Multi-Domain Strategic Competition: Rewards and Risks

Workshop Summary

December 2018

CGSR

Center for Global Security Research

LAWRENCE LIVERMORE NATIONAL LABORATORY

Workshop Summary

5th Annual LLNL Deterrence Workshop
Multi-Domain Strategic Competition: Rewards and Risks

Center for Global Security Research
Lawrence Livermore National Laboratory

November 13-14, 2018

Jacek Durkalec, Paige Gasser, Oleksandr Shykov*

Context:

On November 13-14, the Center for Global Security Research (CGSR) at Lawrence Livermore National Laboratory (LLNL) hosted the 5th annual Deterrence Workshop to examine the potential rewards and risks of multi-domain strategic competition. The workshop brought together about 80 participants drawn from across the policy, military, and technical communities, including experts from allied countries. Discussion was guided by four key questions:

1. How do the United States, Russia, and China approach strategic competition in their defense strategies?
2. How should the United States and its allies integrate efforts to improve strategic competitiveness with efforts to strengthen deterrence?
3. What impact might new forms of strategic competition have on strategic stability?
4. How can the United States and its allies reap the disruptive and deterrence benefits of new technologies while avoiding the unintended consequences?

Panel 1: Strategic Competition and U.S. Strategy

- What key ideas have been set out?
- What are we competing for, precisely?
- Is there a theory of victory or success?

The necessity for the United States to compete in an era of renewed great power rivalry is well established in the strategy documents of the Trump Administration, including the National Security Strategy (NSS), the National Defense Strategy (NDS), and the Nuclear Posture Review (NPR). The United States, however, is pursuing a get-started approach to strategic competition, trailing behind Russia and China, which are two or more decades in. Due to this, much remains to be done to put the U.S. intellectual house in order.

**The views summarized here are those of the workshop participants and should not be attributed to CGSR, Lawrence Livermore National Security, LLC., the United States government or any other organization.*

A fundamental uncertainty in the U.S. approach to strategic competition is about the long-term goals. It remains unclear to what end the U.S. is competing. One answer is that the U.S. aims to preserve and expand its influence to secure economic and political interests while safeguarding a global order that serves these interests. The competition, thus, is about using political, economic, and military instruments to achieve limited national aims by changing Russia's and China's behavior. Yet, if this is the U.S. goal, it has not been clearly articulated. The NSS and the NDS provide over a dozen different answers about the goals of strategic competition. In addition, senior administration officials have set out their own ideas of what the goals of the competition should be. The question of long-term goals is especially sharp at the strategic level of war. It is unclear whether the United States seeks "over-matching" capabilities for "strategic dominance" in cyber space, outer space, missile defense, conventional strike, and nuclear deterrence, or if the U.S. goals are more limited.

The framework of strategic competition encompasses political, economic, and military dimensions. However, these three dimensions appear to be weakly integrated not only within the U.S. government but also in relations with allies. While Russia's and China's approaches to competition are multidimensional and cohesive as they regard military capabilities, political warfare, and economic statecraft as a part of the integrated whole, the U.S. still sees these domains as separate. The prevailing view seems to be that when different U.S. government institutions finish their homework, better integration across different government agencies will be possible, leading to greater integration with U.S. allies.

In the military dimension, the competition is transregional and multi-domain, with the recognition that the U.S. homeland is no longer a sanctuary. While, again not clearly articulated, the goal of the military competition appears to be to shape adversaries' and allies' perceptions about likely outcomes of a war with the United States in a way that undermines adversaries' confidence in their theory of victory. The military competition is designed to shape perceptions of relative power trends that help create political conditions and facts on the ground that advance U.S. interests.

There is a recognition that more needs to be done to maintain the U.S. military competitive advantage. The multi-domain aspect of competition seems especially underdeveloped conceptually. A key initiative aimed at addressing the erosion of the U.S. relative advantage and insufficient capacity of the Joint Force is the concept of Global Integration promoted by the chairman of the Joint Chiefs of Staff. This concept applies to four mission areas: assure allies; deter aggression and escalation; compete below the level of armed conflict (a new mission area); and respond if deterrence fails. The goal is to transform the way the U.S. military operates by multi-domain planning and operations, integrating U.S. efforts to marshal its power against an adversary while emphasizing transregional aspects of the U.S. military strategy. To ensure that the U.S. will never find itself in "a fair fight" with an adversary, the Global Integration concept seeks to initiate changes in four areas: in the decision-making process to make decisions at the speed of relevance; in how the U.S. prioritizes force allocations to particular theatres; in how the U.S. plans in a globally integrated way; and in how the U.S. improves its forces in the near-term while ensuring its forces stay ahead in a competitive environment in the long-term. The approach to achieve the above aims is outlined in two strategic documents, including a Joint Strategic

Campaign Plan (JSCP) that sets out a framework for competitive strategy in peacetime, and the Global Campaign Plan that provides tailored applications of JSCP to potential adversaries.

The U.S. theory of victory appears to contain an underlying hypothesis that its economic and political systems will prevail if shielded from military threats by sufficient force. While choosing a specific strategy the U.S. may choose from at least four possible options: 1) Strategy of denial – convincing potential adversaries that they will not achieve their objectives; 2) Cost imposition strategy – channeling adversaries into strategies that are unfruitful and self-defeating; 3) Directly attacking competitors' strategies and undermining their confidence in the assumptions that underpin their strategies; or 4) Directly going after the competitors' political system. No matter which strategy is chosen, more work needs to be done on assessing the capabilities of adversaries to cope and respond. This can be achieved by assessing whose options are increasing or shrinking, who is imposing costs upon whom, and on who has momentum in the competition—that is, who is dictating the pace of the competition and who is more reactive. In any case, it is critical to advance our thinking on competitors' strategic goals, their decision-making calculus, and how the U.S. can influence or alter the competition to its advantage.

