National Security in Space
The Ultimate “High Ground”:
Deterrent or Provocation?
What are the Implications for the United States Naval Services?

Produced by:
The Center for the Study of Democracy
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This paper was produced by Bonnie Green and Steve Spehn for the Patuxent Policy Group, a collaboration of the Center for the Study of Democracy and The Patuxent Partnership.
The Patuxent Policy Group hosted a group of experts to discuss National Security in Space and the implications of space militarization on the U.S. Naval Services. The group included panelists and participants from across government, academia, and industry, with a broad range of perspectives and experience.

Although the discussion was framed by a set of assertions and guided by a set of foundational questions, the group's discussions were allowed to develop and evolve according to the expertise and interests of the group. Over the course of these discussions, the group articulated seven findings:

1. Despite the clear codependency between satellites and communications networks, the two communities are completely separate from each other.
2. Collaboration on space programs among nations is difficult, due to national self-interest and a general undercurrent of mistrust.
3. There is a worldwide reliance on satellites for private, public, and defense activities. A loss of space assets would have an immediate, negative, and almost incalculably large impact to the U.S. and global economies.
4. There is a critical need to develop international partnerships and alliances to establish enforceable "rules of the road" for space operations and activities.
5. Space assets are vulnerable, and action must be taken to protect space resources from both adversaries and natural phenomena.
6. It is vital to build and maintain multinational alliances to counterbalance China's growth in space.
7. Space has become the new battlefield. Disruption, denial and destruction of an enemy's space assets may well determine the outcome of future conflicts.

In addition to these findings, the group also posed numerous questions, which were meant to frame future discussions on other aspects of National Security in Space, as well as a small set of recommendations:

- As to conflict in the space domain, the United States should start with temporary or reversible actions that can be demonstrated incrementally, much as we do during traditional military exercises and activities with our partners.
- The U.S. government should incentivize and entice rates of procurement and production to stimulate commercial industry to develop the necessary space-based capabilities.
- The United States should educate its citizens—and the rest of the world—on the implications of the ongoing war in cyber space.
- The United States should continue to focus on the counter space capabilities of Russia and China and as the leaders in space, prioritize what they want to do in space and then attract others to our way.
- The U.S. Government should create continuous, viable, acquisition policies across administrations.
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Introduction

National Security in Space:
The Ultimate “High Ground”: Deterrent or Provocation?
What are the implications for the United States Naval Services?

The Patuxent Policy Group, a collaboration of The Patuxent Partnership (TPP) and the Center for the Study of Democracy at St. Mary’s College of Maryland (SMCM), hosted a group of experts at SMCM to discuss National Security in Space. The working group, moderated by Mr. Michael D. Griffin, Chairman and Chief Executive Officer (CEO) of Shafer Corporation, convened panelists and participants including former National Aerospace and Space Administration (NASA) officials, academia, government, and industry, with a broad range of perspectives and experience.

To establish the appropriate background and context, the discussions were premised on the following assertions:

- The 2010 National Space Policy acknowledged that ‘Space has become congested, competitive, and contested.’
- Three major space powers—the United States, China, and Russia—see strategic advantage in the space domain.
- China continues to increase its spending in space-based technologies, and possesses the ability to destroy satellites in space—an ability that the U.S. has already demonstrated.
- U.S. reliance on Russia to support the space station has come into question in view of recent events in the Ukraine.

Within the context of these assertions, the Chair asked the Panelists to consider the following questions:

- What is the United States view of itself as a spacefaring nation?
- How is the United States viewed, as a spacefaring nation, by other nations?
- What is the role of the civil space infrastructure?
- Can the United States defend its space assets without encouraging greater investment in offensive space weapons by potential adversaries?
- What is our space situational awareness?
- What capabilities does the United States need to develop to defend its space-based assets?
- How will changes in the space domain impact maritime domain awareness (MDA)?
- What are the implications to the U.S. Navy (USN) of the militarization of space?
- Can the United States encourage major powers to reach agreements about ‘rules of the road’ in space and establish ‘norms of behavior’?
- Are we at a tipping point for space militarization?
- What should future policies for space and the military look like?

