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Space and the Third Offset Symposium - Summary Report

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Space and the Third Offset

Workshop Summary

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LAWRENCE LIVERMORE NATIONAL LABORATORY

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Executive Summary

The Third Offset Workshop explored the nature of the challenges and opportunities facing the United States as it is increasingly forced to integrate space into defense strategy as well as deterrence and strategic stability frameworks. Participants broadly agreed that Washington's deep ties to allies and partners, as well as its history of leveraging an innovative U.S private sector, will be enduring competitive advantages against potential rivals into the foreseeable future. Yet panelists also highlighted key challenges from Russia and China's rapid integration of space capabilities into conventional and nuclear warfighting, the pronounced growth in Chinese and Russian counterspace capabilities, and tensions in the U.S.-Russia relationship.

As a starting point, the participants largely agreed that the national security space community had been largely left out of the broader conversation on the Third Offset Strategy, and the group agreed that space needs to be a more central part of these initiatives. In an effort to understand the potential role that space could play in the Third Offset, participants examined the nature of the First and Second Offset strategies and the role of space in each. Participants agreed that space's role in the Third Offset should center on negating Chinese and Russian anti-access / area denial (A2AD) concepts, primarily through resilience, speed, and human-machine teaming. The group also saw space as potentially a part of the Third Offset's goal to bring forward capabilities that our potential adversaries cannot cope with, thereby strengthening strategic stability.
A major discussion point surrounded how to more closely integrate U.S. allies into space planning to enable success. Participants raised the question of how potential rivals could use space or counterspace capabilities to try to drive a wedge between the U.S. and our allies and partners, and what the implications of this would be for policy, strategy and acquisitions. Potential solutions to this problem include increased collateral threat intelligence sharing and joint technology development for space protection with allies. Technology development to counter non-kinetic weapons (e.g. cyber, jammers, dazzlers)—which rivals are likely to use at low levels of escalation—should be the key focus area for joint efforts.

Many participants expressed concerns about the difficulties of integrating space into the Third Offset within the confines of current organizational structures and practices, particularly given the fissures between the U.S. Air Force, the National Reconnaissance Office (NRO) and combatant commanders, and all agreed that the current system will eventually need major reform although the specifics of how—and when—to do so remained a major unresolved point. While participants agreed that the compartmentalization of space remains a major challenge to crafting integrated strategy, they disagreed on the extent to which current initiatives, such as the Joint Interagency Combined Space Operations Center (JICSpOC), have been successful at lowering these barriers. Major concerns also remained among the group over challenges in the Department of Defense (DoD) seriously engaging a deeper and more strategically useful relationship with commercial space.

Introduction

Lawrence Livermore National Laboratory (LLNL) hosted a workshop on "Space and the Third Offset" on August 15th and 16th, 2016, in Livermore, CA, sponsored by LLNL's Center for Global Security Research (CGSR). This report summarizes the workshop's panels and subsequent discussions.

Attendees and panelists came from diverse backgrounds in academia, government, industry, the national laboratories, and think tanks. Their expertise was diverse, to include the technological, operational, and policy aspects of space, as well as regional and country-level knowledge. The group also included several representatives from allied nations. The primary goal of last year's seminar was to deepen our collective thinking about the role of space in integrated strategic deterrence, particularly in the context of the U.S. Defense Department's Third Offset Strategy.[1] This evolving strategy is driving the need for a new strategic playbook to meet U.S. national security objectives, and space capabilities will be crucially important to this new playbook. However, the United States and its allies are still grappling with the challenge of integrating space into defense strategy and broader approaches to deterrence and strategic stability, particularly as foreign threats to space are growing.

The workshop attempted to advance its aims via four sessions:

1) Space in the Strategies of Potential Regional Adversaries
2) Space in U.S. Defense Strategy
3) The Technical Dimension: Linking Strategies to Capabilities
4) The Integration Challenge

This summary is not intended to capture every discussion or viewpoint offered during the workshop. Rather, it provides a general overview of the often complex and nuanced conversations, in hopes that this will provide a basis for future analysis and planning.

Session 1 – Space in the Strategies of Potential Regional Adversaries

This session focused on the role of space in the strategies of Russia and China, particularly in the context of the current security environment and each country's bilateral relationship with the United States. Specifically, participants discussed the progress of Russia and China in integrating space capabilities into their A2AD strategies, their theories of victory, and the role of military escalation in their theories of victory.