Additionally, U.S. allies play a crucial role in all dimensions of the strategic competition and should be regarded as a unique U.S. asset in the competition. Yet, this advantage has not been capitalized on, as evidenced by the fact that some allies do not fully share or understand the U.S. approach to the competition. Much needs to be done to align the visions of the United States and its allies and to create a common interest in sharing risks, roles, and responsibilities. The U.S. approach to competition will have an impact on allies. For example, given the U.S. concept of the Global Integration, the forces that allies can allocate to their region shapes the U.S. allocations elsewhere. The transregional character of current threats also requires that the allies' war plans are integrated not only regionally, but also globally. To prevail in a conflict, the U.S. needs allies who are willing to fight for and defend the international order, if deterrence fails.

Panel 2: Strategic Competition as Practiced by Russia and China

- How do they compete with the United States?
- Toward what ends?
- How have they organized for success?

On the surface, China and Russia act as "typical" revisionist states by undermining the status quo, consolidating their grip in their respective immediate neighborhoods, and challenging the U.S. to uphold the world order. But this analysis does not highlight the complexities of the two countries.

Both Russia and China define the competition in very broad terms—indeed, even more broadly than the United States. In addition to the political, economic, and military dimensions, the competition seems to include an ideological dimension—that is, the competition for world order ideas and forms of governance.

The U.S. understanding of Russia has largely been lost after the end of the Cold War and needs to be regained. The U.S. needs a nuanced understanding of Russia's plans, whether its actions

are strategic and thus with accordance to the plans, and what percentage of their actions are strategically directed or only tactical. While the U.S. is closing the gap in understanding Russia, it is not doing it at the speed required. The U.S. continues to be surprised by Russia due to a lack of analytical depth and sophistication, as well as an over-abundance of wishful thinking. While Moscow's destabilizing acts forces the U.S. to maintain its attention on Russia, there is a need for greater attention on how Russia reacts to the United States' statements and actions. Without diagnosing how Russia is reacting to Western moves, it is not possible to calibrate an effective U.S. strategy.

Russia's strategy toward the United States and the West is both internally and externally driven. The internal driver is Russia ruling elite's preoccupation with domestic stability and perception of fragility of authoritarian rule disguised as democracy. The cyclical interpretation of history fuels anxieties about gradual erosion of domestic cohesion, leading to its sudden and unexpected collapse. Russia's elites cultivate a humiliation narrative and a "Versailles Syndrome," according to which Russia was exploited during a period of post-Cold War weakness. In this narrative, Russia's post-Cold War disarray resulted not only from actions of external adversaries bent on Russia's destruction, but also from domestic collaborators, such as Yeltsin and Gorbachev, who allowed the exploitation to happen. Externally, Russia is driven by its misinterpretation and fear of American strategy. All U.S. actions are interpreted as a part of the U.S. long-term efforts to deny Russia to achieve its primarily external objective – *derzhavnost* – to be feared as a great power. While many in the U.S. believe that Russia has a momentum and the U.S. is reactive to Russia's moves, Russia's perception is totally opposite. The prevailing view is that despite Russia's comeback under Putin's presidency, it still acts reactively and from a position of weakness.

Russia's approach to military competition is aimed at negating the conventional strengths of the U.S. and its allies by targeting vulnerabilities and exploiting asymmetries of stake. While Russia's approach is defensive in origin, Russia also has the means to aggressively contest European security order backed by the United States. It is hotly debated whether Russia may choose to seize an opportunity for action before the United States fully orients itself to long-term competition.

Russia has made three organizational military adaptations that are aligned with its strategy to compete. On the strategic level, it established a National Command Center and adapted to wage global information warfare. On the operational level, Russia emulated the U.S. Combatant Command (CCMD) structure with regional Joint Strategic Commands. On the tactical level, Russia transformed its forces to conduct expeditionary missions in Near/Far Abroad.

To fully understand Russia's strategy there is a need to consider some elements that have been largely ignored or under-appreciated. Russia's challenge is global and multi-domain, not only regional. The U.S. is slowly recognizing these features. Russia's challenge is also systemic and enduring. In particular, Putin is not an anomaly and the challenge will continue after he has left power. The challenge posed by Russia is volatile and nuclear, which has significant implications on strategic stability. Every gray zone clash has a potential to escalate. Challenges from Russia are also territorial and manifested by Russia's actions in Crimea, Western Ukraine, Abkhazia, South Ossetia, and Transnistria. Regarding ideology, Russia now has more freedom of

movement than during the Cold War as its propaganda does not have to be confined solely to influencing the left. Today, Russia can act both on the left and the right.

Similar to Russia, China does not see the momentum of strategic competition as being in its favor. Instead, China perceives its actions as reactive to the United States. Its actions are also defensive in origin, as they result from concerns about territorial integrity (i.e. the case of Taiwan, Xinjiang and Tibet, and securing territorial interests in East and South China Seas), as well as economic development for ensuring CCP domestic power and Chinese global influence. Thus, China wants to secure access to markets and communication networks while protecting its people and resources abroad. Although the history of humiliation is a part of Chinese strategic culture, it is not a driver of Chinese strategy to the extent that it is in case of Russia.

