10th Annual Strategic Multi-Layer Assessment (SMA) Conference

Jointly held with DHS, NCTC, DNI/NIC

From Control to Influence? A View of—and Vision for—the Future

Joint Base Andrews
25-26 April 2017

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This report represents the views and opinions of the conference participants. The report does not represent official USG policy or position.

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Executive Summary

Conference Background

The Strategic Multi-Layer Assessment (SMA) office hosted the 10th Annual SMA Conference on 25-26 April 2017 at Joint Base Andrews. This year's conference, formally titled *"From Control to Influence? A View of—and Vision for—the Future,"* brought together a multidisciplinary group of participants to consider how the US and its allies can more effectively counter the influence that recently re-emerging, capable states (such as China and Russia) and non-state actors (such as ISIS) exert on their neighbors and/or third parties through multiple elements of power.

The rise of Anti-Access Area Denial capabilities and the economic ascendance of China lead some to argue that we are moving toward becoming a more pluralized, multipolar world in which military and economic sources of power are widely distributed. Technologies (e.g., the Internet and rapid means of mass migration) are making nation states increasingly more porous, and a resurgence of nationalism and other forms of ethnic or religious identity politics has solidified some states and weakened others. The continuance of these factors may change the way that the US, its allies, and its adversaries consider and prioritize influence, both within the state and across interstate borders. This conference examined these trends, and explored possible implications for how such factors may necessitate an explicit focus upon "influence" rather than "control" and how influence could exert effects on national, regional, and global levels over the next 30 years.

Conference Overview

Many of the conference's panels touched on the human dimension of the challenges and opportunities the United States Government (USG) faces in the 21st century. The human element is a new aspect of competition and conflict that is not in the physical realm where the military typically feels most comfortable, but it is an environment that the military (and, more appropriately, the whole of government and whole of nation) must become more comfortable with.

Operating in this new world requires forms of mental agility that cannot be ordered on Amazon or developed in a military lab; it must be developed and nurtured. Societies must become more resilient—to attacks, to fake news, to unreasonable fears, and to reasonable fears as well. Creativity and surprise will become more important elements of US strategy than simply overwhelming military force. We must also do a better job of crafting and explaining our vision for the future international system, as this is another essential element of successful US strategy.

People will matter more in this new world, which means a successful US strategy must integrate not only whole of government, but whole of society to include industry, community groups, etc. Conflict is no longer solely in the military domain. Partly because of this, unclassified information will increasingly dominate intelligence analysis.

Warfare has always reflected new developments in society. Given the empowerment of individuals fueled by the information revolution, this has several implications for how the USG understands and interacts with populations (not just leaders). First, physical might is not going to always achieve strategic aims. We must use a soft power/influence/information strategy. Second, perceptions matter. We have a hard time accepting or acknowledging the validity of others' perceptions, especially if we disagree with them. This hampers our effectiveness in communicating our strategy, influencing others' behaviors, and

responding to threats. Third, Target Audience Analysis (TAA) should not just be a Military Information Support Operations (MISO) process. Actions influence just as much, or even more, than messages do. Fourth, people are not persuaded by facts and logic. Neuroscience research show us that humans make decisions based on emotions first, and logic later.

As the conference shifted from defining new challenges brought by the changing environment, its focus turned to trying to understand how the Commands are dealing with these developments. The changing environment theme is not new—it has been a focus of SMA conferences for the last 10 years. But when we ask ourselves what exactly is so alarming about change, it is not only that the world is changing, but that parts of the US paradigm or strategy no longer work. The USG can no longer prevail by sheer application of overwhelming force. However, the US defense paradigm has not properly evolved or adapted to the changing environment. Conference participants suggested that the USG needs a new set of rules that are more adaptive to new and evolving environments. It is difficult for a bureaucracy to change, so this challenge should not be underestimated.

Ultimately, paradigms matter. The way we perceive and frame a challenge conditions and/or limits our responses. We clearly have blind spots. For example, the USG tends to apply the kinetic metaphor to influence operations. However, we cannot "win" in the information space by applying the equivalent of overwhelming force. Instead, we must understand the motivation and intentions of others, understand the environment in which they live, and—most importantly—understand ourselves.

Conference Introduction (Mr. Marty Drake, USCENTCOM)

Mr. Marty Drake welcomed participants on behalf of the Office of the Secretary of Defense (OSD), Joint Staff (JS), Department of Homeland Security (DHS), National Counterterrorism Center (NCTC), and Director of National Intelligence (DNI) and National Intelligence Council (NIC) to the 10th Annual Strategic Multi-Layer Assessment (SMA) Conference.

Mr. Drake emphasized that over the past 10 years, the SMA team has provided significant support to the Combatant Commands in addressing core COCOM problems and interests. According to Mr. Drake, one of the most valuable aspects of SMA is that it brings together an array of people and perspectives from across academia, think tanks, and government, which generates a unique expertise that is of significant utility to the Combatant Commands. Mr. Drake stressed that the Combatant Commands are grateful for all of the support that the SMA team has provided over the past decade.

