nascent global surveillance architecture. Building blocks in this foundation are embedded within a myriad of PRC foreign policy projects, business practices, and legal regimes.

The PRC is already a formidable cyber actor, able to exploit software vulnerabilities to find information relevant to its political objectives. It is also becoming adept at inserting itself into supply chains and states’ networks. In part, it uses development projects and business practices to do so. New technologies like fifth-generation wireless networks (5G) and artificial intelligence (AI)-enabled facial recognition will only increase the PRC’s access to information over time, as long as the PRC maintains and grows access to international networks. Expansion of technological capabilities and consequent deployment of those technologies will further the PRC’s ability not just to hunt and exfiltrate specific data but to vacuum it up en masse from a wider variety of sources.

### ***Fusion Deployment and Development Projects***

The PRC systematically “fuses” categories to render state-backed projects as dual use; development projects could create doorways for state sur-

veillance.<sup>8</sup> Companies might not want to work for the state and, of course, government connections with companies are not evenly distributed or monolithic. But the blurring of public and private entities and several new PRC laws create challenges for understanding whether companies are independent from the state. These laws and practices create backdoors for the PRC to access information through companies working abroad.

One type of fusion comes in the form of opaque private company ownership. The recent Huawei controversy has raised questions about the intentions of Chinese companies operating abroad, how these companies fit into the PRC's foreign policy, and whether Chinese companies can be independent from the state. Huawei—an ostensibly private company known for its phones, undersea cables, and 5G projects—has prompted a litany of analysis addressing these questions. A scholarly investigation of Huawei's ownership concludes that the company is one percent owned by CEO Ren Zhengfei and 99 percent owned by a "trade union committee."<sup>9</sup> The researchers infer that Huawei "may be deemed effectively state-owned."<sup>10</sup> Ashley Feng in *Foreign Policy* adds that assessing which companies work for the CCP is also challenging because of internal party committees and the PRC's recent intelligence and cybersecurity laws.<sup>11</sup> Legal regimes give the government the ability to request assistance from private companies without recourse for companies to push back. Article 7 of the PRC's National Intelligence Law, for example, states, "Any organisation and citizen shall, in accordance with the law, support, provide assistance, and cooperate in national intelligence work, and guard the secrecy of any national intelligence work that they are aware of. The state shall protect individuals and organisations that support, cooperate with, and collaborate in national intelligence work."<sup>12</sup>

Government ownership, party committees, and legal requirements create risks for companies' independence. These practices and regulations are a feature, not a bug, and create pathways for the PRC to request access to companies' work and data. This year, tech giants Alibaba and Tencent elected to withhold data from a government-backed financial credit score system, but time will tell how long their refusal might last.<sup>13</sup> Lack of transparency makes Chinese vendors of information technologies difficult to vet. These factors pose significant risks for countries that adopt Chinese-built information infrastructure.

Information infrastructure projects increasingly feature in foreign policy projects as well, especially development-related projects like the Belt and Road Initiative (BRI). Through the Belt and Road, and components of it like the Digital Silk Road, the PRC offers development projects with

competitive pricing or financing backed by the Chinese state. The BRI has been criticized in recent years for transitioning from “pocketbook diplomacy” to “debt-trap diplomacy” where states unable to pay for projects give up some sovereign element like ports or territory for lease. The PRC has used the debt-trap approach not only for physical infrastructural projects but also for digital infrastructure, as in the case of Nigeria’s telecommunications satellites. The state-owned enterprise (SOE) China Great Wall Industry Corporation built a pair of telecommunications satellites for the Nigerian government but, instead of charging \$550 million for them, acquired a stake in Nigerian Communications Satellite (NIGCOMSAT) Limited.<sup>14</sup> NIGCOMSAT Ltd. is owned by Nigeria’s Federal Ministry of Communications Technology and manages Nigeria’s satellite communications. PRC information-based development projects pose risks to host nation governments’ control of telecommunications assets.

The technologies built by companies like Huawei and the China Great Wall Industry Corporation are not necessarily built for spying, but PRC institutional practices create risks for the confidentiality of user data traveling along this information infrastructure. The way the PRC combines technology with institutional innovations and foreign policy projects could manifest in the building blocks of a global surveillance architecture.

### ***Established Initiatives***

Historical instances demonstrate how aggressive, diverse, and systematic the PRC approach is to accessing information—especially information connected with political objectives—through technical means. Some instances follow well-established methods; for example, FireEye identified APT40 (advanced persistent threat) as a PRC-sponsored cyber operation using a seemingly typical attack life cycle.<sup>15</sup> APT40 targeted actors involved in either South China Sea disputes or possessing advanced maritime technology. FireEye assessed that “APT40’s emphasis on maritime disputes and naval technology ultimately support China’s ambition to establish a blue-water navy.”<sup>16</sup> While APT40 is only one of many APTs attributed to the PRC, the case illustrates the PRC’s worldwide reach and firm grasp of well-established cyber methods for obtaining privileged information important to state objectives during peacetime and conflict.

The PRC’s breaches of information infrastructure exploit vulnerabilities in networks as well as supply chains. The PRC is adept at penetrating software and hardware supply chains and supply of management personnel (wetware). Hardware supply chain vulnerabilities can exist almost anywhere in the chain of custody of equipment. In the case of the new



African Union headquarters, Huawei installed network hardware components in the building, which the PRC consequently hacked.<sup>17</sup> Whether Huawei played an active role is unclear, but the case does little to instill confidence in the company. Digital supply chain attacks work through common trusted software and updates—software patches may themselves be an attack vector. In 2017, cybersecurity researchers discovered that CCleaner, a common computer security tool, had been manipulated—possibly by a PRC-backed actor—so that updates would install backdoors into users’ devices.<sup>18</sup> The CCleaner attack infected thousands of devices for the purpose of gaining entry into only a few dozen belonging to technology companies. In terms of wetware, a recent *Wall Street Journal* investigation uncovered a case of Huawei employees tasked with managing telecommunications networks spying on dissidents on behalf of African host nation governments.<sup>19</sup> While this Huawei case does not implicate the Chinese government, if Huawei is not able to deny state requests for access, it demonstrates that host nations are not necessarily the only ones that can spy on their citizens. These situations show the risks posed by PRC entities’ involvement anywhere in putting together or maintaining systems, whether software, hardware, or wetware.

### ***Emerging Examples***

More recently, the PRC is leveraging its infrastructure-building approach to potentially expand its network penetration capabilities, including amassing new kinds of data. Technologies that increase risks for surveillance include 5G and AI-enabled technologies like facial recognition. These technologies are likely to be deployed as part of development projects such as digital infrastructure upgrades and Smart City initiatives.