The nature of China's challenge to the global international order is subtle. Many of the Chinese actions are in line with this order and are aimed at increasing Chinese influence within the existing rules. These actions are exemplified by Xi Jinping's Davos speech; efforts to strengthen a role of China in the global international institutions according to its economic weight; participation and financing peacekeeping missions; and the establishment of Asian Infrastructure Investment Bank (AIIB), which resembles the IMF. Standing in China's way to exert influence in the framework of existing rules may be counterproductive, since China may create an alternative system where the United States may not have any influence. Some Chinese actions, however, contradict the rules and require a U.S. response. These actions include China's expansive view of territorial security in South and East China Seas, establishing a *fait accompli* on the ground, and the nature and conditionality of Chinese aid packages that create debt traps for Chinese clients. The Chinese economic model is itself predatory and cannot be emulated nor be used internationally.

In contrast to Russia, China competes mostly on the economic front. One Belt One Road (OBOR) is a Chinese effort to export its economic capacity abroad. What requires closer attention is not how particular Chinese investments move the pieces on the geopolitical chessboard, but how the Chinese economic weight has the potential of re-drawing the geopolitical chessboard itself. Additionally, in contrast to Russia's approach to fomenting instability abroad, China prefers stability on its borders. China tries to achieve its political and economic goals while avoiding instability (i.e. Chinese diplomatic maneuvering with Philippines). China is satisfied with a gradual approach. Since Beijing perceives time being on its side, it pauses if its actions meet opposition and does not risk unnecessary costs. While both Russia and China have emphasized "information confrontation," China has stressed the importance of science and technology competition.

China is also utilizing military tools to advance its goals. Like Russia, it understands U.S. vulnerabilities and is systematically striving to exploit these weaknesses. Defensive in its origins, military modernization creates a military force that can be used offensively to exert a regional control. China, however, does not compete solely with its military. Instead, its defense spending is relatively low to its GDP, and it puts much less emphasis on nuclear weapons than Russia. China still does not assess to be in place in which a military conflict with the United States would be necessarily in the Chinese favor.

Whether China is well organized and prepared to succeed in the competition is a matter of debate. China has to tackle domestic security problems as it spends on internal security as much

as on external. The integration of military capabilities within the PLA is not as close as many fear. For example, the Chinese nuclear enterprise is scattered across services and lacks central command, such as STRATCOM. China is also becoming increasingly dependent on space, which seems to decrease its asymmetric leverage against the United States. The concentration of power in the hands of Xi Jinping might be an asset, but also liability—if Xi is in charge of everything he, in fact, may be in charge of nothing.

Both Russia and China are paying close attention to U.S. actions. When it comes to the U.S.-China relationship, Russia pays more attention to China and thinks about the relationship in a comprehensive, integrated, and triangular way. In contrast, China is reluctant to comment on Russia, in particular about their Cold War tensions. Chinese experts, however, have drawn lessons from what they consider to be the mistakes of the Soviet Union during the Cold War. Given the extent of shared interest between Russia and China in competing with the United States, the two countries cooperate even despite mutual distrust and suspicion. Any hopes in the United States to drive a wedge between the two and repeat a Nixon strategy, seems unrealistic in the short term. The other temptation is to treat Russia as dangerous, but not serious and to treat China as serious, but not dangerous. However, it is critical for U.S. policymakers to address how both are serious and dangerous, but in different ways.

Panel 3: Competing for Long-Term Advantage in the New Domains

- What goals guide the competition in cyber space, outer space, AI, and other new technologies?
- What results can we expect from a competition for dominance?
- What rewards and risks can be expected?

There is a need for a clear distinction between competing for an advantage in a specific domain, such as cyber and outer space, or in a specific technology, including different applications in artificial intelligence (AI).

The decision to compete for a long-term advantage in new domains and technologies is not a binary choice as there will be both rewards and risks associated with different courses of action. There are a series of potential risks that can be expected from a competition for advantage, including political repercussions for the United States, both domestically and with allies, and military-technological risks that may create new avenues for escalation. For example, information-enabled precision strike capabilities with a left-of-launch potential to destroy mobile targets can open various pathways to instability, including creating incentives for adversaries to adopt a launch on warning military posture.

The risks of instability require a better understanding and a strong narrative on how leveraging new domains will serve U.S. strategic ends in the long-run. If the U.S. is going to compete for an advantage, it needs to do it in a way that not only strengthens its military-technological position but also considers political-military aspects of the competition. To compete effectively, more should be done to break down misperceptions on critical issues and to get the public and allies fully on board. Without these actions, the U.S. will, for example, not be able to leverage support

of the private sector—a task that is becoming increasingly difficult. Therefore, a comprehensive net assessment for how the U.S. should leverage these new domains and technologies is essential.

An alternative view is that U.S. adversaries are competing for superiority in the new domains and technologies, regardless of the U.S. net assessment. It is irrelevant as to whether competition for dominance is useful or senseless, since U.S. adversaries are going to compete for superiority regardless. The U.S. adversaries are already engaging in strategic competition as "the train has left the station"—that is, the struggle for power and dominance is already underway and is ceaseless. In line with this view, competition is not an option since new technologies are increasingly becoming essential for military capabilities and define what it means to be a modern society. In particular, applications in AI and new cyber capabilities are versatile tools that provide political leaders the benefits of flexibility.

