NDU Conference on "Securing Space Assets for Peace and Future Conflict"

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Space is critical to the Department of Defense. Capabilities based in space enable our Armed Forces to navigate accurately, communicate quickly, see the battlefield clearly, and strike precisely. However, the environment in which our space systems operate has fundamentally changed.

During the Cold War, space was the private reserve of the United States and Soviet Union. It was the "High Frontier" from which we could support national defense and power projection with near impunity.

Today, space is increasingly a shared domain in which we operate with more and more space-faring countries -- both close allies and potential adversaries. It is a shared domain that is increasingly challenged by what we call "the three C's": congested, competitive, and contested.

Space is increasingly congested. There are over 1,100 active systems on orbit, and an additional 21,000 pieces of debris littering the skies. Radio frequency interference is also a concern, with more than 9,000 satellite transponders expected on orbit in 2015.

Space is increasingly competitive. Eleven countries are operating 22 launch sites. More than 60 nations and government consortia currently operate satellites. The US share of worldwide satellite exports dropped from nearly 2/3 in 1997 to 1/3 in 2008. This is a significant challenge to our industrial base …. but also opens opportunities for international cooperation.

Space is increasingly contested. China demonstrated a direct-ascent anti-satellite capability in 2007 and is developing other capabilities to disrupt and disable satellites. Iran and others have demonstrated the ability to jam satellite signals. Our reliance on space tempts potential adversaries to see it as a vulnerability to be exploited.

A New Strategic Approach

The space environment has changed, and our national space policy has changed. The Department of Defense must change its strategic approach to space accordingly.

Secretary Lynn spoke about the need for change in his November 30th speech to the STRATCOM Space Symposium. The forthcoming National Security Space Strategy, to be issued jointly by the Secretary of Defense and the Director of National Intelligence, will elaborate on the changes that are needed.

Today I will focus on the changes necessary for the subject of this conference: "Safeguarding our Space Assets for Peacetime and Future Conflict." I will argue that we must change our strategic approach in three areas: rules of the road; resiliency and mission assurance; and deterrence.

Rules of the Road

First, we need to start work on rules of the road.

There are a variety of potential roles for such rules. These include: promoting spaceflight safety; reducing unintentional interference; maximizing the use of crowded orbits; reducing mistrust and misperceptions; and discouraging destabilizing crisis behavior. Moreover, rules provide a way to hold accountable those who break them.

Rules normally apply in peacetime, but may also help to shape crisis behavior. The rules may be written and agreed internationally. Rules may also be tacit, based upon established practice, diplomatic or military-to-military exchanges, or even declaratory policy.

An obvious place to start making rules is to build on emerging guidelines to avoid the generation of long-lived space debris. With this in mind, we are closely examining the EU's proposed Code of Conduct and are encouraging other space-faring countries, including Russia, China, and India, to do the same.

Ultimately we seek agreed rules – or at least tacit understandings – that limit the risk of mishaps or miscalculations in crisis. During the Cold War, there seemed to be tacit basic rules of the road between the U.S. and U.S.S.R. These were founded in part on treaty obligations not to interfere with either side's "National Technical Means." Such rules of the road do not exist today, but are needed as more countries are developing capabilities that can be used for hostile purposes.

In his speech, Secretary Lynn called on us to consider what further measures of transparency, verification, and confidence-building can enhance the stability of space.

Rules of the road need to be accompanied by practical measures to implement them and monitor compliance. STRATCOM is already doing important work to help other countries avoid collisions by providing Space Situational Awareness services. Just as the Air Force through STRATCOM is the world's premier provider of global positioning data, STRATCOM is becoming the world's premier provider of collision warning.

Strengthening our capabilities for Space Situational Awareness and further developing our mechanisms to share it will reinforce our efforts to establish international rules of the road.

Resiliency and Mission Assurance

Second, we need to increase emphasis on resiliency and mission assurance.

Past means to protect our space systems were frequently too narrow. Too often they provided system-level protection or no protection at all. They also tended to focus on specific satellites, not the mission they performed.

We need a different approach. Specifically, we need to make our space-based architectures more resilient and to assure the missions that they support. This may entail a variety of means:

- No matter what else, we must improve our capability to "fight through" interference. Our Services are already conducting training and exercises that simulate a degraded space environment, helping and indeed requiring them to develop the necessary tactics, techniques and procedures for this environment.
- Rather than relying on a small number of satellites for critical functions, we may want to "fractionate" their functions across multiple satellites. This is a concept being pursued by DARPA.
- We may want to leverage commercial space systems or use foreign space capabilities to complicate targeting and add resilience. The Wideband Global SATCOM system is a good example. Australia is joining the constellation and other allies are looking at doing the same.
- We may want to have a responsive capability to reconstitute space-based capabilities that have been degraded or lost. The Air Force's Operationally Responsive Space program is starting us on a trajectory to that end.
- Finally, we may want to pursue cross-domain solutions with ground-, sea-, or air-based systems backing up space-based capabilities. UAVs are one option that we are exploring.

In many cases, we may want to pursue multiple means. Take for example the Global Positioning System, a space-based capability critical to all of our Services. To enhance its resiliency and mission assurance, we may want a combination of on-orbit spares, interoperability with Europe's Galileo satellite system, and land-based backup … including refresher courses in compass navigation!

Resiliency and mission assurance can help protect critical capabilities in crisis and conflict. Moreover, to the extent we develop and demonstrate resilience and mission assurance, potential adversaries may be dissuaded in peacetime from pursuing counterspace capabilities.

Deterrence

We also need to think differently about deterrence.

We must not assume that attacks in space can or should be deterred by the threat of retaliation in space. Rather, as Secretary Lynn has argued, a strategy that encompasses a broad range of options will have the greatest chance for success.

Many of the actions that I have already described can contribute to deterrence by complicating the decision-making of a potential adversary: creating norms that would need to be broken; building international partnerships that would need to be attacked; and strengthening resilience and mission assurance that would reduce the benefit of attack.

The threat of retaliation can still play a role, though it need not be confined to space. As Secretary Lynn said, we must make clear that United States "views its space assets as a vital national interest. Consistent with our inherent right of self-defense, we will respond accordingly to attacks on them." This implies certainty of response but in a manner of our own choosing.

Ultimately, like any deterrent strategy, the deterrent strategy for space must be developed in the context of particular countries and particular scenarios. And we must consider the best means to convey our deterrent messages in peacetime and to influence the decision-making of potential adversaries in crisis and war.

Conclusion

As we adapt our strategy to take on new challenges, the Department of Defense does not have a monopoly on good ideas. We need to tap the advice and input of experts such as you from the United States, our allies, and other space-faring countries.

In his speech last month, Secretary Lynn said:

> "Succeeding in the new space environment will depend as much on changing mindsets fifty years in the making as it will on altering longstanding institutional practices. The fundamental mission of the Department of Defense to deter war and to protect the security of our country stays the same. But how we use space capabilities to achieve this mission will change."

Change we must. I look forward to your advice on how best to do so.