Fifth-generation mobile networks add a layer of complication to the telecommunications surveillance problem. As 3G enabled smartphones to send e-mails and 4G enabled media streaming, 5G will enable new applications by transmitting even greater amounts of data to travel at high speed and volume. The applications of 5G are wide-ranging, from the industrial Internet of Things (IoT) to autonomous vehicles. The 5G connections could transmit sensor data from these user devices to cloud-based computing or even cloud AI systems, which in turn could operate devices or perform analysis for use during military operations. Huawei’s push to install 5G networks around the world has created a firestorm for policy makers concerned about foreign espionage, and rightly so.<sup>20</sup> The volume of data that will be transmitted via this foundational technology would be a goldmine for any state actor. The data would include not only person-to-

person communications but also information produced as part of industrial processes. High-fidelity industrial data could also be a valuable source of economic intelligence.

Smart City initiatives employ a suite of interconnected sensors and objects that pose a surveillance risk as well, especially the security component of Smart Cities often called “safe city.” Surveillance cameras connected with facial and other recognition systems mean that individuals can be automatically tracked anywhere, anytime. Ongoing initiatives include Ecuador’s ECU911 project and Venezuela’s Integrated Monitoring and Assistance System (SIMA), both built by SOE China National Electronics Import and Export Corporation (CEIEC).<sup>21</sup> These projects include the installation of thousands of surveillance cameras combined with networking equipment, data centers, and emergency response command centers. The Venezuela case is cause for elevated concern given the country’s *carnet de la patria* or fatherland card initiative, built by ZTE, that will connect citizens’ IDs with government services including voter registrations.<sup>22</sup> If politically sensitive data from the fatherland card initiative is ever connected with SIMA, Venezuela’s poor governance will be compounded by increased state capacity for control. SIMA and the fatherland card projects are built and managed by Chinese companies; the Venezuelan government may not be the only entity with access to citizens’ centralized data. PRC law requires that companies—like ZTE, CEIEC, and Huawei—building Smart City initiatives cooperate with the state when requested.

### ***Future Trends***

The PRC has expanded its access to information, and infrastructure projects and new technologies will only continue to expand that access. Smart City initiatives and 5G deployment, by installing sensors and building the means of transporting sensor and other data, could create a firehose of information available upon state request. This massive amount of data may have limited value for a state due to finite resources for processing and analysis, but artificial intelligence could diminish this limitation. Machine learning, a method of AI, is adept at identifying patterns in big data and will likely refine the PRC’s ability to sift through and interpret it. AI can make sense of the mass or hunt for specific information within it. The PRC is already testing AI applications for surveillance domestically in Xinjiang, which some observers have called a “surveillance lab.”<sup>23</sup> Those efforts are likely to expand over time in geography, scope, and depth.

Facial, voiceprint, gait, and other types of biometric recognition made possible by AI can pick a person out in a crowd and will make hiding from

the PRC difficult. The state has subjected the Uyghur ethnic minority population to biometric data collection and has used it to enforce control. The state uses facial recognition at checkpoints to limit where individuals may and may not travel; some wanted persons are even detained on sight.<sup>24</sup> Voiceprint recognition, developed by companies like iFlytek, can identify participants in eavesdropped phone calls.<sup>25</sup> The PRC is already beginning to aggregate surveillance information on platforms like the Integrated Joint Operations Platform (IJOP) in Xinjiang and the Golden Shield and Sharp Eyes projects elsewhere in the country.<sup>26</sup> Aggregating data in the IJOP is labor intensive at present, but data collection and processing may become more automated in the future.<sup>27</sup> Advances in speech recognition, natural language processing, and keyword detection could also allow the government to track the content of individual conversations or monitor public opinion at scale. In terms of where all this data might go, in addition to tracking and trend analysis, the People's Liberation Army (PLA) and PRC Ministry of Foreign Affairs have expressed interest in AI tools for decision-making.<sup>28</sup> They will need data to support these initiatives. If the PRC has access to foreign surveillance cameras, telecommunications networks, and sensing equipment, it may be able to use AI to process and analyze vast quantities of data to gain decision advantage over other states.

### ***Implications for Great Power Conflict***

Competition for better decision-making tools already drives technology investments in the PRC and the US. The US intelligence community's (IC) Augmenting Intelligence Using Machines (AIM) Initiative envisions an IC that can "provide decision advantage at machine speed" by using AI to "clos[e] the gap between decisions and data collection."<sup>29</sup> Part of the Defense Advanced Research Projects Agency's (DARPA) AI Next Campaign looks to develop machines that can work with humans to "facilitate better decisions in complex, time-critical, battlefield environments."<sup>30</sup> The PRC is investing in capabilities to assist decision-making on and off the battlefield as well. A researcher from the Chinese Academy of Sciences disclosed that the Ministry of Foreign Affairs is working with a system for vetting foreign investment projects.<sup>31</sup> The system, still under development, supposedly accesses PRC government databases to perform geopolitical environment simulations. With regard to open conflict, one researcher from the PRC's Army Command College anticipates an eventual "singularity" where machine-speed decision-making overtakes the human mind's ability to keep pace with the speed of operations on the battlefield.<sup>32</sup> With increased worldwide connectivity and the deployment of myriad sensors, states are

acquiring access to exponentially more data. AI can leverage that data to generate decision advantage in great power competition and conflict.

The challenges these emerging technologies pose for the PRC's foray into decision advantage—sensors, 5G, and AI-enabled processing—come not from the technologies themselves but the PRC policies that generate surveillance risks. The PRC's mode of fusion deployment through ambiguous private-public relationships poses severe hazards for states, especially as the PRC integrates digital and information infrastructure into its development projects. By the time states go looking for a smoking gun, it may be too late. The United States ought to work with allies and partners to build risk-based frameworks to assess and mitigate surveillance risks from PRC-built technologies, especially where massive data flows are involved.

### **Technologies of Disruption**

Information superiority creates advantages for operating in an environment, but the environment itself can be disrupted and shaped. This shaping can be used to influence “an adversary’s decision-making through actions below the threshold of outright war” and for “setting the terms of conflict in peacetime.”<sup>33</sup> The CCP regards information operations as part of “discourse power” or “the power to control perceptions and shape narratives that advance Chinese interests and undermine those of an opponent.”<sup>34</sup> It frames its voice in the world, and its building of that voice, as “discourse power.”<sup>35</sup> Discourse constitutes knowledge and shapes governance, and it can be manipulated in part by determining who is permitted to speak and about what. It is about cultivating a dominant narrative, in part by promoting certain perspectives and censoring others. This narrative can be general, such as to foster perceptions of the CCP, or specific, such as election interference to drive specific political outcomes. This discourse power forms a part of military strategy as well, according to PLA documents from as early as 2003.<sup>36</sup> Peter Mattis states that “the whole point of pushing that kind of propaganda out is to preclude or preempt decisions that would go against the People’s Republic of China.”<sup>37</sup> Information superiority and information support thus play a significant role in great power competition below the threshold of conflict.