Opening Sessions

Maj Gen Charles Moore (JS/J39)

Maj Gen Charles Moore emphasized the invaluable role that the SMA team plays in providing planning support to Commands with complex operational imperatives requiring multi-agency, multi-disciplinary solutions that are not within core Service/Agency competency. SMA solutions and participants are sought across USG and beyond, and SMA is accepted and synchronized by Joint Staff/J-39 DDGO and executed by ASD(R&E)/EC&P/RRTO.

Maj Gen Moore presented the theme of this year's SMA Conference: "From Control to Influence? A View of—and Vision for—the Future." More specifically, the conference was designed to examine how the US and its allies can counter the influence that recently re-emerging, capable states such as China and Russia, and non-state actors, such as ISIS, exert on their neighbors and/or third parties through multiple elements of power. The rise of anti-access area denial capabilities and the economic ascendance of China lead some to argue that we are moving toward becoming a more pluralized, multipolar world in which military and economic sources of power are widely distributed. Technologies (e.g., the Internet and rapid means of mass migration) are making nation states increasingly more porous, and a resurgence of nationalism and other forms of ethnic or religious identity politics has solidified some states and weakened others. The continuance of these factors may change the way that the US, its allies, and its adversaries consider and prioritize influence, both within the state and across interstate borders. This conference aimed to examine these trends, and explore possible implications for how such factors may necessitate an explicit focus upon "influence" rather than "control" and how influence could exert effects on national, regional, and global levels over the next 30 years.

Dr. Charles Perkins (Principal Deputy, Deputy Assistant Secretary of Defense, Emerging Capability & Prototyping)

Dr. Charles Perkins began with a story of how he met Dr. Hriar Cabayan (JS/J39/SMA) about 20 years ago while working with the J39. Drs. Perkins and Cabayan were given a project to tag the heroin coming out of Afghanistan so that the US could find it once it made its way out into the international system. It seemed that the obvious solution to this problem was to tag the heroin with some radioactive tracer; however, eventually it was realized that this could not be done because the FDA required that the

heroin be tagged with something safe. Eventually, a solution to this problem was found by using a safer material for tagging.

When the Afghan war started, it quickly became evident that we did not understand the social aspects of the conflict, and there was a clear need for a rich contextual understanding. As such, Drs. Perkins and Cabayan began a "rich contextual understanding" effort to help provide understanding of the cultural and social issues driving the conflict in Afghanistan and Iraq. It was not long before they realized the need to engage with social scientists. This rich contextual understanding effort is what began SMA as we know it.

Today, in addition to the focus on social interactions, we have also seen the impact of social media. Understanding social media, like social interactions, is critical to the counter-ISIS fight, critical to understanding gray zone conflicts, critical to understanding how to create stability in Iraq and the region, and critical to understanding how we bring in whole of government solutions to some of our problems.

The growing interest in SMA has been clear. Over the past 10 years, SMA has grown to comprise about 3,000 individuals, 95 US universities, 14 US defense groups, and 8 foreign military groups. There are at least 30 SMA projects that are either ongoing or fully completed. This Annual SMA Conference allows the SMA team to extend its network and gain more expertise and understanding into how to best make use of social sciences and social media to do smart, innovative things.

NIC's 2017 Global Trends Report (Mr. Dan Flynn, DNI/NIC)

The National Intelligence Council (NIC) produced the 6th edition of its Global Trends Report in January 2017. The Global Trends Report provides a framework for thinking about possible futures and their implications. The free, unclassified report is published every 4 years to inform incoming Administrations.

The 2017 Global Trends Report focused on the paradox of progress. Power is evolving in the world today. Evolving power makes governing harder and raises the risk of instability and conflict, which means that there is now a premium on policy choices and resilience. Ultimately, international order is in the balance.

The paradox is that the world has gotten better in many ways for many people in many places—people are living longer, healthcare is getting better, there is more access to technology, less people are living in extreme poverty, etc.—yet the world feels more dangerous than ever. Despite the positive global trends, there seems to be more uncertainty about where the world is headed. This is the paradox of progress.

The positive global trends have not been spread equally. For example, when it comes to the modern global economy, there have been big winners and big losers. The big winners have been 1) the middle classes in China, India, and other emerging economies and 2) the very rich. The big losers have been 1) the very poor, in Africa and elsewhere, and 2) citizens of the OECD countries, plus much of the population of the former communist countries. The key question going forward will be how these big winners and big losers handle these types of shifts.

These shifts in global winners and losers are making governing more difficult. Four key trends stand out in explaining why governing and cooperation will become more difficult going forward.

- An increasing number, complexity, and speed of issues.
- An increasing number of states that can exert geopolitical influence.
- An empowering of individuals and small groups to act like states, altering once established patterns of both governance and conflict.
- A changing information environment that produces countless perceived realities, undermining cooperation and democracy.

In such a world, power is not what it used to be. Forging new patterns of cooperation becomes essential but also more difficult. Leadership and the coordination of individual, group, and state choices is more important than ever.