This white paper considers the responses that emerged from this policy group discussion and the way forward to achieve National Security in Space and to maintain U.S. leadership in aviation, space operations, and space technologies. The views expressed in this paper reflect a synthesis of panelist presentations and group discussion, and are not intended to represent the specific views of any particular individual.
Over the course of the discussions, the group articulated seven findings. These findings, along with short titles for easy reference, are:

1. **Satellites and Networks.** Although there is a clear codependency between the operational successes of satellites and communications networks, the two communities are completely separate from each other.
2. **National Self-Interest.** Collaboration on national security space programs among nations is difficult, due to national self-interest and a general undercurrent of mistrust.
3. **Space Dependency.** There is a worldwide reliance on satellites for private, public, and defense activities. A loss of space assets would have an immediate, negative, and almost incalculably large impact to the U.S. and global economies.
4. **Standards of Space Conduct.** There is a critical need to develop partnerships and alliances with other countries to establish “rules of the road” for space operations and activities, with agreed upon consequences for transgressions.
5. **Space Resiliency.** U.S. space assets are vulnerable, and action must be taken to protect our space resources from both adversaries and natural phenomena.
6. **China’s Aspirations in Space.** As China continues to outpace the rest of the world in development, it is vital for the U.S. to build and maintain multinational alliances with both large and small nations to counterbalance China’s growth.
7. **Space Warfare.** Space has become the new battlefield. Disruption, denial and destruction of an enemy’s space assets may well determine the outcome of future conflicts.

The following sections provide additional detail on the discussions that went into the consensus on the Findings. A few of these Findings were judged to be essentially self-evident, and little discussion went into the group consensus, while others generated considerable discussion. Throughout these discussions, the panelists generated numerous additional questions to stimulate further thought and discourse within this theme.
II. Satellites and Networks

Satellites are dependent on networks and networks are dependent on satellites. Although there is a clear codependency between the operational successes of the two, the two communities are completely separate from each other. This disconnect creates the potential both for lost opportunity in leveraging the synergies of these domains, as well as for inefficiencies and duplications of effort.

III. National Self-Interest

As is natural, every nation puts its own priorities and self-interest first. Information sharing is limited, and there is a general undercurrent of “mistrust”, or at least “absence of trust”, when establishing partnerships with other nations. This makes collaboration among nations difficult.

The reliance by the United States upon Russian transportation of astronauts to the International Space Station (ISS), as well as use of the Russian RD-180 lox/kerosene rocket engine in the Atlas family of launch vehicles, have come into question in view of recent events in the Ukraine and the more adversarial tone in U.S.-Russian relationships across the board. The United States may no longer be able to consider Russia as a strategic partner in space, if indeed that view was ever a realistic prospect. After having worked with Russia in the human spaceflight arena since 1993, such a paradigm shift poses immediate and long-term implications for the U.S. space program. The tactical actions that will be required to cope with this strategic shift have not been, but must be, carefully evaluated. Cooperation with other countries should not be discounted, such cooperation is vital.
There is a worldwide reliance on satellites for private, public, and defense activities (e.g., high-speed communications, navigation, imagery). A loss of space assets would have an immediate, negative, and almost incalculably large impact to the U.S. and global economies.

The United States may still be the most dominant actor in space, but it is clearly no longer preeminent. Our nation’s response to these ongoing changes, if indeed there is to be one, has yet to be determined. Many policy questions remain to be addressed. What is our situational awareness as it pertains to space activities by other nations, and how certain are we that our perceptions are accurate? How do we view ourselves and our role in space, and how does that view compare with the views of others? The average American sees the United States as “the” leader in space; but funding for NASA, the U.S. Air Force (USAF), and other U.S. space organizations is not always consistent with this view. Today we are reliant upon allies and even potential adversaries such as Russia for space infrastructure and services that previously were entirely within our national span of control. Is this acceptable, and if so, how do we coordinate with other organizations and programs so as best to position ourselves in the space domain? If this dependency is not acceptable for the long term, then how do we justify and obtain the funding to bring critical functions and infrastructure once again under our own control?