The CCP’s goal for using discourse power is to create an external environment amenable to the “Chinese Dream of national rejuvenation.” Well-known initiatives include the United Front, which the CCP regards as its third “magic weapon,” in addition to open conflict and party building.<sup>38</sup> The United Front works by coopting or neutralizing people and organizations that could undermine CCP rule or authority. Discourse power

lies in the CCP's ability to determine who may or may not speak as well as what is said. Methods can be psychological, public opinion-based, or legal in nature.<sup>39</sup> The PRC is well practiced in shaping or manipulating the information environment. It employs some technical tools now and is likely to expand its abilities as other technologies advance.

### ***Established Initiatives***

The PRC boasts one of the most advanced censorship capabilities in the world. The “Great Firewall” is designed to block web content considered politically sensitive, such as the Tiananmen Square massacre and, more recently, the Hong Kong protests. Censorship is not limited to the “public” areas of the internet like websites but is prolific on social media platforms and messaging apps like Weibo and WeChat. Increasingly, WeChat users have reported that automated censorship catches private messages and even images.<sup>40</sup> The PRC is well established in its efforts to censor sensitive contributions in the public and private information space.

Discourse power also involves strengthening a point of view through promotion or mass. Here, the CCP employs the *wumao dang* or “50 Cent Party” to spread positive sentiments about the CCP. The 50 Cent Party so far seems composed of real human people that react to anti-CCP online content by flooding the comments with pro-PRC sentiment. Research from Harvard University indicates that the 50 Cent Party approach varies from the Russian “troll farm” method. First, the 50 Cent Party does not rely on bots but a large volume of people.<sup>41</sup> Second, its content coopts or deflects conversations to push for pro-CCP unity in lieu of driving political division or sowing outrage. But as the PRC forays its online initiatives to more international audiences, it may take a more targeted approach to drive specific political objectives.

The PRC has started to target its online information operations to drive political outcomes and to respond to international and off-mainland crises. In the lead-up to Taiwan's 2018 elections, the PRC released fabricated news designed to undermine Taiwanese citizens' faith in their government. One story widely circulated on social media claims that Taiwanese travelers stranded at Osaka's Kansai International Airport during a typhoon were offered transport by PRC officials if they self-identified as Chinese.<sup>42</sup> The story stoked outrage in Taiwan. It may have culminated in the suicide of a Taiwanese diplomat in Japan and influenced certain election outcomes. But social media operations on platforms not controlled by the PRC, particularly Western platforms, still seem to be maturing. Twitter, Facebook, and YouTube exposed “coordinated inauthentic behavior” on their platforms

in response to the Hong Kong protests.<sup>43</sup> Analysis suggests that the PRC hastily acquired these social media accounts but had not matured them as part of a sophisticated long-term operation. Whether the haste was caused by a lack of foresight into the protests or was due to the PRC's relatively new entry into this open social media space is unclear.<sup>44</sup>

The PRC has been influencing the online information space by driving volume—dialing certain perspectives up or down through promotion or censorship—and by seeding disinformation to drive political objectives. Its approach, while not yet on par with Russia's efforts, is likely to become more sophisticated with time.

### ***Emerging Examples***

The PRC is beginning to use structural and infrastructural approaches to shape the information space. Structural approaches condition actors to adopt certain narratives or self-censor by incentivizing and deterring certain behaviors. Infrastructural approaches work by deploying the information infrastructure necessary to disseminate information.

Structural approaches are powerful because they link discourse with incentives, and they work by using accounting systems to fuse them together. One example is the corporate “social credit” system, a digital accounting method that assigns positive values to certain behaviors and negative values to others.<sup>45</sup> Companies that accumulate positive values by aligning with CCP narrative maintain access to the PRC market. Those that do not risk their access. The PRC has had success so far with manually issued warnings, for example around companies' regard for the One China policy. A number of airlines and fashion companies ran afoul of the CCP by listing Taiwan as a country on their websites or by showing China on a map without including Taiwan.<sup>46</sup> The corporate social credit system goes a step further than manual threats; it will require companies to submit their data for inspection, allowing the PRC to have deeper access into their activities and more efficient screenings for state policy and narrative compliance.<sup>47</sup> The system creates a more stringent way to use the “lure of the Chinese market—to stifle discussion.”<sup>48</sup> This tool will be especially powerful given the high visibility of large companies and their ability to monitor the conduct of their employees as a second-order effect. Cathay Pacific's response to the recent Hong Kong protests—it has fired employees—demonstrates the power of a warning from the PRC.<sup>49</sup> By making companies' behavior easier to surveil, the corporate social credit system will gradually improve the efficiency of structure-based incentives for policing dissent.

The PRC has used information infrastructure development projects to increase its ability to disseminate information. As with the installation of technologies that could be used for surveillance, the PRC leverages a fused approach to build the means to purvey its message. This approach blends development projects with state initiatives and organizations. The 10,000 Villages project is a development initiative for upgrading analog television to digital in African states.<sup>50</sup> StarTimes, a private company, received millions of dollars in funding from the Export-Import Bank of China for these upgrades. As of 2019, StarTimes completed upgrades in 30 African states and boasts some 10 million subscribers. PRC state media gained advantage through this initiative because StarTimes offers cheaper pricing for television packages, including PRC state-run channels, than other outlets.<sup>51</sup> By using development projects to establish the technological means of transmission, the PRC enables its state media to expand its overseas reach at the expense of other media outlets. As Chinese state media lacks editorial independence and is required to toe the party's line, development projects that elevate state media serve to increase the CCP's overseas discourse power.