In the near term, there is a rising risk of instability and conflict as global trends converge. Within countries, problems are likely to arise because of economic, demographic, technological, and societal factors. Between countries, problems are likely to arise because of increasing geopolitical competition and the changing character of warfare. Globally, problems are likely to arise because of terrorism, environmental factors, and health factors.

Key Trend: Changing Character of Conflict

The character of future conflict will be diffuse, diverse, and disruptive.

- **Diffuse**: Greater accessibility to instruments of war will empower states, motivated individuals, and non-state groups to engage in conflict. With the growing privatization of violence, greater firepower is wielded by smaller groups. The high-tech lone-wolf terrorist is a future threat. Private military corporations, mercenaries, and even companies may be involved in future conflict.
- **Diverse**: The means of war will vary from nuclear and advanced conventional weapons to cyber and other nonmilitary capabilities.
- **Disruptive**: Increasing emphasis in conflicts will be on disrupting critical infrastructure, societal cohesion, government functions, and leadership decision-making (i.e., paralyze operations).

The changing character of conflict is highlighted by four notable strategic trends in warfare: the distinctions between peacetime and wartime will continue to blur; non-state groups will become more capable of greater disruption; there will be an increase in stand-off and remote attacks; and new concerns about nuclear weapons and other WMDs will arise.

The International Order in the Balance

The post-Cold War, unipolar moment has passed, and the post-1945 rules-based international order may be fading too. As power diffuses globally, aspiring powers and non-state actors are seeking to adjust the rules and norms to favor their interests. Waning of existing security commitments, reinterpretation of norms, and the erosion of international institutions create the conditions for “a la carte” internationalism and greater global disorder.

Long-Term Scenarios

To explore long-term possibilities, the Global Trends Report presented three possible scenarios for the long-term future: an islands scenario, an orbits scenario, and a communities scenario. These paths depend a lot on what the level or prime organizing units where order might be fostered will be.

The **islands pathway** investigates how long periods of slow or no economic growth might challenge both traditional models of economic prosperity and the presumption that globalization will continue to expand. In this scenario, governments face challenges in meeting societies' demands for both economic and physical security and managing between populism and inclusion as popular pushback to globalization increases, emerging technologies transform work and trade, and inequality and political instability grows. Such developments lead some states to turn inward, reducing support for multilateral cooperation and encouraging protectionist policies that further reduce global trade. Over the long-term, the most successful states are those that find ways to leverage new sources of economic growth and productivity by exploiting local manufacturing and technology advances, such as biotechnologies, robotics, and artificial intelligence.

The **orbits pathway** explores a future of tensions created by competing major powers, particularly China and Russia, seeking their own regional spheres of influence while attempting to maintain stability at home. In this future, rising nationalism, changing conflict patterns, emerging disruptive technologies, and decreasing global cooperation combine to increase the risk of interstate conflict and threaten the rules-based international order. The scenario highlights the importance of reassuring allies and preventing gray zone conflicts from undermining international norms and from escalating into a war between major powers. The scenario portrays how the deployment of new capabilities, such as hypersonic weapons, autonomous systems, counter-space weapons, and cyber operations, might introduce new—and not well understood—escalation dynamics, increasing the risk of miscalculation. Growing geopolitical tensions that produce destabilizing events and increase the dangers for all involved might provide incentive for rivals to find common ground if the risks of miscalculation and escalation are managed.

The **communities pathway** examines how the enormity of future economic and governance challenges might test the capacity of national governments to cope, opening the space for local governments and private actors in governance. Information technology is the key enabler, and in this future, companies, advocacy groups, charities, and local governments prove nimbler than national governments in delivering services to sway populations in support of their agendas. Governments that adopt policies and processes for encouraging public-private partnerships with a wide-range of actors—city leaders, non-governmental organizations, and civil societies—will be more resilient in coping with emerging challenges. Liberal democracies with experience in encouraging decentralized governance and private-public partnerships will be best suited to operate in this world. Other governments, however, might not fare as well, leading to a variety of outcomes, including increased authoritarianism and state failure.

Opportunities

Going forward, resilience will be crucial. In the emerging global landscape, rife with surprise and discontinuity, the states and organizations most able to exploit such opportunities will be those that are resilient, enabling them to adapt to changing conditions, persevere in the face of unexpected adversity, and take actions to recover quickly. They will invest in infrastructure, knowledge, and relationships that allow them to manage shock—whether economic, environmental, societal, or cyber. Similarly, the most resilient societies will likely be those that unleash and embrace the full potential of all individuals—whether women and minorities or those battered by recent economic and technological trends.

Discussion

Can you talk about the report's methodology?

Mr. Flynn noted that this is the 6th edition of the Global Trends Report, and for each edition, the NIC begins with a clean sheet of paper. The NIC puts significant effort into challenging the report's assumptions, and part of this effort includes reaching out to subject matter experts to challenge assumptions. The NIC also utilizes simulations to support the development of the report's trends and scenarios. The Global Trends Report is also peer reviewed within the National Intelligence Council (NIC).