Developments in cyber space, outer space, and AI technologies are already significantly influencing the military balance between strategic competitors. Currently, there seems to be a degree of symmetry in U.S., Russian, and Chinese thinking about new domains and new technologies—all focus on space and cyber dominance in some way. For example, Russia and China believe that space is critical to "information dominance" and both strive to undermine U.S. space-based assets with strategies that call for counter-space systems with a wide array of capabilities. China views "space dominance" as particularly important for precision-strike, with the PLA becoming increasingly reliant on space. The Kremlin has also identified the significant role of offensive cyber capabilities to help the state achieve "information dominance" in all stages of conflict. Moreover, the NSS recently highlighted "information dominance" as a central priority for the U.S. due to its essential role in protecting infrastructure and supporting the military.

Even if competition for dominance is already underway, the critical question is whether or not pursuing dominance will produce anticipated and desired results. One of the desired results is to shape and guide the nature of the competition to the United States' advantages. This entails efforts undertaken to set the rules and norms, as well as rallying support of the allies. Since there is little evidence to suggest that the concept of strategic stability has guided China or Russia's strategy for competition in these domains and technologies, the establishment of domain-specific norms will remain necessary in preventing a miscalculation or misunderstanding.

Achieving dominance or gaining the advantage in the new domains and with new technologies while minimizing risks will prove to be more difficult than it was during the Cold War. The United States is heading toward a critical debate regarding the amount of restraint the U.S. should exercise, while simultaneously capturing the benefits of multi-domain strategic long-term competition.

The critical task for the United States is to prioritize among the different technologies that may define the U.S. position in competition in the new domains. In support of the NDS, the U.S. has established nine priority technology areas, including hypersonic; directed energy; command, control, and communications; space offense and defense; cybersecurity; AI/machine learning; missile defense; quantum science and computing; and microelectronics. Pursuing all these technological areas will require sustained and targeted investment. The U.S. specifically needs a better understanding about where to prioritize investments in each of these areas, what it expects

to receive as a return on these investments, and how these investments align with strategic goals. A stronger focus on the specific application of these technologies and effects that the U.S. desire to achieve is necessary to better guide this process.

Panel 4: Competition and Deterrence: Complementary or Contradictory?

- To what extent are they complementary? Contradictory?
- Can US strategy be coherent while supporting both objectives? How?

The relationship between competition and deterrence in the United States' strategy is unclear. The two may be complementary or contradictory. Deterrence and competition can be complementary if the objective of strategic competition is to re-establish or bolster deterrence. Competition can reinforce deterrence by shifting the balance of power and influence back to the United States and its allies, ensuring a long-term U.S. advantage. Likewise, deterrence may also contribute to competition by managing the unintended risks. The NDS demonstrates this thinking as it assumes a complimentary relationship between competition and deterrence.

Yet, competition and deterrence may be contradictory, especially if the goal of competition is to dominate. If the competition is aimed at shifting the correlation of forces to create a stronger strategic opportunity for the U.S. and less of an opportunity for the adversary, this may lead potential adversaries to believe that the United States will use its dominant military posture to coerce them or otherwise damage their vital interests. Instead of bolstering deterrence, competition may incentivize military challenges and escalation in a conflict. For example, if Putin perceives strategic competition with the U.S. as a way for the U.S. to use its dominant military posture to overthrow the Russian regime, then this will only weaken deterrence and may increase the risks of deterrence failure and potential escalation. This is part of the reason that it is so important to get the goals of the strategic competition right. A comprehensive, coherent, and deliberate U.S. strategy toward deterrence and competition will be critical for the U.S. to maintain its ability to deter, while decreasing the risk of miscalculations by its adversaries.

The relationship between competition and deterrence differs across the various realms, including nuclear, cyber space, and political warfare. When it comes to nuclear, the NDS and NPR are not pushing for an unconstrained competition and reflect reluctance to engage in nuclear arms racing with potential adversaries. If the nuclear arms control regime collapses with the end of the INF Treaty and uncertain future of New START, the U.S. does not necessarily have to go for a bigger force. Yet, with the demise of the nuclear arms control and breakthroughs in conventional and missile defense, the competition could spill over to the nuclear realm, opening up the Cold War questions of trade-offs between balance of power at the strategic and regional levels, and between nuclear and non-nuclear capabilities. The renewed nuclear competition would certainly influence the perceptions of the U.S. allies.

Cyber space requires a different way of thinking. Some experts believe that deterrence can be applied to cyber with a denial-based strategy and norms-building. These "deterrence adapters" have noted that the Department of Defense must invest significant attention and resources to ensure that U.S. nuclear forces and NC3 are highly cyber-resilient to a top-tier cyber adversary. In contrast, "paradigm smashers" believe that cyber space will rely on dominance and degrading

capabilities. This thinking aligns with the 2018 National Cyber Strategy (NCS), which adopts the language of "persistent engagement" in cyberspace and assumes persistent campaigns in cyberspace as a key feature of great power competition. Embracing the idea that the U.S. has to compete aggressively, it emphasizes the offense rather than mitigating risks and de-escalating. Another category of thinkers—the "synthesizers"—link competition with the strategy of deterrence in cyber space. In their thinking, the U.S. not only needs to degrade and destruct with a focus on the offense, but ultimately change the behavior of an adversary in this domain by deterring them from certain actions.