Today’s space infrastructure is widely employed for public benefit in the United States and the rest of the world. The world relies heavily on space-based services for communications, navigation, and imagery for global situational awareness. A loss of satellite capability in any of these arenas would have a dramatic “ripple” effect across domestic and international commercial and defense sectors. For example, the loss of the Global Positioning System (GPS) would render most navigational systems useless, bringing military operations, commercial travel and transport, and personal navigation systems to a standstill. Further, the loss of the GPS timing signal, which is widely used to synchronize digital communications systems, would cause possibly even greater disruption. Encrypted digital communications to process credit card and other point-of-sale transactions rely on these timing signals. Significant disruption of this capability would cause a worldwide shutdown of payment processing and purchasing, resulting in financial chaos for commercial retailers and service providers. A broader view of the policy value of having the United States be—and be seen to be—a leader in promulgating and enhancing worldwide use of its space infrastructure for global economic benefit, stability, and security would have profound geopolitical consequences.
Space is “congested, contested, and competitive”. Eleven countries now have space launch capability and over sixty countries own and operate over a thousand active satellites. As the world relies increasingly on space, orbital debris is a rapidly growing threat to all satellites.

With no boundaries or territorial lines, space does not fall under the jurisdiction of any one country or existing policy. Current operations and activities are based on an unwritten—and presently unenforceable—set of “rules of the road”. There is a critical need to develop partnerships and alliances with other countries to establish “rules of the road” for space operations and activities, with agreed upon consequences for transgressions.

Since space has no boundaries or territorial lines it does not fall under the jurisdiction of any one country or existing policy. There currently is no sovereign authority or responsibility for regulation in space. One might argue that the United States has historically seen itself in that role. Indeed, the U.S. has played an active role in establishing most of the existing United Nations (UN) space accords, only to be unable to obtain internal political agreement to become a signatory. Even without official approval, these agreements have in the past served as industry guidelines and standards, both nationally and internationally. Such informal industry standards, unofficial UN guidelines, and bilateral agreements have been and continue to be utilized for the common good, such as to prevent or mitigate potential satellite collisions and interference from space debris. If, however, a country chooses to ignore these informal understandings, there is no official recourse or underpinning of international law comparable to that which governs maritime and aeronautical operations.

The United States’ core national interest is to prevent or minimize the inherent risks of space activities. The United States should work with other spacefaring nations to establish an international code of conduct for space operations and activities. Specifically, the United States should start negotiations that build upon and ultimately replace the current draft of the Space Code of Conduct put forth by the European Union (EU). A Space Code of Conduct could be a promising transparency and confidence building measure (TCMB) but would not represent a binding legal commitment by the United States as would occur with a treaty.
VI. Space Resiliency

U.S. space assets are vulnerable, and action must be taken to protect our space resources from both adversaries and natural phenomena. The cost of hardening or replenishing space assets presents the greatest challenge. The United States needs to entice competitive commercial development of multi-use space assets that are more secure, reliable, diversified, and affordable than present-day architectures. There is an immediate and urgent need for these smaller and cheaper satellites to meet the growing demands for communications, navigation, imagery, and other space products.

The U.S. Government in general, and NASA in particular, have gone from a leadership role to that of anchor tenant for commercial development in space. Use of government facilities for launch, private investment, and the increasing role of Silicon Valley technology all demonstrate these changes. The United States needs to maintain the ability to launch smaller, more affordable satellites, with increased capability and greater cyber security protection. The DoD and others recognize that these critical assets are, and will continue to be, at risk.

If the U.S. Government were to incentivize and entice rates of procurement and production, it would stimulate commercial industry to develop the necessary capabilities. Using a ‘rapid refresh’ model for small satellites by updating technology every couple of months or so—similar to the technology refresh cycle of tablet computers and cell phones—would increase capabilities and affordability. The private sector recognizes this, as illustrated by Google's recent acquisition of the commercial venture imagery satellite company Skybox. Google wants this orbital capability and universal domain awareness to leverage minimal competition and disruptive technologies that will change the marketplace and the environment. The number one domain for information is Google, currently worth $450 billion. If it were not profitable, the private sector would not support it.