### ***Future Trends***

The next generation of PRC information operations will likely include microtargeting and synthetic media, also known as deepfakes. These technologies can tailor messaging to individuals and increase the believability of disinformation. While already in use to a limited degree, such technologies are likely to become more pervasive. Chinese social media platforms already use microtargeting to a degree, as do Western-based platforms. Microtargeting is the use of algorithms to optimize content recommendations for a specific audience.<sup>52</sup> This technology can be used for commercial purposes in the case of product or content recommendations on social media. It can also be used for social manipulation as in the case of the Cambridge Analytica scandal around the 2016 US presidential elections, in which Russia proved especially adept at manipulating algorithmic processes of content distribution to promote social divisions. PRC social media platforms benefit the state because of the PRC's agency to control their content through the promotion of state media and censorship. The role of algorithms to automate content distribution is increasing, however, according to Leiden University's Florian Schneider. He terms this capability "digital nationalism," "a process in which algorithms reproduce and enforce the kind of biases that lead people to view the nation as a major element of their personal identity and as the primary

locus of political action.” Schneider adds that digital nationalism is “special in that these existing biases are further strengthened and made to seem natural by virtue of the pervasive personalisation processes, preference filters, and group bubbles that have come to define communication on the commercial internet.”<sup>53</sup>

This digital nationalism in the PRC is mostly a domestic phenomenon, but the PRC’s app ecosystem is growing and gaining more international users. TikTok, owned by the Beijing-based company ByteDance, has enjoyed a meteoric rise. In 2018, it was the fourth most downloaded non-game app in the world—trailing Facebook but beating Instagram—and has been installed by 1.3 billion users worldwide.<sup>54</sup> TikTok is not subject to the same content restrictions as Douyin, its sibling app for mainland Chinese users. In the wake of the Hong Kong protests, observers have begun to point out what appears to be a conspicuous lack of protest content or any other content considered sensitive by the CCP. The *Washington Post* reports that ByteDance calls TikTok “a place for entertainment, not politics, and said its audience gravitates there for positive and joyful content as a possible explanation of why so few videos relate to sensitive topics as the protests in Hong Kong.”<sup>55</sup> Yet the platform does boast plenty of American political content.<sup>56</sup> ByteDance has been opaque about how it moderates its platform, but recently leaked documents indicate how content sensitive to the CCP might be banned under broader rules.<sup>57</sup> TikTok’s approach to politically sensitive content might indicate how other Chinese-owned apps could operate in international settings. Like Western social media platforms including Facebook and Twitter, TikTok uses recommendation algorithms, but its content rules are more likely to be state-regulated than those of its non-PRC counterparts. ByteDance cultivates “stars” on Douyin; if it begins to choose stars on TikTok as well, the messages they purvey will be something to watch in future.<sup>58</sup> If more users come to PRC-run platforms, these platforms recommend content to users, and the state dictates what type of content platforms can carry, then the state can begin to extend microtargeting beyond its borders.

AI could supercharge disinformation through synthetic media. Synthetic media, also known as deepfakes, consists of realistic audio or visual media created by a type of AI system called a generative adversarial network (GAN). Reports about deepfakes used for malign purposes are beginning to emerge. In June 2019, AP News reported on a potential espionage recruitment operation involving synthetic media.<sup>59</sup> A LinkedIn profile named “Katie Jones” connected with senior US government officials and think tank experts, but the account was for a person who does



not exist—the account sported a GAN-generated profile picture to fool connections. This operation was not attributed to the PRC, but the country is known for recruiting over LinkedIn. Just as AI can create images of imaginary people, it can also mimic real humans—whether to deceive the general public or specific individuals. In 2018, opponents of Gabon’s president Ali Bongo attempted a coup after the release of a video speculated to be a deepfake of the president.<sup>60</sup> In early 2019, criminals defrauded a United Kingdom–based company of \$243,000 by using AI-manipulated audio to pose as leadership of its parent company over the phone.<sup>61</sup> These tools are becoming more widely available, and researchers are racing to create detection systems. If a state has agency over a social media platform or television station, however, it may choose what content to show or filter. Deepfakes will likely be more effective on platforms where they are intentionally deployed at scale as propaganda or disinformation.

### ***Implications for Great Power Conflict***

The CCP has been building its presence in the information space by increasing its ability to control the flow and content of information. This effort has been rooted in its approach to technology. Established initiatives include exerting governance via censorship over domestic online platforms, building positive narratives on the CCP via mass posting of propaganda, and distributing disinformation in neighboring states to stoke outrage. Emerging initiatives increase the CCP’s agency to distribute information by building and controlling the physical technological infrastructure needed to do so.<sup>62</sup> These initiatives also increase the CCP’s discourse power by binding the CCP’s economic weight to incentives for narrative compliance. In the future, as CCP-regulated platforms start to collect more company and user data, they could also employ microtargeting to automatically optimize delivery of content in ways that feel natural to consumers. Synthetic media will further complicate matters; the state could use it to create audio and visual media that support the version of reality it wants people to believe.

### **Technologies of Destruction**

Just as states can build technologies to access information or manipulate information, they can destroy adversaries’ information channels and ability to communicate. The US military’s global information architecture enables the United States to perform operations almost anywhere on the globe. Elements that connect this architecture include fiber, cable, microwaves,

shortwaves, and satellite nodes.<sup>63</sup> In addition to organizational and personnel communications, networks are critical for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) and for the positioning, navigation, and timing (PNT) capabilities that enable the US military's signature precision strike systems.<sup>64</sup> A history of the 1990 Gulf War written by China's Academy of Military Science states that "the Gulf War has led to a world-wide military transformation characterized by the shift from mechanized warfare to information warfare."<sup>65</sup>

In the event of a conflict, the PRC is not likely to take on the United States in a "fair fight" but will employ an offset strategy.<sup>66</sup> If the PRC cannot win without fighting, then it will look to win by "decapitation and paralysis rather than outright destruction."<sup>67</sup> This approach underpins the PLA theory of victory, which is to disrupt or destroy the enemy's operational system through "systems destruction warfare."<sup>68</sup> Once paralyzed, the enemy "loses the will and ability to resist."<sup>69</sup> The PLA has identified information architecture—especially C3—as the US military's center of gravity. In the event of a conflict, the PLA will attack key points and nodes in US information architecture with kinetic or nonkinetic means.

US reliance on these systems—especially space assets—is only growing. In the 2003 invasion of Iraq, 68 percent of munitions used satellites, a significant increase from 10 percent during the 1990 Gulf War.<sup>70</sup> The US way of war demonstrated in Desert Storm informed the PRC's military strategy, and the PRC has accordingly formed its institutions to counter US information systems. These efforts include "informatized" warfare and long-range strike capability to hold C3 assets at risk.<sup>71</sup> The PLA established the PLA Rocket Force (PLARF) as a fully-fledged armed service to fulfill this strike capability.<sup>72</sup> A recent PLA reorganization included the new Strategic Support Force (SSF) that folds the PLA cyber, space, and electronic warfare efforts into one organization.<sup>73</sup> Cyber, space, and electronic warfare are ultimately all about information flows—the key target for paralysis in a fight.