What kind of data does the report use?

Mr. Flynn stated that the report's data came from both secondary sources and people on the ground. The report incorporates on the ground insights from people from all different walks of life, which helps to ensure that the study has a cross-cutting societal representation.

Does the report address shifts in the environment and shifts in human use of resources?

Mr. Flynn noted that the report does address environmental shifts more generally. For example, shifts in the environment and in temperatures will put increased stress on areas throughout the world. Additionally, shifts in human usage of fossil fuels will certainly put pressure on economies that are largely dependent on fossil fuels and not diversified, which again shows the importance of resilience.

Are there findings from the Global Trends Reports from 4 or 8 years ago that are no longer relevant in this year's report?

Mr. Flynn stated that one big change in this year's report is how we think about power. Traditional metrics of power (things like GDP, military spending, etc.) no longer seem to really explain what is going on in the world. An enemy like ISIS is able to really change things, and they are not a state actor at all. It is clear that there are other elements of power that we need to better understand. The informational aspect is important and was missing in prior versions of the report. The other new, notable aspect is resilience. Ultimately, though, the way we look at power has changed over the past 4 to 8 years.

Does the report look at population density and megacities?

Mr. Flynn noted that the report looks into factors like urbanization and numbers of people living on coastlines.

Does the report talk about relationships and allegiances to communities, which are notably evolving and strengthening?

Mr. Flynn stated that as communities strengthen, so do allegiances to that community. Strengthening allegiance to the community might mean weakening allegiance to the state. We have already seen this happening in many places where communities are looking to city leaders to help solve the community problems. We have also seen this on the adversarial side with groups like ISIS but also with Russia and its allegiances to Russian speakers in other countries.

Does the report make any policy recommendations?

Mr. Flynn noted that the report is a US intelligence product so it does not explicitly make any policy recommendations. The closest the report comes to making a recommendation is with its emphasis on resilience. The Global Trends Report has typically been used by incoming Administrations as the foundation for strategy documents, and it is the hope that this new Administration will use the report in a similar fashion.

Panel 1: Rethinking Control and Influence in the Age of Complex Geopolitical Systems

Panel members:

- COL (ret) Chuck Eassa (SCO), moderator
- Dr. Val Sitterle (Georgia Tech Research Institute)
- Dr. Nick Wright (University of Birmingham)
- Dr. Bob Toguchi (USASOC)

COL (ret) Chuck Eassa (SCO)

COL (ret) Chuck Eassa emphasized that what it means to control and influence has changed as time has progressed. When we thought about control and influence in 1945, we focused on US military power (i.e., personnel and weapons). When we thought about control and influence in 1986, we focused on the number of soldiers in the NATO consortium, levels of dedication to nation states with clear ideas about defense of territory, and capability and capacity levels with things like technology, space, and communication. When we think about control and influence today, nation state militaries no longer lead the research—corporations like Google, for example, are now ahead in building and utilizing technologies, and NGOs are operating throughout the world with their own spheres of influence. Ultimately, power has been diffusing—we are now competing for influence. The problem we face, though, is that our planners still operate using war frames and criteria for declaring war, while our opponents are working in the gray zone.

Dr. Val Sitterle (Georgia Tech Research Institute)

Dr. Val Sitterle wondered what it means to have a capability. First, since we do not get to decide what the future operating environments will be or look like, we must understand control and influence as both opposing and interacting state spaces. In today's age, control is comprised of three primary factors: the ability to compel, the ability to coerce, and the ability to influence. In the military sense, control means being able to regulate forces and battlefield conditions to meet the commander's intent; while in the tech sense, control tends more toward influence and requires interaction with media, information, and ideas to impact populations across amorphous spaces and multidimensional environments.

Given that we can no longer control the intersection of the operational and information spaces, what should we do? Many suggest proactive approaches to influence, pushing ideas and even "inoculating" against ones we believe are harmful. Understanding what we seek to influence based on what we want to achieve will define our personal Overton Window and what we are willing to do to achieve it. This ties into the materiel space by understanding what a Commander needs to know. Materiel solutions alone

cannot address this space completely. For example, success must integrate complex interactions across kinetic and non-kinetic, military and civilian, state and non-state, economics and ideology, etc.

We need understanding that goes beyond our traditional linear and kinetic lenses. Sometimes the technological systems themselves—how they are perceived and used operationally—can also significantly shape or at least change the local environment, adding their own contribution to influence dynamics. Notions of non-control such as those in strategically engineered autonomy of materiel systems help us see how impactful influence can be and, critically, how unbounded its analysis can be. Ultimately, what it means to have a capability is changing. We must find new approaches to evaluate systems and the impact of actions as we can no longer brute force either capability development or its analysis.

Dr. Nick Wright (University of Birmingham)

Dr. Nick Wright wondered what is influence? Influence is affecting the behaviors, attitudes, or perceptions of others (e.g., deterrence, escalation management). To effectively influence, we need to be able to anticipate how a given audience is going to decide.