When it comes to political warfare, it is inherently ambiguous and shrouded in deception as adversaries are utilizing overt and covert disinformation campaigns and cyber tools to deter, compel, or disorient the U.S. and its allies. The U.S. cannot ignore the fact that allies' perceptions of resolve and will are being shaped today within the political warfare realm. If the U.S. fails to hold its own in this arena, then assuring its allies will prove to be increasingly difficult. This could have serious implications on deterrence, especially if the U.S. finds itself working through an escalation process in the future. To compete in this area, the deterrence "elasticizers" advocate for a flexible and adaptable concept of deterrence. Their set of solutions include efforts to shape narratives, norms, countering disinformation, and cost imposing strategies such as naming and shaming. Yet, while they are using the mantra of deterrence as a tool for waging the competition, it seems that this is more of a framework of dissuasion.

Reflecting on the Cold War experience may provide useful lessons for thinking about the relationship between deterrence and competition. Since 1977, NATO's operationally oriented steps to bolster deterrence led to successes in managing the Cold War competition. NATO's approach to guide military competition effectively denied the Soviet Union any significant strategic benefit from the military build-up that began after the Cuban missile crisis. NATO guided the military competition by conceding few, if any, geographic and capability sanctuaries and not yielding territory; establishing operational concepts and capabilities aimed at taking strategic initiative away from the adversary; focusing on targeting adversary's strengths to reduce its own confidence, while carefully targeting the adversary's vulnerabilities; and matching ambition with ambition and scale with scale to deny the adversary its perceived advantage. The Alliance's steps to bolster deterrence were a part of a comprehensive approach that also included non-military means, such as countering Soviet political warfare.

Of course, today's strategic and operational context is radically different from that of the Cold War. Instead of head-on competition with the U.S., potential adversaries are using asymmetric strategies. While the U.S. has emphasized "emulative restraint" on its military to encourage reciprocation from Moscow and Beijing, both Russia and China have undertaken military build-up and sought to operate within that perimeter in order not to provoke the U.S. This is especially evident by the A2/AD postures and information confrontation; Russia dismantling the bilateral arms control architecture, including through their covert violation of the INF Treaty; and Chinese actions in the South/East China Seas. In this current landscape, the competitive steps of the U.S. and its allies should be aimed at "front-loading" deterrence by making greater investments in the "steady-state" capacity to hedge against deterrence failure or excessive escalation during a crisis. These competitive steps to bolster deterrence should be aimed at avoiding a scenario where the U.S. and its allies might be forced into escalation by their own weaknesses or operations by their adversaries. For this purpose, more needs to be done to develop concepts for peacetime

"deterrent operations" and "demonstration events." Developing plausible operational concepts toward deterrence will remain critical to the success of solving key competition problems. Lastly, the U.S. with its allies need to think more about how to prevent future arms races by combining restraint with efforts aimed at dissuading competitors from engaging in potential enduring rivalries.

Panel 5: Competing for Escalation Dominance in a Contested Multi-Domain Environment

- How are Cold War models of escalation control helpful and unhelpful?
- Is it possible to orchestrate multi-domain "strikes" to mass effects?
- Are there multi-domain analogues to the competition of risk-taking in the nuclear domain?

Escalation dominance is too high of a bar against near-peer competitors. It is more a psychological aspiration than a feasible objective. The more realistic aim is escalation advantage, which can be defined as real or perceived advantage held by one side of increasing the intensity or scope of the conflict. It does not necessarily require dominance at all levels of intensity or scope. In the nuclear domain, it is an ability to shift the balance of nuclear forces in a way that provides a real or perceived advantage in a competition of risk-taking, casting a long shadow over the entire spectrum of conflict. Escalation advantage can be pursued to enhance deterrence as the Reagan Administration did during the Cold War. It could also be used as a part of a competitive strategy aimed at forcing an adversary to divert and overstretch its resources by investing in countermeasures.

There are many examples of the U.S. (and Soviet) pursuit of escalation advantage during the Cold War, including efforts to achieve real-time detection of the Soviet strategic bombers and surface vessels, and alleged electronic warfare capabilities to neutralize Soviet nuclear command and control. In some cases, the effects of the U.S. efforts to get an advantage went beyond expectations as the U.S. was much more successful than it thought it was. For example, the U.S. capability to track surface vessels created the Soviet perception that the U.S. can track their SSBNs in real time as well. U.S. allies were crucial in the orchestration of U.S. efforts and, recognizing this, the United States went to great lengths to share intelligence with its allies. The U.S. domestic consensus as reflected by actions of Congress played a critical role too, securing the financial basis for U.S. competitive efforts. These lessons remain valid today.

Revisiting the Cold War concepts can be valuable to a new generation of military planners who lack the direct experience and have not thought about escalation dynamics with peer competitors. Yet, to adapt these lessons to a new context, there is a need to better understand adversaries' decision calculus, the contexts and scenarios in which escalation can occur, and how adversaries' stakes might change during the conflict. Effective adaptation also requires an understanding of different forms of escalation (intentional, inadvertent, accidental), multiple pathways to escalation across different domains (nuclear, conventional, cyber, space), and how these escalation dynamics differ depending on the size of an adversary's nuclear arsenal. One needs to recognize the inherent uncertainty if one climbs the escalation ladder. Misperceptions are almost guaranteed, and presumptions about what adversaries "would never do" are bound to be misleading. What has never been resolved during the Cold War is a question about the off-ramps

in the escalation advantage strategy. There was no rational plan for escalation control, once escalation was initiated. The escalation models can help to provide a framework for analysis and can help to explore the decision-making processes.