### ***Current Risks***

If the PRC is already building information support and information operations as key parts of shaping battlefield conditions, then it is likely taking other measures as well to tilt the field in its favor. Supply chain risks have been a source of consternation for the US Department of Defense because the manufacture of technology, especially components of information technologies, is typically global.<sup>74</sup> Supply chain risks occur when

actors along a technology's chain of custody cannot be verified as trustworthy. Supply chain attacks can happen to software supply chains, as with the CCleaner attack, or in hardware supply chains as during semiconductor manufacturing. The Department of Defense has made efforts to secure its supply chains through initiatives like the Trusted Foundry program.<sup>75</sup> As an example of hardware supply chain issues, a United Kingdom-based company that manufactures circuit boards for the F-35 Joint Strike fighter was discovered to have been acquired by Fastprint, a company based in Shenzhen.<sup>76</sup> The British company Exception PCB manufactures the bare-board component of the circuit board and was assessed not to pose an immediate risk, but the case illustrates the challenges of accounting for all the actors that touch complex platforms. Supply chains are becoming more globalized over time and will pose an ongoing challenge for the integrity of US platforms.

These efforts to secure supply chains are imperfect not only because of the global nature of supply chains, but because of the US military's integration with partners and allies. Despite a growing reliance on space systems, NATO does not own satellites. Instead, NATO requests access to "products and services" and uses a mix of military, civilian, and commercial space assets made available through memoranda of understanding among the allies. According to a Chatham House report on satellite, cyber, and supply chain vulnerabilities, NATO's reliance on commercial companies for military purposes creates vulnerabilities whether physical, personnel, or procedural.<sup>77</sup> The PRC has incentives to act now on these vulnerabilities where it can because cyberattacks need network access to deliver payloads; state actors require persistence to keep attack options open.<sup>78</sup> The SSF was designed for "peacetime-wartime integration" to facilitate the transition from cyber reconnaissance and attack.<sup>79</sup> Even in peacetime, the SSF is probably exercising persistence and conducting reconnaissance on critical information infrastructure, especially in the parts where that infrastructure seems most vulnerable. Satellites pose risks because of supply chain concerns and because civilian interaction with them increases the attack surface.

### ***Data on the Battlefield***

Fighting under "informatized" conditions means dismantling adversary information systems and also possessing superior capabilities. For the PLA, "a truly joint force must be able to control the information environment through information-networked forces."<sup>80</sup> This theory of operations involves understanding the environment, making decisions, and acting

swiftly. Components include sensors, network equipment, analysis tools, and weapons that can perform at high speed. This suite of sensors and connected objects could manifest as an “Internet of Battlefield Things” (IoBT). The IoBT could potentially connect to cloud services by way of 5G networks; the PRC is already piloting 5G-connected devices for border control in Jilin province on the North Korea border.<sup>81</sup> The PLA is investing in a number of platforms to support battlefield communications and decision-making. The integrated command platform is designed to facilitate communication to multiple moving units to quickly adapt to the battlespace.<sup>82</sup> The platform is supported by digital databases and command automation tools in what the PLA terms “intelligentized” command and decision-making.<sup>83</sup> From there, the PLA has invested in hypersonic missiles and directed energy weapons to minimize the time between target identification and attack.<sup>84</sup> Sensors, networks, decision-making tools, and fast weapons support the PLA’s ambition to observe, orient, decide, and act more quickly than its adversaries.

### ***Future Hazards***

The opening salvo of conflict will likely target information flows for operations, C4ISR and firepower elements, and operational systems and networks.<sup>85</sup> The SSF will employ cyber, electronic warfare, and counter-space capabilities to destroy, disrupt, or delay the functioning of US information systems. Cyberattacks could exploit logic bombs placed during peacetime operations or other pre-positioned payloads. The PRC would not be the first to engage in this practice. During the Iran nuclear negotiations, the US planted malware into Iranian military networks as an insurance measure in case the talks failed.<sup>86</sup> The operation, Nitro Zeus, stopped short of activating the payload that would have disabled those networks. Future network vulnerabilities might also impact US allies or partners, especially if they accept Huawei as a vendor for 5G. Cybersecurity company Finite State found poor practices from Huawei within its firmware.<sup>87</sup> Whether these vulnerabilities are “bug doors” or backdoors, they would leave states’ economies open to coercion if new industrial IoT is dependent on Huawei 5G networks. Network disruption via cyber means could impact the information backbones of both military and economic systems.

Where cyberattacks use the language and logic of computers to disrupt networks, electronic warfare is about controlling the physical electromagnetic spectrum to achieve desired effects. Effects can include degradation of adversaries’ connections or outright destruction of systems. Jamming

works, for example, by overpowering the signals a platform is looking to receive. Directed energy, such as high-powered microwaves, uses a concentration of electromagnetic waves to dazzle or physically damage systems. Both techniques have successfully disabled unmanned aerial vehicles by disrupting their connections or physically damaging them.<sup>88</sup> As the technology advances, it will be able to strike other platforms at light speed. To target satellites in particular, the PLA is developing a number of measures that use directed energy and other means. The US Defense Intelligence Agency anticipates that the PRC will have lasers capable of countering low Earth orbit satellites by 2020 and geostationary orbit satellites by the mid-2020s.<sup>89</sup> In addition to directed energy weapons, some threats to satellites are kinetic, such as antisatellite missiles and orbital threats (satellites) designed to damage or interfere with other satellites.<sup>90</sup>

### ***Implications for Great Power Conflict***

An assessment of the PRC's technological investments and strategy—and the way they target US vulnerabilities—can inform American approaches to technology and war fighting. DARPA launched its Mosaic warfare concept to disaggregate sensors, decision-making nodes, and effects platforms to boost resiliency.<sup>91</sup> It also seeks to eliminate concentrated points of failure from communications networks. Scholars in the defense community have argued that the US may need an entirely new “way of war” altogether to adapt to new competitive and technological landscapes.<sup>92</sup>

The US and PRC understand that their forces will operate in environments where communications are degraded or denied, even as both countries invest in shielding, cognitive electronic warfare offense and defense, and other resiliency measures. Degraded networks could prompt increasing reliance on autonomous systems that can operate on the edge. These systems will create new implications for conflict escalation dynamics, operational concepts, ethics, and strains of technological competition.

## **Conclusion**

From Smart Cities, to deepfakes, to systems destruction warfare, the technologies that connect, manipulate, or disconnect nation-states will lie at the heart of great power competition. The development and deployment of technology are not linear but are shaped by norms, governance, and the choices of the actors that interact with and through that technology. The PRC's projects and initiatives do not delineate cleanly between public and private or between development and defense. This fusion poses a unique

challenge to US national security and foreign policy as it will require creative interagency solutions. In developing strategy and communicating with US allies, partners, and like-minded states, agencies will need to use a risk assessment approach. The US will need to find ways to empower states to adopt the technologies that connect people, make cities more efficient, and increase security without taking on undue risk should the competition escalate or lead to war. The innovation behind the PRC's growing access to information comes not from the 5G or other technology platforms but from the PRC's institutional practices and foreign policy. The PRC is shaping the information space by increasing the reach of platforms it can extend its governance over. It is grooming the battlespace by organizing its military around what it has identified as an American vulnerability and has shaped its technology innovation around those principles. The PRC's approach to twenty-first-century great power competition and conflict stretches across the whole spectrum from accessing information, to shaping the information space, to denying adversaries' information systems in a conflict. Competition thus involves technologies of decision advantage, disruption, and destruction, along with the institutional practices that embed them.