Thus, what we know about decision-making is critical to understanding influence. Three key aspects of decision-making stand out in particular. First, we have learned a lot about how humans make decisions—not just mathematical models about how people should make decisions, but how they actually do make decisions. For example, we have learned that people actually typically only think one or two steps ahead, not all the way through. Second, we should think about the types of things that people do poorly. People are not very good at thinking outside-in (e.g., what does the audience want, and how do they make decisions?). If we want to influence, we need to listen to those we are trying to influence. Third, we need to get smarter about how we use evidence. We have learned a lot about human motivation, so we should try to progress in how we present evidence so that we are properly capitalizing on that knowledge.

Dr. Bob Toguchi (USASOC)

Dr. Bob Toguchi remarked that ongoing advances in society structure the character of war (e.g., democratization prior to the Napoleonic Wars, the first industrial revolution prior to WWI, mechanization prior to World War II, the nuclear age, and the era of digital technologies). As we move forward, warfare is likely to reflect what is going on in society. Given this, what is going on with the accelerating pace of change in the information age, in society today, that is changing the character of warfare?

First, there is a ubiquity of information. We are drowning in data—not only data created by humans, but also data created by machines. It is estimated that we are only analyzing about .5% of all available data. Going forward, everyone is going to have data, which means that there will likely be an acceleration in our pace of change. This will create significant changes in capabilities for individuals, non-state actors, and near peer competitors—information will create power.

Second, our adversaries are adapting—they are learning our playbook and looking for other ways to compete. The space between peace and war, in particular, is a new battle area that our adversaries are targeting for vulnerabilities. We must realize that we cannot expect to play the same wargames of the past and get the same results—our adversaries are adapting, and so are our conflicts.

Third, we are masters of maneuvering in the physical space, but we lag far behind when it comes to the cognitive space. We do not even have doctrine for the cognitive space. At present, our adversaries are out-maneuvering us in the cognitive space. We need to be more knowledgeable about how others are maneuvering in the cognitive space and about how we can improve our capacity in this arena. This effort needs to start from the ground up—beginning with our education system, where cognitive maneuver is rarely even taught. Ultimately, we are very good when it comes to physical objectives but very bad when it comes to cognitive objectives, and this needs to change.

Discussion

How do you inoculate populations against false news?

Dr. Toguchi responded that we must condition populations to expect false news and then also consistently present what actually happened. There is also a need for alternative means of getting news and verifying the facts on the ground. One tactic might be to start by showing people that what they have seen in the past, on a repetitive basis, from a particular adversary, is actually false news.

Are you seeing an evolution in how we measure success and whether or not we are making populations more resilient?

Dr. Toguchi noted that there has been progress in visualizing the cognitive space. Things like sentiment analysis and artificial intelligence have contributed to this progress.

Dr. Wright added that the main blockage is not that complex—ultimately, we do not do enough evaluation.

Cognitive maneuver incorporates the term "warfare" very nebulously—one of the struggles seems to be that the military is designed to kill and break things, so when does this become the responsibility of the State Department and/or others?

COL (ret) Eassa noted that the military is designed to meet national security objectives, not just to kill and break things.

Dr. Toguchi stated that operating in the cognitive space should be a team effort. To operate in this space effectively, we must work with the Interagency community, share information widely, and support the involvement of all interested agencies.

COL (ret) Eassa added that defense acquisition is focused on phase 3. Unfortunately, the ability to shift some of that to the left—thus empowering the COCOMs to focus more on understanding their AORs—has not been done yet.

How do we know what the decision strategies and styles of our adversaries are?

Dr. Wright noted that understanding cross-cultural differences is very important. For example, things like caring about being treated unfairly, trust, status, etc. are typically important to everyone, but some cultures might express them or value them slightly differently. We need to identify core elements of decision-making and what we think will cross cultures, so that we can use those insights as a basis.

What can the technology realm do with respect to advancing our understanding and capabilities in the influence arena?

Dr. Toguchi noted that the USASOC G9 Directorate has worked with a few simulation tools to visualize success in the cognitive space. Tools such as Athena and Senturion have been helpful in this sense to understand the cognitive impact of selected courses of action.

Panel 2: From Failure to Success: Information Power and Paradigmatic Shifts in Strategy and Operational Art

Panel members:

- LTC Scott Thomson (OSD-P), moderator
- Dr. Emile Simpson (Harvard)
- Ms. Priscilla Guthrie (IDA)
- Dr. Ian McCulloh (Johns Hopkins University Applied Physics Laboratory)
- Dr. Spencer Meredith (NDU)
- Mr. James Farwell (Kings College London)
- Mr. Michael Lewis (Marine Corps Command and Staff College)

Dr. Emile Simpson (Harvard)

Dr. Emile Simpson began by noting the conceptual problem that the panel would address: when adversaries operate below a certain threshold, it makes the concept of victory irrelevant; thus, what are the instruments in the commanders' toolkits? There are two scenarios in which an adversary frustrates the use of military force to secure victory: scenario 1) when the adversary limits operations to below a threshold, and scenario 2) when the adversary is a dispersed network.