While thinking about escalation in a multi-domain environment, one critical question is whether escalation is domain specific (cyber, space, conventional, nuclear) or effects specific. While in some cases the effects matter, the tool matters (i.e. nuclear use) as well. The escalatory potential of different capabilities during different phases of conflict is also not sufficiently understood. Communicating multi-domain advantage to adversaries also seems difficult without a clear advantage in specific domains and corresponding misperceptions. There are also related questions about a balance between openness and secrecy—specifically, what capabilities should be revealed in order to deter adversaries? And if deterrence fails, what capabilities should be concealed to win?

While tackling the problem of multi-domain escalation requires a better understanding of adversaries, it also necessitates a better understanding of allies thinking and their stakes. The idea of escalation advantage seems to be more useful while looking at it in regionalized terms. In the Cold War, orchestrating multi-domain effects for escalation advantage was possible in the background of the U.S. heavy forward-based conventional presence. U.S. steps to bolster escalation capabilities helped to balance perceived asymmetry of stakes and assured allies. However, the clear escalation advantage bolstered by heavy forward presence does not exist today. If the American allies were to believe that adversaries have an escalation advantage and higher stakes than the U.S., then the U.S. extended deterrent would lose its credibility.

Panel 6: The Future of Crisis Stability: Catastrophic Decay or Piecemeal Reinforcement?

- Will future political-military crises be more or less stable than past crises?
- What are the requirements of crisis stability in the new multi-domain context?
- What are the similarities and differences with cold war concepts?

Multi-domain strategic competition will have a corrosive impact on crisis stability. There are several factors that can make crises less stable. In particular, with new technologies, there are more significant risks of a perceived first strike advantage, fears of a preemptive attack, or beliefs that the conflict cannot be managed and, therefore, escalation is inevitable.

Conventional and nuclear warfighting is becoming harder to separate, which heightens risks of nuclear escalation in a conventional conflict. Nuclear and conventional command and control (C2) and weapons systems are becoming more entangled. Defensive systems, including BMD, against conventional attacks have nuclear implications. Space and cyber capabilities are not only critical enablers of conventional war-fighting, but also support strategic nuclear systems and provide strategic warning. New deep-strike conventional systems, such as hypersonics, have greater potential for threatening nuclear assets, such as mobile delivery vehicles. The sustainability and survivability of nuclear forces in a prolonged conventional conflict may be questionable even if the forces are not directly attacked.

Also, the fragile advantages in cyber and outer space can create a significant incentive to strike first in a time of mounting crisis. Potential decisive strategic effects of non-nuclear weapons, especially in space and cyber, may make it harder to control escalation. Attempts to gain cyber access for intelligence and deterrence purposes can also be interpreted as preparations for an attack. In addition, AI and other new emerging technologies have a potential to erode stabilizing value of the satellite reconnaissance regime. The improving ISR capabilities coupled with hypersonic missiles, can create first-mover advantage and increase fears of a preemptive strike during a conflict. With the increased speed of conflict, there will be less time for communication, and for interpreting signals of restraint sent by any side during an ongoing confrontation. In potential future crises, time to make decisions will be shorter than in previous crises and leaders will not have 13 days to climb up and down the escalation ladder, as in October 1962. Uncertainties about new capabilities may cause greater fear of a first strike advantage.

There are also other potential sources of crisis instability, which include exaggerated confidence in the ability to control escalation in grey-zone competitions, or temptations of third parties to use cyber or other tools to escalate a crisis between two powers. The relationship between crisis stability at the strategic and regional levels remains unclear. Can there be stability at the strategic level without stability at the regional level, and vice versa?

While there are compelling reasons to think that crisis stability is decaying, there is also a counter-hypothesis. Indeed, several factors may mitigate escalatory risks and make crises more stable. The stakes of current competition are not as high as during the Cold War, and the stakes of conflict do not appear to be as high as to lead to a global nuclear war. Currently, there is not a sense of a tightly-linked global competition where a loss in one area is perceived as a loss everywhere. Also, economic interdependence, in particular the U.S.-China relationship, raises the costs of conflict and may create domestic voices for restraint in crises. With regards to new domains, any actor that understands military operations in cyber space and outer space will likely understand that there is no possibility of escaping some significant form of retaliation, if a first strike is conducted in these domains. Also, offensive actions in space and cyber do not necessarily limit damage to one's own space and cyber capabilities. Therefore, mutual vulnerability may induce caution and reinforce crisis stability.

Even though it is acknowledged that the future will be different from the Cold War competition, there is not enough systematic thinking about how today differs from the lessons from the Cold War. What lays ahead is a process of both defining and learning how various dynamics operate in this new environment. One lesson from the Cold War is that its early stages were more violent and less stable than later stages when there was more understanding of risks and the nature of U.S.-Soviet competition. In general, the new dangers of crisis stability remain poorly understood by the United States. As discussed in previous panels, the tools developed to study nuclear escalation control in the Cold War are not well suited to the task of exploring multi-domain escalation management in the types of conflicts the United States and its allies plausibly face in the 21st century.