Space and the Chinese Dream:
China's space capabilities are developing rapidly, and thus present a complex target for analysis. Events in the 1990s were important in the development of contemporary Chinese military doctrine, including in the space domain. The inability of China to deal with U.S. carrier groups in

[1] We note that following the recent U.S. presidential election, it is unclear whether the Trump Administration will continue the Third Offset strategy, and if so, in what form or scope.

the Taiwan Straits looms large in Chinese national security writings, as well as the 1999 bombing of the Chinese embassy in Belgrade, after which Chinese officials held an array of meetings to discuss how to develop new and meaningful technological capabilities.
The organization of the People's Liberation Army (PLA) has also evolved through the current rule of President Xi Jinping. Participants noted that the Chinese military is currently going through a major reorganization, the outcome of which will likely be a specialized service arm to train and equip PLA space and cyber forces. They also noted that PLA authors today emphasize the importance of space in military affairs, especially regarding the concept of "information confrontation," a component of the broader concept of information dominance. Chinese military writers also emphasize the importance of space in their concept of strategic deterrence, although there is a tension between their apparent emphasis on moving slowly up the escalatory ladder, and the distinct possibility of the PLA misinterpreting American responses.

Russia's Insecurity:
Vitally important in understanding the role of space in Russia's broader strategy is the feeling of massive strategic instability that the Russian government feels has existed since the end of the Cold War. President Putin has said that the Cold War calculations of mutually assured destruction (MAD) no longer function in the same way. Combined with Russian views of America's broader intentions, this makes Moscow feel deeply insecure. Participants argued that Russia feels that the balance of conventional technologies has greatly weakened their relative power vis-à-vis the United States. Consequently, Russia is increasingly coming to view nuclear modernization and counter-space weapons as two key means by which to reduce conventional vulnerabilities that they fear could have a strategic impact on the overall military balance. As Russia continues to slowly modernize its own space systems to support both conventional and nuclear capabilities, participants argued, their concepts with respect to the role of space in reducing these vulnerabilities and leveling out power imbalances may also change.

Strategic Stability and Space:
Signaling intentions with potential adversaries in space will be a distinct challenge requiring planning and technical assessment, including the consideration of cultural barriers that may color how actors view each other's actions. Successful signaling will be important for a variety of reasons, from avoiding an arms race, to strengthening crisis stability, to controlling escalation. However, our collective understanding of escalation dynamics in the space realm is weak; we do not yet understand the rungs in the escalation ladder, nor how our potential rivals think about these rungs.

Participants were generally optimistic about the potential for future space cooperation with China, and it was noted that track 1.5 dialogues have shown some promise and should be further pursued. Yet gaps remain between the U.S. and China that inhibit cooperation toward mutually beneficial strategic goals, including China's belief that transparency in the context of arms control is a tool of the strong against the weak. By contrast, participants agreed that the situation with Russia is far more fraught, and that recent experience with cyber aggression does not bode well for space.

Lastly, the group concurred on the importance of examining political and military actions holistically to better determine their global impact, rather than limiting ourselves to thinking only about the regional implications of our actions. For example, participants discussed how announcements or changes in U.S. policy toward the Baltics might be scrutinized closely by a Chinese government eager to assert itself in the South China Sea, resulting in broad-ranging global implications for regional policy actions.

For further information, see:

- Cross Domain Coercion: The Current Russian Art of Strategy
- China's Military Strategy (2015)

Session 2 – Finding Space in U.S. Defense Strategy

This session focused on the ways in which space fits into the concept of the Third Offset, and how resulting changes in the broader security environment will affect both red and blue theories of victory.

Parallels to the Earlier Offset Strategies:
The First and Second offsets were fundamentally different from today's Third Offset concept, primarily in that the earlier offsets were strategies either enabled or driven by changes in the nuclear balance. The First Offset was an effort to counteract Soviet conventional strength in Europe in the 1950s with a robust U.S. nuclear weapons strategy, while the Second Offset in the early 1970s pushed forward new U.S. conventional warfighting capabilities to deal with Soviet strategic nuclear parity, which at the time had made the world safe for conventional aggression. The current conceptualization of the Third Offset is an attempt to counter Chinese and Russian A2AD capabilities, such as integrated air defenses, stand-off anti-ship and land attack missiles, as well as cyber and counterspace capabilities, which are tools to stymie or deter U.S. intervention in a regional contingency.