Scenario 1 is exemplified by Russia in Ukraine. A state operates through proxies to use violence in a limited way (i.e., gunboat diplomacy, raids against rebels in another state, etc.). These "measurers short of war" have fallen a bit out of fashion. But as recently as George Kennan's address of the Soviet Union, these ideas are still animating discussion. The goal of limited violence is to prevent escalation to achieve a small battlefield objective. Limited violence is also information aiming to send a political message, or in other ways, influence.

In conventional war, the idea is that victory on the battlefield ultimately translates into political influence from the victory's policy goals. Here the primary means of sharing information is performance on the battlefield. In measures short of war, the political message from violence is used in such a way that the battlefield is bypassed and a direct message to the targets is conveyed—economic sanctions, cyber attacks, routine political action, etc. are examples of this. The more one moves toward limited conflict short of war, the more violence is about information and informational signals.

The more one bypasses the battlefield, the less victory on the battlefield should create political outcomes. You cannot have victory in war if you are not in a war. The political effects of forces in the gray zone is directly woven into the fabric of routine political operations. Management of violence,

rather than victory, is the paradigm. We have made a fetish of the idea of decisive victory, even when the conditions for victory are not there.

In scenario 2, we are reminded of the war against terrorist groups. It is inconceivable to explain the rise of ISIL without the information revolutions. Unlike measures short of war, this model of conflict does not fit the Clausewitz model of war. That model of war presumes a hierarchy or central organization of the adversary. This hierarchal arrangement allows for violence to create political outcomes.

In the loose confederation that are terrorist groups, actions against a base will not defeat the network. The network can also play on existing grievances to exploit itself.

There are parallels between the use of force against a network adversary and in measures short of war. One, there is no decisive victory. Two, the manipulation of information to influence its goals is key to successful management.

There are differences too. Membership in a network is subjective; increasing the importance of information operations to slow recruitment. Through audience analysis, one can disaggregate the supportive populations of an insurgency. Local political intelligence becomes very important. For example, the 2013 intervention in Mali allowed French forces to target al Qaeda without alienating the Tuaregs.

LTC(P) Scott Thomson (OSD-P)

LTC(P) Scott Thomson highlighted the importance of properly integrating information into planning practices. Moreover, the challenge we have with information operations and persuasion is that it is intangible. So, how do we help the institution adopt these ideas as practice? LTC(P) Thomson noted that for 20 years, as a maneuver officer, he had thought that success was accomplished at the end of a gun. Only late in his career, with a transition to being a PSYOP officer, did he realize this thinking was patently false. We tend to make a lot of assumptions about human behavior and assume that if we use enough force, we will get what we want; however, the problem is inherently informational, despite our training mostly being about victory in battle.

Ms. Priscilla Guthrie (IDA)

Ms. Priscilla Guthrie highlighted frustration at our lack of progress in dealing with information and information technology. We are trapped by our taxonomy and the words we use—particularly across the technical, policy/legal, and operational communities. Why are we allowing vocabulary to separate our communities and to limit our progress and effectiveness?

Information warfare has been around for a long time. Social media has been used to foment rebellion and people are now harnessing it to govern. Unless we figure out how we want to use technology and leverage information, we are likely to find ourselves at a "technological" disadvantage. And, while machines working with humans can often do better than a human working alone, the challenge is not just pairing humans with computers. We need to harness computers and information as integral parts of the C2 structure. In doing so, we will be able improve mission effectiveness by: 1) providing the force with information-rich (e.g., data-finds-the-data) situational awareness and access to high-quality, timely, multi-domain options (some of which may be nominated by machines) and 2) enabling delivery with the directness and scale of our hierarchical military force and the agility and speed of small cells.

Dr. Ian McCulloh (Johns Hopkins University Applied Physics Laboratory)

Dr. Ian McCulloh wondered how many planners understand models of behavioral change. It is important that we have senior leaders that understand how to link behavioral models to our polices to achieve outcome. We have seen al Qaeda fight informational campaigns with supporting lethal fires. We have seen the Russian military declare that information operations are their main effort. While we have experienced similar success in the past with programs like the Strategic Programs Operations Center (SPOC) in Iraq; we are no longer operating effectively in this arena. Therefore, going forward, it would benefit us immensely to 1) capture and communicate the lesson of SPOC in Iraq, 2) improve our processes for collecting and sharing data, and 3) further incorporate these lessons and processes into the Commander's planning space.

Dr. Spencer Meredith (NDU)

Dr. Spencer Meredith emphasized the importance of communicating measures for things. We talk about narratives, attitudes, behaviors, and cognition, but how are we measuring these things? Likewise, how do we measure the mobilization potential of society, whether our own, a neutral, or an adversary, and how do we find the rightness of engagement?

Dr. Meredith noted that we are now beginning to talk about learning the same types of approaches our adversaries currently use. When we think about phase 1 and strategic messaging, that means we will need our hand in a lot of pies, which will be expensive. We need to better understand how all of these things mix.