Some negative aspects to be considered include the timeliness of commercial intelligence and the skepticism regarding the technical ability and capabilities of commercial industry. For a non-market or non-commercial product to be a viable option for the United States, an established process or acquisition program would be required. Given the current acquisition policy, it would be done under a waiver. The acquisition process is skewed. The lack of focus and lack of a rational acquisition process holds us back. Our acquisition system was designed for a very rich nation. It was not designed for efficiency or purpose. In a crisis, we set it aside. We need to create continuous, viable policies across administrations.

We are constantly considering the cost of systems against the completion of the mission. Every system costs more than the one it replaced. Putting up smaller, cheaper, more capable satellites gives us a strategic advantage. Given the importance of reliability and maintainability, we should use caution and not let cost be the main driver.

Launch requirements also continue to be a signature driver in the cost of our systems. One solution is to put new capabilities on existing satellites. There are ways to use ground systems that are more generic, and to launch more satellites that require fewer people to operate.

Costs are determined by the requirements of the systems. The United States has high costs due to reliability, because the United States has been launching ‘exquisite’ systems. Is there a benefit in utilizing a fractionated system, where cost per space asset comes down, and reliability rates increase? This policy group did not examine the current cost of government oversight imposed by federal acquisition practices and their affordability. It is a subject being considered by various groups and organizations.
There is a vigorous debate about protecting life, mission safety, and reliability. A launch is technically feasible with desirable value payload sizes, smaller launching systems, prebuilt busses, and on-hand spare parts, but it is too expensive. The difference from the cultural aspect is the quality, reliability, and maintainability. While culture is a big root cause, it is technically a difference as well. The United States is in uncharted territory. We have a process that we know has resulted in successful launches, but we no longer are the lead player.

Consider also the public relations aspect of risk taking. A space launch is in the face of the media and the public. The United States will not take any risk based on assumptions related to the burden of loss of life. Should we consider realigning value to payloads that do not risk human life, and allow some processes to change? It would be interesting to look at the cost difference between an ‘exquisite’ system and one with 95% reliability in reducing cost per space asset. It is a risk-trade decision about what is acceptable. NASA is very risk adverse because of its history and the burden of potential loss of life. Will we be able to decide what is a risk—how much of a risk are we willing to take and is it worth the money we are spending? How does our attitude compare with that of China and Russia?

Along the way we need to remember how to do it better, faster, and cheaper. The future depends on our ability to do so.
China’s growth in space is focused on: its own advancement, its increased stature in the world order, and on protecting and extending its sphere of influence. As China continues to outpace the rest of the world in development, it is vital for the United States to build and maintain multinational alliances with both large and small nations to counterbalance China’s growth.

The United States, China, and Russia all seek to gain and maintain strategic advantage in space, with China modeling many of its space initiatives on the historical pattern of United States space development. China continues to increase its spending in space technologies and systems, and possesses the ability to destroy satellites in space, a capability previously shared only by the United States and Russia.

Our present and future relationship with China demands strategically thoughtful consideration. It is not feasible to attempt Cold War-style containment of China as it continues to advance its own national interests in space. It may, however, be feasible for the United States to provide a counter-balance to Chinese initiatives to enlarge their span of control, and to provide a partnership alternative for the many non-aligned nations whose aspirations in space require engagement with a more senior partner. It is difficult to see how it could be in the larger interests of U.S. statecraft to fail to offer such an alternative. To do so, however, may well require more of a national commitment to the space domain than the United States presently demonstrates.

For its own part, does the United States want to engage directly with China in space? What is the present situation regarding such engagement? Is there a national policy underpinning these activities? If not, why not, and if so, how is it established and controlled? Although some are of the view that there is little benefit to engagement with China from a technological standpoint, this may not be the main or even an important criterion for engagement. It may be more important to keep this adversary as close as possible. While some Chinese academic research is in the public domain, most space activities are conducted outside public view. The opportunity to work on cooperative space ventures with China would certainly afford the United States a much better perspective on Chinese space capabilities and intentions than could be obtained by any other means. It would be important to structure such a cooperative engagement so that the United States maintains an appropriate level of control. Given China’s aspirations for its space initiatives, China might very well not be a willing participant in such a partnership among our traditional partners.