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*Rising Titans, Falling Giants: How Great Powers Exploit Power Shifts* by Joshua R. Itzkowitz Shiffrin. Cornell University Press, 2018, 263 pp.

As China rises, so does the number of books grappling with what that means. Enter Joshua Itzkowitz Shiffrin, an assistant professor of international relations at the Pardee School of Boston University, with the most recent scholarly contribution to the debate—*Rising Titans, Falling Giants*. But where much of the literature focuses on narrow slices of the puzzle, Shiffrin integrates multiple perspectives into a wide-angle view of great power politics.

The central issue of the work is how rising powers deal with declining powers. Although liberal theories tend to take an optimistic position and realist theories a pessimistic position, the historical record is varied. Why do rising powers sometimes undermine declining powers and other times buttress them? Shiffrin's argument is that rising powers' strategy (or what commonly goes by the name grand strategy) is a product of the declining state's strategic value and military posture. First, a rising power determines whether a declining power has high or low strategic value, primarily based on whether the declining power would blunt the threat coming from other great powers. Next, the rising power assesses whether the declining state has a weak or robust military posture. Interacting these two factors yields four ideal type strategies: strengthening, bolstering, weakening, and relegating. At base, rising powers decide on geopolitical grounds whether they want to help or hurt declining powers and how energetically they want to do it.

Conceptually, Shiffrin defines decline by relative regional economic capability and has defensible quantitative cut points. This brings a number of advantages—it avoids being circular or parochial, and we can use the same yardsticks across the globe and across history. His concept of decline implies about a half dozen cases over the past century and a half, but Shiffrin zooms in on two in particular: US-Soviet treatment of Britain after World War Two and American responses to Soviet decline in the 1980s. These are tough cases for Shiffrin's argument, have potent opposing arguments, and are the most politically relevant (because they are the most recent and the only ones involving nuclear powers). Using interviews, archives, and government data, Shiffrin traces these cases in fine detail. In addition, he spends time in the conclusion reviewing earlier cases, such as the decline of Austria-Hungary and France to check his theory's validity. The main rival views are those of theorists of the security dilemma, interdependence, and domestic ideology.

His key findings are that predation is not very frequent in great power politics and war is very infrequent. He finds that not only do outcomes correlate with the factors predation theory says they should, but the interviews and archives make plain that they correlate for the reasons predation theory gives. Quite accurately, he points out that rival theories are not baseless, only that predation theory explains more with less. The policy recommendations that flow from his analysis are to expect mild Chinese predation on the US position in the Pacific, but because of the US military edge in the region—which is unlikely to substantially erode for some time—that predation is unlikely to intensify. The real pivot of Asia, in this story, is Japan in decline, which will continue to be propped up by the United States and undercut by China.

The strong points of the book are manifold. Most obviously, the book takes theory seriously. Shiffrin is meticulous in selecting quality building materials and making sure they fit together tightly. The author is head and shoulders above his peers in this department, and it makes life a lot easier for the reader. Rather than do violence to reality or muddle it, Shiffrin makes manifest who is doing what to whom, why, and what to do about it. Further, his careful treatment of evidence illuminates things you think you know in new ways. For instance, he excavates shifts in Soviet grand strategy after 1945 from trying to woo Britain away from the United States to actively trying to sap British strength. He also shows how US grand strategy turned increasingly predatory toward the Soviet

Union as the 1980s wore on, in line with the predictions of his theory. These changes over time, shown in exquisite detail, help nail down causation and shed new light on history.

The weak points of the book are few. One is the occasional inconsistency. Shiffrinson treats states as rational unitary actors and assumes great powers will perceive shifts in world power in predictable ways, leading to predictable responses. Boldly stated, there is no genuine domestic politics in the theory, and that makes it parsimonious. Nonetheless, domestic politics sometimes creep in, for example, where he says that a declining state must be “politically available” (27), which depends on domestic political support. Still, sand these edges off and the logic and evidence stand.

Another weak point is incongruousness. Like Charles Darwin or Adam Smith’s theories, Shiffrinson’s balance of power theory depends more on objective environmental shifts than subjective statements of the actors in the system. Interviews with dating couples would not invalidate *The Origin of Species* any more than interviews with the butcher, the brewer, or the baker would disconfirm *The Wealth of Nations*. So though Shiffrinson’s quotes line up with his logic, that is not to say that they fit with it. Politicians not being known for their self-awareness or foreign policy acumen, it is impressive that they verbally confirmed predation theory as much as they did. Yet if the quotes had been different but the strategies the same, would the theory be less right? Shiffrinson’s belt-and-suspenders solution is to track objective conditions and leaders’ perceptions of them, which may be more rhetorically effective but has some tension and redundancy in it.

But these are quibbles. Shiffrinson asks a great question, collects the best explanations, tests them fairly against the best evidence, and follows the evidence to its logical conclusion. He says things that are new, true, and nontrivial and has produced a book that is both timely and timeless. Long may titans and giants read it.

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*China’s Vision of Victory* by Jonathan D. T. Ward. Atlas Publishing and Media Company, 2019, 279 pp.

*China’s Vision of Victory* is part contemporary affairs and part history of Chinese strategy. Author Jonathan Ward has a PhD in history from Oxford and spent time living, studying, and—by his own account—hitchhiking through China. His education and experience have positioned him well to contribute a unique and important perspective to a sizable body of literature on Chinese contemporary affairs, including notable works like *Destined for War* and *The Third Revolution*.

Ward’s thesis is that the Chinese Communist Party’s (CCP) original and current strategy is one designed to make the Chinese “the global leaders in virtually every form of economic, military, technological, and diplomatic activity on earth” (xix). Additionally, the author argues that China aims to complete this strategy by 2049, the hundredth anniversary of the founding of the People’s Republic of China (PRC). Ward states his argument in an introductory chapter, provides supporting evidence over the course of five chapters, and ends with a concluding chapter and afterword, where he makes recommendations for American policy. The five supporting chapters, or parts, compose the majority of the book, and each outlines one aspect of Chinese strategy. Part one focuses on China’s national narrative. Ward states that rejuvenation has been central to China’s national narrative since 1949. Part two addresses China’s strategic geography and military strategy. Here, Ward contends that China is building a military to challenge and outclass America both in the Pacific and across the globe. In part three, Ward addresses the CCP’s technological and economic strategies, and he says that economics “will be the foundation for China’s power as a whole” (92). Part four addresses the strategy behind

China's foreign policy. Specifically, Ward makes the case that China's need for resources drives a global foreign policy and that to sustain China's enormous population, China must have global interests. After establishing the PRC's national narrative, military and economic power, and global interests, Ward outlines China's vision of how the world should be ordered. In part five, Ward notes that China's vision of world order has China at the world's center, with all other states (including the US) as lesser surrounding states.