Participants largely agreed that Russia and China have made tremendous strides in mastering some of the key technologies and concepts of the Second Offset, namely remote sensing and precision strike, in support of A2AD. Today's Third Offset concept builds upon its predecessors and similarly seeks to foster and exploit areas of U.S. asymmetric advantage in the face of these growing A2AD capabilities. Third Offset-related capabilities should be significant and demonstrable to the extent that the adversary will be convinced that they cannot cope with them, potentially allowing us to win without fighting. Deputy Secretary of Defense Robert Work has called for new capabilities in autonomy, artificial intelligence, human-machine teaming and other related areas to improve the speed and quality of situational awareness, and of command and control. While the space domain and space systems are rarely mentioned by U.S. policymakers in the discussion of the Third Offset strategy, the centrality of space in contemporary military affairs supporting situational awareness in denied areas, and ultimately, power projection, suggests that it should be a critical part of the effort.

Space in its Current Context:
The previous U.S. presidential administration reportedly proposed investing $5.5 billion in a 5-year defense program for space control. Deputy Secretary of Defense Robert Work has heralded the JICSpOC as a key example of required new operational elements—fusing title 10 and title 50 authorities in a center designed to experiment with new operational concepts—that the Defense Department is advancing as part of the Third Offset. Work has even said that the JICSpOC is the organizational instantiation of the Third Offset in space. Success for the U.S. in the space domain will be critically dependent on reducing the vulnerability of critical satellite constellations. Victory in a regional conflict against a space-capable adversary will require assured access to U.S. space systems, especially when potential adversaries are trying to deny us this access.

In this session, participants also discussed the parallels and differences between space and cyber at more length, particularly in the context of potential roles they will play in the Third Offset strategy. Ultimately, they agreed that the Third Offset strategy is not yet fully conceptualized or realized; thus, the role of space in this strategy is still evolving. Participants also came to agree that space is an offense-dominant domain, which facilitates weapons development and drives incentives to undertake an escalatory first-strike. The development of international norms in the space domain is lagging, potentially inhibiting efforts to avoid or control unwanted escalation in the future, but the U.S. should work with both allies and private industry to develop and enhance these norms of behavior.

For further information, see:
- Work Outlines Key Steps in Third Offset Tech Development
- Defense Department Budget: $18B Over FYDP for Third Offset
- Remarks by Deputy Secretary Work on Third Offset Strategy (April 28, 2016)
- Toward a New Offset Strategy (2014)
- Operating Under Constant Surveillance (2016)

Session 3 – The Technical Dimension: Linking Strategies to Capabilities

This session focused on the current and projected capabilities of adversaries, as well as on how well U.S. capabilities meet the challenges they pose. A second major theme concerned the ways that allies can either enable or hinder further U.S. success.

Potential Adversary Counterspace Capabilities:
Participants discussed that counterspace technologies and concepts are not necessarily new, as counterspace capability development dates to the mid-Cold War. Russia today can be categorized as a recapitalizing power with regard to space. China also has growing counterspace capabilities; it has released videos from 2010 and 2013 anti-satellite tests, and is focusing on the vulnerability of U.S. communications and imagery systems. Participants further noted that, as in other realms, Russia's approach to counterspace policy may tend towards assertiveness in the future, whereas Chinese policy may seek to avoid overt confrontation.

Thinking About New Capabilities and Architectures:
In discussing U.S. capabilities, participants noted that the major focus in space acquisition since 1990 has been to develop incremental improvements in satellite architectures. As satellites became increasingly integrated across the full array of U.S. defense capabilities following the Cold War, the vulnerability of a few increasingly capable systems gained the potential to affect more facets of conventional conflict. Methods for mitigating this problem include hardening individual satellites, deterring attacks against space programs, developing terrestrial alternatives to space capabilities, supporting international agreements as to the role of space, and implementing new and more resilient satellite architectures. Altogether, these points provide a theoretical framework for thinking about the goals of further U.S. development.

Allies and Partners: A Key to Victory or an Achilles Heel?:
Participants discussed how during the early phases of a conflict with the U.S., Russia or China could attempt to punish U.S. allies, potentially in space, to decouple the alliance and induce U.S. restraint. This raised the question as to whether U.S. allies would be an Achilles Heel during wartime, particularly given the vulnerabilities of the U.S. and its allies in space. While the space community has not given this question much consideration to date, participants largely rejected this proposition, agreeing instead that U.S. allies were and are likely to remain far more of a help to Washington than an Achilles Heel. However, much more work needs to be done with allies and partners to ensure that they cannot be decoupled from the U.S. at low levels of escalation. This can be done by sharing information on the threat, through joint technology development, and potentially by giving technical assistance to strengthen allies' space protection programs.