Notwithstanding questions about the future of crisis stability, multi-domain strategic competition has already had a corrosive impact on what used to be called arms race stability. This period has been characterized by the competitive pursuit of new capabilities in a manner that is tightly coupled to an adversary's progress and is driven by the fear that some future newly-gained

advantage will be used to seize some strategic objective on the ground. Russia, China, and the United States are all competing to dominate cyber space and outer space and in the associated strategic technologies. Since restraint cannot be monitored or verified, each must assume the worst of the other. Moreover, since none can afford to fall behind, the competition rages on. And yet neither can know definitively whether it is pulling ahead or lagging behind (or what that might even mean), given the particular attributes of these domains.

Panel 7: The Competitive Future: Unbridled or Managed Competition?

- Is reciprocal restraint possible? Among whom?
- Can formal and/or informal arms control measures be used to favorably manage new forms of competition? If so, how?
- Is unilateral restraint sensible? Under what conditions?

In principle, reciprocal restraint measures are possible in the domains of nuclear, cyber space, and outer space. However, the practice of this restraint is more complex, posing several policy challenges for the decades to come.

While striving to seize the benefits of multi-domain strategic competition and minimizing associated risks, some policymakers are inclined to automatically reach for the arms control tool given that this helped to mitigate the risks of a nuclear arms race during the Cold War. However, this approach appears to be unfit for current challenges.

The future of nuclear arms control is uncertain and appears contingent on sustaining the U.S.-Russia bilateral nuclear arms control framework, which may not be possible with the unraveling of the INF Treaty and unclear future of New START. China, on the other hand, has not been interested in formal arms control. In the absence of formal arms control mechanisms, reciprocal-restraint measures, transparency, and confidence building measures, if agreed upon, might provide the only way of avoiding costly peacetime nuclear competition. Establishing these measures in the U.S.-Russia relationship in a post-arms control world might not be possible. The momentum of the U.S.-China strategic competition coupled with China's perception of the United States' fading supremacy may lessen the likelihood of China's willingness of continuing to exercise nuclear restraint. The Chinese historic approach and strategic posture are also at odds with the need for greater transparency around its nuclear arsenal.

When it comes to cyber space, formal arms control seems difficult to obtain, while some forms of reciprocal restraint might be tenable. To date, there has not been a massive escalation in the cyber domain or a catastrophic cyber-attack, which may suggest that there are lines which countries do not want to cross. The risk that cyber-attacks can easily get out of hand (for example, NotPetya or Wannacry) might have a constraining effect by itself. There are also efforts of norm entrepreneurship, which include the United Nations Group of Governmental Experts on Information Security (UN GGE) and the Tallinn Manual on the International Law Applicable to Cyber Operations. In addition, there are private sector efforts to mitigate unintended risks, such as Microsoft's Digital Geneva Convention to protect cyberspace. While there are problems with all of these informal processes, these are necessary discussions and could be the foundation of a future norm for restraint in cyber space. Despite these efforts, the

future looks much murkier with the prospect for establishing incentives for restraint on cyber-enabled influence operations, without compromising democratic rights and values.

There may be some room for restraint in constraining the weaponization of outer space. Examining historic periods of restraint, such as with the Outer Space Treaty and Limited Space Ban Treaty, could provide useful insights. Yet, formal arms control in the domain of outer space has little to offer in the foreseeable future until anti-satellite (ASAT) capabilities can be properly verified. Russia and China's proposal for the Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT) is an example of how verification remains a challenge, especially since the PPWT is ambiguous as to what constitutes a weapon. There are, however, three efforts that may prove valuable. First, efforts to establish transparency and confidence building measures in space or the EU draft code of conduct could be a useful start. There is also room for discussing an agreement on not targeting or attacking missile warning satellites. Second, risk reduction measures similar to the U.S.-Russia Agreement on the Prevention of Incidents On and Over the High Seas (INCSEA) could provide another useful template for space, especially as such measures do not require verification. Third, an agreement that permits the deployment of defensive weapons in space to protect space assets, with limited number and range, could have a stabilizing effect as they may help to defend against an attack on strategic warning satellites.

A new set of ideas and new opportunities for arms control need to be identified, but this will continue to prove to be a challenge as there appears to be limited political support, especially in Beijing and Moscow. In the absence of significant opportunities for mutual reciprocal restraint, unilateral restraint may be sensible and beneficial if aligned with U.S. interests. Some argue that unilateral restraint can exert pressure on competitors to do the same. However, there is very little evidence to support this argument as there are several instances where unilateral restraint is not reciprocated by U.S. competitors. There is also a risk that the U.S. unilateral restraint can be interpreted as a signal of a lack of resolve. These factors may undermine the case for unilateral restraint as an opportunity that will help to achieve U.S. objectives.

Despite all the difficulties and uncertainties, the United States should continue to insist on reciprocal restraint and transparency, while simultaneously engaging its allies in order to strengthen deterrence and strategic stability in the long run. A tailored competition that signals both resolve and restraint will demonstrate that the United States will compete to preserve credibility, while securing a stable regional order and existing balance of power. By diversifying military capabilities and building a consensus through dialogue, the United States can favorably manage new forms of competition. Without a viable strategy to seize the benefits of competition and reduce the risks, the United States and its allies should expect a period of high uncertainty about the scope and consequences of multi-domain strategic competition.

Panel 8: Out-Thinking our Adversaries

- What kind of thinking needs to be done, specifically?
- By whom? In what kinds of institutions?
- What else needs to be done to accelerate conceptual innovation for this new problem?