*China's Vision of Victory* is well supported through each of the five parts, and endnotes provide easy, but not distracting, access to source documents. Ward draws from both English and Chinese sources. Additionally, he pulls from secondary sources, like histories of China, and primary sources, such as speeches made by Chinese leaders or policy documents from CCP governing bodies. When looking at primary sources, Ward seems predisposed to see continuity rather than change. For example, he emphasizes the continuities between China's "hide your brightness, bide your time" strategy under Deng Xiaoping (who ruled China from 1978 to 2002) and Xi Jinping's current rejuvenation strategy. While there are certainly differences between Deng and Xi, Ward minimizes those. The picture Ward paints is one of a monolithic China with a consistent, predetermined strategy dating back to the founding of the PRC in 1949. When addressing Xi Jinping's leadership, for instance, Ward emphasizes that the story is about "the great continuities in worldview between each Politburo, and, even more importantly, of the great continuities between each Politburo and a deeper aspiration to restore . . . China's 'central position in the world'" (29). Ward's opinion of China thus differs from that of authors like Elizabeth Economy, who seem to see China charting a less predetermined, more uncertain course through a changing world. Ward's view of Chinese strategy leaves little room for accommodating a rising China or living with a China that equals or exceeds America as a superpower. His view of China leads him to the conclusion that America must prevail in a great "contest for global leadership" by prioritizing American economic growth, strong alliances, and a strong military.

Military officers and foreign policy professionals who are concerned with China will find that *China's Vision of Victory* brings a distinctive, valuable perspective about one of the world's great powers. Ward provides a good yardstick with which to measure Chinese actions. Will we see actions that match Ward's argument of great continuities in Chinese strategy, or will world events and internal politics lead to different strategic movements from China? Time will tell, but Ward offers a useful model for thinking about China and Chinese strategy. Color maps and pictures along with better binding would make the book more attractive and slightly easier to maintain, but those minor drawbacks don't detract from the overall merit of this book. Ward presents a well-reasoned, well-documented argument about Chinese strategy.

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*US National Security: New Threats, Old Realities* by Paul Viotti. Cambria Press, 2016, 293 pp.

National security is an important concept for anyone concerned with the safety of the United States. It is especially relevant to individuals whose professional careers are affected by it, such as those in the military or intelligence services. Hence, the knowledge presented in this work will bring us up to date about past, present, and—most of all—future developments regarding national security that we will face in the twenty-first century. It is thus appropriate that the title of the book is *US National Security: New Threats, Old Realities* since it is a reflection on the past with a look toward the future.

Viotti examines several key concepts associated with national security and shows how they have been viewed in the past and may be viewed in the future. Some of the concepts discussed in detail include war, intelligence, the military, insurgencies, terrorism, and civil and military relations. Many of these have a chapter devoted to them describing past as well as projected future interpretations. The author emphasizes that concepts associated with national security often have a subjective interpretation. For example, the concept of a threat as discussed in chapter one can result in a subjective interpretation of its meaning involving defining just what is a threat. In addition, the seriousness of a threat to national security can also result in divergent views. Finally, how a country should react to a threat can generate differences of opinion. A good example given in the book is the Cuban missile crisis that emerged in the Kennedy administration.

One of the author's major points is that the world we live in today in terms of national security is quite different from the past because new challenges affecting our national security are now present, including cyber warfare, terrorism, global climate change, threats in outer space, and the proliferation of weapons of mass destruction (xv). Having them called to our attention shows just how much the world has changed in the past 40 years in the context of national security because of their potential effects. These challenges will not go away. They will become more serious, dangerous, important, and in need of a proper response by US policy makers. For example, today cyber warfare in one form or another is a major concern of the United States electoral process. Hence, the more we know about it, the safer we will be if proper action is taken against it.

Although much of the book's value is found in the author's suggested future changes in these concepts, there is additional worth in the informative historical background. A fine example of this is in chapter two dealing with the concept of war. It is here that he devotes considerable reference to the classic book *On War* by Carl von Clausewitz and notes that military action is not an end in itself but a means to an end specified by political leadership. War is an instrument of policy (40). Considering the role of the United States in fighting various types of wars in the past 60 years, it is not surprising that many would agree with this view.

While all of the chapters are quite interesting, chapter six concerning intelligence could be one of the more pertinent ones considering how our president today is reacting to the intelligence establishment. Perhaps this is also so because, as the author indicates, the intelligence factor in national security has become much more critical to American security since World War II. Viotti does a commendable job in explaining why this is and identifies the increased activity of this factor by noting the covert actions of the intelligence services. He points out that a problem for intelligence is the sheer amount of information accumulated by its efforts (163).

Of course, wars are fought in various ways. Today, we are more likely to experience a limited war such as the ones in Afghanistan, Iraq, and elsewhere without the probability of using a nuclear weapon. The author also observes that these types of military endeavors may also require a different approach on our part. Specifically, he suggests that when combatting an enemy insurgency movement, it is extremely important not to alienate the local population for fear that doing so would hamper our success. In addition, it is critical not to lose the support of the American people in countering an insurgency. This precept is evident when the author explains the American defeat in the Vietnam. It is thus obvious from reading this book that future wars and military conflicts will be fought differently with newer, more sophisticated weapons and a different type of military personnel composed of individuals reflecting various backgrounds in terms of gender and sexual orientation. Space and cybersecurity concerns are brought to our attention as key considerations in national security matters. Yet these concerns are to be expected due to the many changes in American society and in the world at large.

This book does a commendable job in identifying challenges to national security, making it a significant work for anyone concerned about the topic. Perhaps one of its better characteristics is a calling for a more realistic future consideration of the central concepts associated with national security. This emphasis is understandable considering the many changes coming about in the area of international relations as we use the instruments of national power.

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*American Power and Liberal Order: A Conservative Internationalist Grand Strategy* by Paul D. Miller. Georgetown University Press, 2018 (2016 original), 283 pp.

Paul D. Miller's *American Power and Liberal Order* covers a range of concepts in the realm of international relations. Currently a professor at Georgetown University's School of Foreign Service, Miller himself served in the Bush and Obama administrations, in the CIA, and at RAND and as an Army Reserve officer. This breadth of experience clearly shows as the book—while clearly a contribution to the international relations body of literature—engages regional conflict, homeland security, grand strategy, military power, political theory, and even diplomatic history. Importantly for the readers of *Strategic Studies Quarterly*, this work values practicality, relevance, and accessibility over esotericism.