Another way to strengthen cooperation with allies, suggested participants, is to share information about new policies and capabilities early in the development stage. Participants remarked that the current tendency in Washington towards increased transparency on these fronts is a very positive development; for instance, the DoD is beginning to open the box on space policy to the Five Eyes allies. Yet work remains to be done on better implementing cooperation beyond the theoretical level. Two important suggestions for doing so are to include senior officials in ongoing discussions, and to work more closely on long-term concepts and plans, which can be discussed with fewer restrictions than current strategies and capabilities. Many allies also have difficulty justifying increased defense spending in an area as esoteric as national security space. Allied participants at the conference argued that politically justifying increased spending on military space to protect our capabilities can be a challenge, but that using the rationales of job creation and national resiliency has a proven track record of success. Broadly speaking, the separation of the U.S. from its allies will be a major strategic goal of our adversaries; preventing this separation must therefore remain a priority. Though both Russia and China have recently driven allies closer to the United States, the threat of decoupling will remain a challenge in the future.

For further information, see:
- Spy Satellites Will Target US Carriers
- Anti-satellite Tests in Space: The Case of China Fact Sheet
- Dancing in the dark redux: Recent Russian rendezvous and proximity operations in space
- The End of Sanctuary: Why America is Considering Getting More Aggressive in Orbit

Session 4 – The Integration Challenge

This session focused on the organizational and operational challenges of integrating space into the Third Offset. It focused on challenges and limitations that currently exist, and concluded by tying together the themes from earlier sessions.

A Historical View of Technology, Strategy, and Bureaucracy:
Participants noted that space has evolved over the past 30 years, from a domain used to deliver a niche set of services, to one that today enables a vast array of military and civilian capabilities. However, despite its broad importance to military operations, space has yet to be granted the organizational independence that other core parts of the defense apparatus have been given. A history of the bureaucratic turf wars over space from the 1950s show that space has often been fought over as a subordinate branch of a much larger agency.

Space Integration Challenges:
The major schools of thought about space capabilities have shaped the bureaucratic history of space policy. Space was long a sanctuary from which the U.S. and, to a lesser extent, the Soviets could conduct support activities for military and intelligence purposes. The freedom of operation in space during the Cold War led to the organizational construct of separating intelligence community (IC) and DoD capabilities into different organizations. But as space became more integrated into warfighting down to the tactical level and as it has become integral to the intelligence community, so too have U.S. capabilities become scattered organizationally. Nobody looking at a blank sheet of paper today would come up with the current organizational chart that governs U.S. space activities. The rising threats to space have spurred new thinking, with some strategists increasingly focused on the survival of space services, while others—to include the U.S. government—seem to have focused on "space control" as an analogue to the powerful sea control concepts of Mahan. Chinese writings have comparatively called space a strategic high ground, where an advantage could be decisive for terrestrial conflict. These different concepts drive toward different organizational solutions, but up until now the U.S. has left space divided primarily between the NRO and the U.S. Air Force.

The designation of the Secretary of the Air Force as the Principal Defense Space Advisor (PDSA) during the previous administration indicates that efforts are underway to more effectively organize space activities and to drive planning out of the program offices and up the decision chain. However, major limitations to integration remain at an organizational level, and space planners must work more effectively across domains to better integrate space into conventional war planning. While most of the participants agreed that eventual organizational reform would be necessary, an unresolved question was whether the current timing is right. The U.S. government has generated enough consensus to advance huge shifts in programs within the existing organizational constructs; a complete overhaul could shift the focus away from overhauling programs and toward interagency conflict. Possible options for an eventual reform to national security space include: 1) further strengthening PDSA to cover both the IC and the DoD, 2) a space "force" comprising a new service arm of the military, 3) a separate space acquisition arm like the Missile Defense Agency that supports the services and combatant commanders, or 4) a space combatant command with separate acquisition authorities like Special Operations Command.

For further information, see:

- The Third U.S. Offset Strategy and its Implications for Partners and Allies (Jan 2015)

Conclusion

Though participants widely agreed on major U.S. strategic advantages and potential weaknesses, remaining topics for discussion include how to leverage these advantages to advance the Third Offset strategy and how to fully integrate space into this strategy. Significant areas for focus include the development of more effective and streamlined operational and organizational components, integrated strategic concepts, the empowerment of allies and management of alliances, and how the DoD and the IC can more deeply engage the commercial sector to acquire and encourage the development of new revolutionary space capabilities.

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