China’s aspirations for regional and global strategic advantage, along with certain local actions on their part, have led to grave concerns on the part of our traditional international partners in the Association of Southeast Asian Nations (ASEAN). For many years, the U.S. has promoted cooperative partnerships and cooperation within the Asia-Pacific region. Freedom of movement and security on the high seas, in the air, and in space are critical public commodities in these partnerships. Our Asia-Pacific partners have viewed space cooperation as the means to build essential technical and geopolitical foundations for Asia-Pacific security and maritime domain awareness.

China’s ongoing efforts in space are proceeding very logically. Apart from their geopolitical consequences, such activities also confer significant domestic benefits, promoting national pride in Chinese industry and STEM education, and significantly enhancing regional soft power. China seeks broader recognition on the world stage, and there have been an increasing number of papers and articles written about Chinese activities and behavior in space. Chinese space efforts are, as with other nations, focused primarily on their own interests, and international partnerships have not yet been important in advancing those interests. It may be difficult to find an
area in which U.S.-Chinese space cooperation is welcomed. Undertaking such an engagement may also raise concerns among our traditional partners.

Japan is a case in point. The Japanese promote their space industry. Japan has established various space related ministries, including a Strategic Headquarters for Space Policy and an Office of National Space Policy. The country’s legislative process creates a system for licensing commercial remote sensing satellites and other private systems, with ministerial roles and missions assigned. Japan’s National Security Council ensures that an inter-ministerial process exists to balance competing security, economic, and diplomatic issues. Japan has also developed an Advanced Satellite with New System Architecture for Observation (ASNARO) System. ASNARO is a research, development, and demonstration project for obtaining high performance and affordable small-satellite systems. It has been executed by Japan’s space systems under the contract of Ministry of Economy Trade and Industry (METI). As these examples indicate, and because the lack of clear governance and crisis management processes would be seen by the Japanese as a risk factor, national security in space for Japan employs a ‘whole of government’ approach to managing policy issues.

Thus, and notwithstanding its many long-term agreements with the United States, the concern with Japan (as well as other Asia-Pacific countries) is, “what does China’s increased activity in space mean for them?” This concern has only been reinforced by China’s aggressive stance in the South China Sea and other maritime areas.

United States interest in the Asia-Pacific region are focused upon ensuring free trade, the rule of law, and preventing unilateral changes to the status quo. At the same time, China is seeking to advance its broader national interests, in part by means of its own activities in space. As we have noted, China cannot be contained. Given this, how do we counterbalance China’s actions in space so that our partner nations do not feel isolated? Japan and the broader Asia-Pacific region have numerous ties to the U.S., and in some cases to each other, related to space initiatives. Enhanced space cooperation thus presents an opportunity to build essential technical and political foundations for Asia-Pacific security.

As an example, Vietnam’s broader economic growth juxtaposed with China’s recent and more aggressive territorial actions have aggravated regional tensions. Vietnam is developing a cooperative arrangement with Japan and the United States, as well as other partnerships, to facilitate information and data sharing. Even so, the United States is viewed as a partner that is unwilling to share its knowledge with its allies, despite the substantial evolution of United States-Vietnam relationships since the end of the Vietnam War. Only a more enlightened view of the role of space cooperation as it contributes to broader geopolitical stability and security concerns can alter this paradigm, and only the United States can bring about such a change.

Cooperative agreements play an increasingly important role in implementing these broader policies. For example, a proposed tri-lateral cooperation with Australia’s Space Situational Awareness (SSA) and Vietnam’s Missile Defense Agency (MDA) offers increased value to the U.S. in light of Chinese expansion of its offensive missile capability. Broader thinking is possible. The United States needs a government-level framework agreement on cooperation in the peaceful uses of space, including Earth science, Earth observation and monitoring, and space science.
VIII. Space Warfare

Space is, and always has been, a military arena, and is becoming more so, to the extent that space has become the new battlefield. Disruption, denial and destruction of an enemy’s space assets may well determine the outcome of future conflicts.