While the book was originally published before the election of President Trump, this review is of the 2018 paperback version that includes a new author preface to help contextualize the book in a world of President Trump's foreign policy. Alongside the original central debates of internationalism versus restraint and (after siding with internationalism) liberal versus conservative notions of what internationalism should look like, Miller's new preface includes a brief discourse on the relationship between nationalism and conservative internationalism, offering that though not necessarily reinforcing, neither are the concepts mutually exclusive. Both tend to see the world through a threat-based prism, and each is willing to employ military force where it might effect change.

As the lengthy title implies, at its core this is a book about grand strategy. Specifically, it advocates for an American grand strategy that is internationalist and tied to the liberal world order, but conservative in both form and function. Conspicuously, Miller avoids characterizing strategy as some combination of *means* employed in specific *ways* to achieve desired political *ends*. In lieu of the formulaic model, Miller instead frames grand strategy as “the observed patters of state behavior and, therefore, the inferred goals toward which the state is moving.” According to Miller, these two aspects of grand strategy—as an organizing concept and a pattern of behavior—allow one to identify and evaluate a state's strategy over decades, rather than trying to chase the “grand strategy” of a given political administration.

Theorizing that observed patterns and inferred goals compose grand strategy allows Miller to sift the historical record for trends and from these trends himself infer how they represent past and future US policy goals. Miller concludes that since the late nineteenth century the United States has largely pursued a consistent grand strategy designed to “defend the US homeland from attack, maintain a favorable balance of power among the great powers, *champion liberalism*, punish nonstate actors, and invest in good governance” [emphasis added]. I emphasize *champion liberalism* because through this work Miller strives (successfully) to demonstrate that the international norms embodied in the liberal internationalist order are the glue that binds US strategy. They empower cooperation and security among the United States and allied nations while simultaneously dissuading potential aggressors from operating outside the liberal norms, precisely



because doing so antagonizes the system and does more harm than good to the antagonist's own economy and state.

Miller is not the first to argue for the combination of realism and liberalism when looking for pragmatic (vice dogmatic) approaches to international conflict. Like Rudra Sil and Peter J. Katzenstein's *Beyond Paradigms*, Miller's *American Power and Liberal Order* understands that combining complex international conflicts with academic reductionism is a recipe for disaster. That said, Miller does not blend the two, but rather appears to favor a realist and limited (conservative) grand strategy that is firmly embedded inside the liberal international world order. His grand strategy is not the offspring of realism and liberalism, but the continuation of nearly two centuries of building a liberal internationalist order that facilitates American power (realist) generally and in specific instances when using force (conservative).

A slight tautology runs throughout Miller's framework. The Cold War is used as an example of how realist instincts and liberal ideals can craft a successful grand strategy that lasted several decades across a variety of ideologically inclined presidential administrations. In the following chapter, however, Miller argues that democratization efforts in Iraq and Afghanistan were not examples of strategic overreach (which would fail to adhere to the conservative aspect of the framework), but rather a failure to provide the necessary ways and means to accomplish the objectives. Even if the conclusion regarding Iraq and Afghanistan is correct, simply by asserting that the operations did not violate his understanding of conservative internationalism, Miller opens himself up for the critique that case studies that fit the framework are valid but those that might challenge the framework are outliers or misapplications of the framework.

Ultimately, this work is absolutely one that the *SSQ* audience should read, reflect on, and discuss. A considered analysis of American strategic theory, this is a book that military leaders, defense experts, and pragmatic academics should all enjoy. Much like Thomas Barnett's *The Pentagon's New Map* was required reading at war colleges a decade ago, Miller's contribution needs to be read by those responsible for employing the force necessary to gird American grand strategy. Most importantly, Miller's style and approach make this book accessible and useful across the academic spectrum. It could be read in an undergraduate class on international relations as well as a graduate school class on security studies or grand strategy. Currently a backlist product, *American Power and Liberal Order* demonstrates the quality of Georgetown University Press's security studies products and is well worth the read.

Lt Col Kevin McCaskey, USAF

*The Future of Intelligence* by Mark M. Lowenthal. Polity, 2018, 130 pp.

If the US intelligence community (IC) has a mentor, Mark Lowenthal is a leading candidate for the title. His government career included positions as the staff director for the House Permanent Select Committee on Intelligence, deputy assistant secretary of state within the State Department's Bureau of Intelligence and Research, and assistant director of national intelligence for analysis and production within the Central Intelligence Agency, where he was awarded the National Intelligence Distinguished Service Medal. He is currently president and CEO of the Intelligence & Security Academy, LLC, and an adjunct professor at Johns Hopkins University. Lowenthal has published or edited four other books and over 90 articles on intelligence, national security, and the IC. Two of these, *Intelligence: From Secrets to Policy* and *The Five Disciplines of Intelligence Collection* (co-edited with Robert Clark), are standard collegiate textbooks on the subject.

*The Future of Intelligence* is Lowenthal's distilled assessment of challenges facing the IC in the immediate future. The slim volume is divided into chapters on changes in technology, the evolving role of analysis, and issues of governance and oversight.

The discussion of technology, unsurprisingly, revolves around the increasing flood of open source data inundating the IC: increasing collection of social media and other Internet-derived data, increasing commercial development of once government-exclusive collection capabilities such as satellite imagery, and the resulting cultural challenges presented to an IC bred on control and protection of classified data by an oncoming reality in which nearly everything is interconnected, and a large portion of the data are both unclassified and uncontrolled.

The analysis discussion extends the "big data" dialogue by looking at the changes to analytical technique driven by working within an overabundance—rather than an absence of—data. Lowenthal sees increased automation and development of specialized data analysts as an opportunity to go beyond analyzing just data content to deriving patterns from the characteristics of the data itself. He also discusses the evolving relationship between analysts and policy makers in an environment where intelligence analysts must prove themselves as value added to successfully compete for leaders' and policy makers' attention in an increasingly information-rich, time-limited environment.

The last section discusses governance and oversight of intelligence policies, programs, and activities. Lowenthal examines this issue from several different points of view—those of Congress, the American public, industry, and insiders within the IC itself. He concludes that convincing all involved that the IC represents a worthy investment of trust and resources requires continually reexamining the balance between transparency and security.

In the end, Lowenthal's latest work doesn't provide answers or a roadmap to the future of intelligence so much as it starts a discussion about key issues affecting that future. This book should be read and reread, and the margins filled with notes by those developing and consuming intelligence—that is, nearly everyone with a connection to national security.

**Col Jamie Sculerati, USAF, Retired**

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