Dr. Meredith concluded that the most successful partners are those that have buy-in. What if we change our paradigm from the US as leader, to the US as a client-state model? We do partner capacity very well, so this kind of paradigm shift might present a model that offers us a beacon of opportunity going forward.

Mr. James Farwell (Kings College London)

Mr. Farwell emphasized that neither USG nor the military has a coherent doctrine of information warfare and that the military tended to give information warfare short shrift. That was dangerous in a world in which engagements and conflicts took place among civilians rather than on a set battlefield. The era of Jena or Iraq 2003 is, with inevitable exceptions, over. Every block in a city, every village, every television set or cell phone in a global landscape could constitute a dimension of what has become a global battlespace.

Sometimes kinetic action may prove most critical to achieving a desired end-state. At other times, information warfare and communication strategy might matter more. Either way, successful outcomes required integrating kinetic and communication strategy, operations, and tactics.

Any successful strategy requires first defining the desired end-state. In short, what constitutes winning? From completion of that task flow the developing and implementation of strategy, plans, operations, tactics, and metrics.

Communication strategy and information warfare is about influencing behavior. Behavior is motivated by emotion and values. The Clausewitz trinity of will, chance, and passion for a cause matters as centrally to information warfare as to kinetic action. Information strategy needs to understand what target audiences hear and feel. Too often USG strategy seems to flow from the premise that the more critical question is making certain that target audiences hear what the US wants to say. That's secondary. Success requires understanding whether or how to ensure that target audiences are interested in what we are doing or saying. They need to understand what we are doing, how we are doing something, why we are doing it, and how it affects their interests. We should seek to convert opponents or for the unconvertible, neutralize them.

How populations perceive US actions is critical to success. It affects our ability to infuse our actions with *legitimacy* and to seize and maintain the moral high ground. Consider the first battle of Fallujah in 2004: despite kinetic success by Marines on the ground, that battle was lost after insurgents won the information war, persuading the Coalition Provisional Authority and ultimately President George W. Bush that blowback from Iraqis and among world opinion required halting offensive operations. The November battle was won because Commanders successfully integrated kinetic and communication strategy. Information warfare made a difference in that outcome, although one notes that the battle was a success only at the tactical level. At the broader strategic level, the bloodshed and violence, fueled by insurgent propaganda now spearheaded by an emerging Al Qaeda in Iraq, led to what became the most violent year in Iraq because the battle did not properly take into account vital strategic considerations that affected the emotions and attitudes of Iraqis.

The picture shifted only after Marines and the CIA successfully came to terms with Iraqi culture and the political dynamics of Sunni tribes in western Iraq—and information warfare notions proved critical to success in forging winning coalitions and turning the tide of battle against violent extremists like Al Qaeda.

Information warfare is vital as well in achieving a desired end-state because unless an enemy recognizes its defeat, it is not defeated. Iraq offers again a good example. Coalition forces toppled the Saddam government. But neither Saddam's allies nor other insurgents agreed that the Coalition had won. That led to a prolonged insurgency. The US military leadership belatedly recognized that you cannot kill your way to success. Warfare is, as Clausewitz properly observed, about achieving political objectives. Realization of that goal requires understanding information warfare, developing an actionable doctrine that does not yet exist for the US, although Russia and China are fast developing and resourcing the capability to fight information wars. Indeed, China's approach to victory eschews kinetic engagement in favor of information warfare. Sadly, the US lacks not only a doctrine or strong sensibility among the military that is, ironically, common in US political and corporate communication campaigns, for communication strategy. It lacks a mechanism to develop or implement one.

As one considers the types of conflicts and engagements that seem likely to define the threat environment looking over the horizon, the US ignores correction of this strategic deficiency at its own peril.

Mr. Michael Lewis (Marine Corps Command and Staff College)

Mr. Michael Lewis noted that more and more we are hearing things like: "your news is fake; my news is real." This type of conversation is driven by perceptions but also reflects underlying systems of sense-

making. Mr. Lewis argued that we are dying in a sea of metaphors and our discussions are not new—we continue to repeat things we have been talking about forever.

Problems arise from not believing that there are other perspectives, or narratives. Narratives are the way we make sense of the world and explain or predict the outcomes of our actions. This understanding shapes the way we interpret data and make theories of action, victory, and roles and responsibilities. There are challenges to narratives that lead to moral conflict within the individual resulting in a form of cognitive dissonance that provides an opportunity for consideration of other perspectives. Notably, strategy is a narrative, but those narratives are constrained by the systems we use to develop plans and operations. We are teaching cognitive tools and critical thinking as part of our professional military education, but when confronted with a product-oriented planning process, problem-framing becomes problem-freezing. Consequently, when a problem emerges that challenges our assumptions and the validity of our plans, we revert to preconceived systems of understanding that are often at odds with empirical evidence. Our resilient narratives and the assumptions that serve as their foundation continue to drive our plans for action and theories of victory. Ultimately, we need to reflect on our own narrative of how we see the world and how the world sees us, understanding that these two narratives may often be in opposition and that the truth really is in the eye of the beholder.