Our perspective on space has changed dramatically over the past few decades. When another country intervenes in U.S. critical infrastructure, it is considered a violation of international law. Loss of data through foreign intervention is a critical threat that can ultimately be used against the United States, but is not always considered a violation of international law. At what point do other countries’ suspect activities in space become criminal? The United States is developing the policies, and more importantly, strengthening the capabilities needed to respond to such crises, and the legal standing by which to pursue remedies. Strong policies are needed to provide credible actions from influence to destruction. These policies must allow for legal issues, alliances, policies, and immediate actions. We should start with temporary or reversible actions that can be demonstrated in exercises much as we do for traditional military activities with our partners.

Engaging in space involves dissuasion, deterrence, awareness, escalation, and defense—preventing the adversary from interceding in all aspects of U.S. infrastructure. The United States must be able to destroy any threats from space, foreign or from nature. Decision time and response time are critical to success, while recognizing the difficulties of attribution. Rapid decision-making and the immediacy of action are essential to success.

The United States would like to maintain space not only as weapons-free, but as hostile-free. There are many challenges to such a vision. The United States must militarily protect assets in space without militarizing space. The following should be considered: Which weapon would be most reasonable to use and how quickly does it allow the United States to react, should it be threatened in space? A threat-response chain analysis is necessary to understand the requirements to assure this capability. Once achieved, how would it be resourced and who would be the command authority? We need to declare publically the right to respond immediately and appropriately to any attacks.

When it comes to satellites and the International Space Station (ISS), the importance of cyber security may well trump the traditional military role. Protecting our assets in space is critical to our financial well-being, agricultural output, weather, and even finding our way across town. Having these assets compromised puts all of that, and more, at risk. There are increasingly overlapping systems in space (e.g., GPS, satellite phones, National Intelligence, Geospatial). The use of optical and radar imagery, which is available from air and space platforms, allows the United States to detect violations of treaties, international law, and standards of behavior. For example, without high-speed satellite communications, global positioning, navigation, and high-resolution imagery (among other capabilities), the U.S. military’s capability to respond quickly to crises would be seriously diminished and compromised. While there are various DoD-related organizations tasked with protecting these assets, the United States remains vulnerable. The rule of law and deterrence changes the behavior of adversaries, builds alliances, and establishes codes of conduct for space. The United States needs to work through issues of data sharing and its current classified system that hold it back from joining such alliances.

One cannot consider space without cyber space. As discussed, we face many challenges in space, one of which is the consequences of being hacked. The space domain is a warfighting domain. Space has become a contested environment and everyone wants be a part of it. Research at the university level has its place, but what once might have been federally funded, may today be commercially funded, raising the question, “Who controls the information?” More countries and companies are sending satellites and space assets into orbit. The broader
the engagement, the greater the susceptibility to attack. Developing nations are pushing to be players in space, and demanding to be taken seriously. There are also non-state actors, political and religious conflicts, and electronic warfare with increased threats to the U.S. and its allies. Now our adversaries are developing ways to gain access to space, and more importantly, access to U.S. capabilities. The standardization and proliferation of small, low-cost satellites allow ease of entry for any entity.

Space used to be the sanctuary of the United States and Russia. Today, it is all about agreements and space situational awareness, providing warnings on collision opportunities to forty plus countries. We are at war in cyber space. We have to educate our citizens and the world about what this means. We need to continuously analyze these threats and capabilities. In the hands of an adversary, these capabilities that we are trying to protect could be core threats to U.S. security. Does cyber security trump the military role? Groups typically look within their own entity to find solutions, and do not think ‘outside the box’. One blind spot is focusing on navigation and positioning along with the idea that some forms of commercial technologies are more important than others. Privacy concerns are an ongoing consideration in the discussion.