While the NDS highlights the importance of out-thinking, out-partnering, and out-innovating potential U.S. adversaries, it does not offer a strategy for doing this. The Trump administration has especially focused on and prioritized "out-innovating," without sufficient focus on the two remaining elements. This aspect not only needs more attention, but also more investment as the United States has disinvested in new strategic thought since the end of the Cold War. In order to out-think potential adversaries, particular focus is required in four key intersecting areas—U.S. strategy, operational concepts, strategic impact on new and emerging technologies, and investment in future leaders.

First, if the U.S. aims to out-think its potential adversaries, it cannot rely solely on the technology developers since technological developments should not drive the U.S. strategy. Instead, the U.S. needs to have a clear whole-of-government or whole-of-society approach for the competition with well-defined goals. So far, there is not a clear strategy for succeeding in peacetime competition or wartime conflict. For example, the practice of messaging during peacetime has been largely forgotten. There is a need to move the thinking back towards specific policy outcomes during peacetime. This is coupled with the need for reading adversaries better and understanding their possible military and political choices. It is critical to improve our assessment of the impact of the United States' behavior on adversaries' choices. Convincing the whole national security establishment and the U.S. society about the need for competing remains a key challenge.

Second, the NDS notes the importance of developing innovative operational concepts to achieve a strategic advantage and maximize the effectiveness of both the United States' existing and emerging capabilities. During the Cold War, clear operational concepts were developed to provide solutions to some of the most formidable challenges and allow for the Department of Defense and the Congress to establish clear defense priorities. Moreover, operational concepts represent the essential link between U.S. strategic objectives, defense policy, budget priorities, and military actions on the ground. Today, such concepts that integrate multi-domain operations appear to not exist while Russia and China are both challenging the U.S. in various domains and with new capabilities. Advanced thinking is required on how the United States should develop new operational concepts that account for an adversary blending space, cyber, nuclear, conventional, and unconventional means. There is also a need for more systems analysis and better integration of detailed concepts within the Department of Defense.

Efforts to out-think U.S. adversaries should consider the strategic impact of technology and innovation. Specifically, there is a need for more thinking about how emerging and disruptive technology may alter the strategic environment. Despite the U.S. prioritizing nine emerging technologies, it is unclear if they link directly to a U.S. strategy or specific policy. Instead, the current mindset it that the U.S. is behind in critical technologies and needs to catch up with the competitors—this does not foster a coherent innovation policy. Instead, the United States needs to define and determine its objectives and priorities that would then guide its efforts in technology and innovation. Additionally, in order to accelerate innovation, the U.S. must expand its partnerships in both the private sector and with its allies to enable the necessary collective responses to the challenges of strategic competition. New partners will need to be identified, as well as how to overcome the barriers to an effective partnership. Although innovation is a critical step, future challenges will also include reforming the acquisition process to ensure that new

technologies can be rapidly acquired and deployed, while maintaining our ability to adapt with evolving future threats.

Lastly, there is the need to better prepare leaders for the future. Not only is there a need for buy-in from the military education system, but there needs to be a stronger focus on teaching concepts such as deterrence, crisis stability, and escalation—all of which are not well understood in the operational sense. Investment in future leaders' education should be prioritized, while ensuring that future military leaders work on real world problems that align with today's most pressing challenges. The persistent challenge is how to educate political leaders about thinking on strategic matters and engage academia to focus more on providing practical recommendations on these issues.

Conclusion: Lessons Learned and Implications

The United States has established the necessity of competing in today's security environment. It is now "catching up" with Russia and China, who have both been competing against the United States for the past two decades or more. So far, the United States does not have a clear approach to strategic competition more than investing in new technologies and not allowing potential adversaries to get ahead in these advancements. This workshop stressed a series of unanswered questions that U.S. policymakers will need to address:

- To what end should the United States engage in long-term strategic competition?
- How will the United States shape and guide where the strategic competition should and should not go?
- How should the U.S. effectively integrate competition and deterrence, and whether in fact these two goals are complementary?

The role of the U.S. allies in the strategic competition remains unclear. The NDS emphasizes the enduring value of the U.S. allies and partnerships, and clearly states that the U.S. reliance on and commitment to allies and partners remains central to U.S. National Security. However, one question is how allies are perceiving this era of strategic competition and how this is impacting extended deterrence relationships. Although the U.S. framework for competition entails political, military, and economic dimensions, it is weakly integrated within the U.S. government and with its allies. The United States needs a narrative that is politically appealing to its allies, while also defining what it is competing for and how its allies may contribute to these goals. The workshop emphasized that some allies fear a unilateralist America, and if the United States is competing with an "America First" strategy, its allies will be unlikely to join, resulting in "America Alone." Others noted that allies may be compelled to engage if this competition concentrates on maintaining the rules-based international liberal order. These debates will likely delay the United States and allies' responses to the competition with Russia and China—positioning the U.S. and its allies further behind and at a disadvantage.

It also remains unclear how the United States will meet the expected and unexpected challenges of the multi-domain aspects of long-term strategic competition. The impact of new technologies and increasing competition in cyber space and outer space is unhelpful for arms race stability and crisis stability. The future of arms control is at a major inflection point and prospects for other

forms of restraint are grim. However, some competitions may be stabilizing over time as the long-term competition may create incentives for restraint. Simply sitting out the competition will not spare the United States and its allies from the consequences of Russia and China engaging in strategic competition with them. In order to reap the benefits of strategic competition while seeking to avoid the unintended costs and risks, the U.S. has to do more to develop a comprehensive, whole-of-government approach that utilizes the U.S. comparative advantages, including its allies.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. LLNL-TR-764859