Space situational awareness is not easy. We do not want everyone to know what is out there. We must accept the premise that our space assets will be attacked. We must maintain reliability and we must take risks, whether acting as a government agency or in the public/private partnership.

Maritime Domain Awareness (MDA) is all about space access and capability. The U.S. Navy (USN) has the primary responsibility for MDA, which dictate warnings and threats. The U.S. Navy has to rely on various national technological means, including assets in space, to maintain adequate MDA to support national security. We have greater threats and shorter response times. To win a war affordably in a market-based democracy, persistent intelligence, surveillance, and reconnaissance (ISR) are invaluable. We do not coherently balance our ground assets with space. We need to correct this culturally, impose disrupters, and change the architecture of managing our ground and space assets. The United States has a huge variety of organizational entities, unique systems, ownership, and proprietary information, all of which contribute to creating obstacles. The concept of embracing open-systems and open-source architecture brings with it increased security concerns and higher operating costs, along with the demand for more information and reconnaissance, not necessarily for maritime purposes.

Other countries want what the United States has; that has been true for a long time. Defending our assets in space is probably not achievable without warning systems or defense systems on our satellites (primarily due to cost). While we are increasingly dependent on space, we have not taken the measures to defend our systems. Would we, the United States, go to war over a satellite, regardless of its importance? Considering our space industrial policy and partners, the approach we take could have disastrous consequences.

Would the U.S. Air Force (USAF) want to divest as the executive agents of space? Probably not, although, at the same time they do not want to fund it. The focus on big central threats skews the definition of national security. Perhaps, rather than focusing so much on what China is doing, we need to focus on what we want to do, and attract others to our way. We need offensive options and should be shaping what other countries are doing. We must not allow International Traffic in Arms Regulations (ITAR) and classification systems to get in the way. They serve a purpose but should not serve as a barrier in our own interests.
VIII. Space Warfare

What are the implications for the USN—space and maritime domain? Is space a disruptive technology? Is lower orbit a disruptive technology or an extension? Life before and after a disruptive technology is fundamentally different. We are politically challenged in space and it is difficult to survive political changes. It would appear that the weaponization of space is inevitable, whether it is an offensive or defensive strategy. It is inevitable because no signature technology has ever stayed off of the battlefield, and space will become a battlefield. Directed energy is only one example of a technology that could reshape the battlefield and affect areas critical to national security. We need a direction that we can work toward together, otherwise everyone will have their own agenda. New ideas and industry make a difference. The Higgins boats in WWII are one such example. What will be the model in space? Everything we need already is there, passing through various arrangements—cyber, directed energy, rail guns on ships. The integration of cyber and space are critical to the warfighter. The way-ahead is not clear, yet people are unwilling to talk publically about it. We need to continue this dialog, for there are many unanswered questions, and much to discuss.
The recommendations of the panelists have their roots in the consensus Findings, but are also informed and influenced by the broader discussions and the body of unanswered questions posed throughout those discussions. Following is a short list of the consensus recommendations from the panelists.

- As to conflict in the space domain, the United States should start with temporary or reversible actions that can be demonstrated incrementally, much as we do during traditional military exercises and activities with our partners.

- The United States government should incentivize and entice rates of procurement and production to stimulate commercial industry to develop the necessary space-based capabilities.

- The United States should educate its citizens—and the rest of the world—on the implications of the ongoing war in cyber space.

- The United States should continue to focus on the counter space capabilities of Russia and China and as the leaders in space, prioritize what they want to do in space and then attract others to our way.

- The United States Government should create continuous, viable, acquisition policies across administrations.
The Center for the Study of Democracy was founded as a joint initiative of St. Mary’s College of Maryland and its partner institution, Historic St. Mary’s City, the site of Maryland’s first capital. The purpose of the Center is to explore contemporary and historical issues associated with democracy and liberty in national and international contexts. The Center provides a forum for presentations by government officials, journalists, and scholars; publishes scholarly writings on subjects of civil governance; encourages and supports public participation in political processes; and engages undergraduate students in study and research on related subjects.

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