Discussion

Some of you have mentioned looking at our allies to shape what we want to achieve. How much do you think there is leftover narrative from the Cold War about democracy that complicates a client-state strategy? People are not moved by facts and logic, they are moved by emotion. We are the commercial not the show. These facts have no appeal and prolong the discussion, creating exposure for the enemy.

Dr. McCulloh argued that it is not wise to group nation-states into single actor models when it comes to influencing their behavior. There is a general population and an elite population, which have different beliefs, knowledge, attitudes, etc.

Dr. Meredith added that when thinking about what binds these entities together, we can use something like "responsive governance" to move beyond "democracy" as a label. These labels can facilitate self-reflection.

Mr. Farwell highlighted his concern regarding formulas that are too broad. We should start with what we want to accomplish and then focus on the audiences that are effected by our actions. In today's world, there are multiple perspectives out there. Our government is not set up to deal with the vagaries of information warfare. The military does not think like a professional communications shop. Mr. Farwell recommended "persuasion and power" with respect to communications strategy and warfare doctrine.

LTC Thomson noted that one of the problems of target audience analysis is that it is an intel problem that occurs at a higher level.

Believing is seeing, not the other way around. Reality is constructed, but that construction occurs atop behavior. Do we have agreement on the quickest way to effect behavior to change beliefs?

Dr. McCulloh responded that this is one model of belief change. There are other models, like cognitive dissonance or shifting sentiment. We need to use the appropriate model. For example, we are able to

incorporate measures of social strain to see how ISIS was able to gain purchase in Iraq, which helped extract the strains that turned the Sunnis against ISIS.

Dr. Meredith added that the idea that the world is constructed is far from settled. There are parts of the world where revelation is the primary mechanism. Ultimately, there are fundamentally different ways of engaging with reality out there.

Mr. Farwell noted that values differ from culture to culture, and there is no tried and true method for doing that. There is no all-encompassing formula.

What are the psychological effects of humans interacting with computers? How does the military think about this interaction?

Ms. Guthrie wondered if we would know if they (the robots) are following reasonable rules. We have not gotten past that kind of question. There is great power in using information, but we need experimentation to figure out where the lines are.

Dr. McCulloh noted that volume, speed, digitization, and cost have changed; how we process information has not. Technological innovations in communications have caused increased information production in the past. The military has become less directive and prescriptive. We can give a Commander's intent to relatively autonomous units. However, we have not been able to communicate the Commander's intent in the information warfare space.

Panel 3: Gray Zone to Gray Matter…A Neurocognitive Revolution

Panel members:

- Dr. Nick Wright (University of Birmingham)
- Dr. Amy Kruse (Platypus Institute)
- Dr. William Casebeer (Lockheed Martin)
- Dr. Diane DiEullis (NDU)
- Dr. James Giordano (Georgetown University Medical Center)
- Dr. Jason Spitaletta (Johns Hopkins University Applied Physics Laboratory)

Dr. Nick Wright (University of Birmingham)

Dr. Nick Wright pointed to a number of advancements in neuroscience and a constellation of technologies surrounding it over past 20 years, including big data, influence tools, biological tools, and weapons. Furthermore, this constellation of technologies is now being connected through deep data; for example, Google has employed neuroscientists to actually look at brains and technology.

Dr. Amy Kruse (Platypus Institute)

Dr. Amy Kruse emphasized that there have been huge changes in neuroscience in the past 3 years, something of a neurocognitive revolution. There is a new focus on the fusion of techniques for looking into the brain and changing behavior, and the scale and scope is huge, now including big data techniques, stimulation techniques, DIY neurocognitive trials, and new and changing technologies.

This neurocognitive revolution impacts defense and security in four primary areas.

1. Optimization and repair: The new knowledge and technologies impact things like prosthetics repair, memory research, and the optimization of individuals, not just appendages or parts. This progress has been clearly visible in sports.
2. Influence: The commercial industry is delving into influence via neural marketing, but defense needs to catch up.
3. Integration with AI: The development of autonomous systems is an area of major interest, particularly when relating to defense and security concerns.
4. Disruption and Defense: We are increasingly learning about the defense of neurocognitive systems in order to disrupt cognitive functioning.

Unfortunately, challenges for defense still exist. The area is still underfunded, and we are underinvesting in neurocognitive research. Additionally, the market is disorganized. There is little penetration in the defense industry. Dr. William Casebeer (Lockheed Martin) is a good example of someone getting in and applying this in the defense area. The dual use nature of neuroscience research is also problematic. Applications can be used in multiple ways, including purposeful alternative applications.

Ultimately, neuroscience is of global and international interest to the extreme. The defense industry has failed to convert and get into the field, while industries outside of biotech, like Facebook and Elon Musk, are out there investing. The disorganized nature of the market is a hurdle for the defense industry, but it is clear that the neurocognitive revolution is at hand.

Dr. William Casebeer (Lockheed Martin)

Dr. William Casebeer noted that by putting humans and machines into a closed loop relationship, we get into the nature of reasoning in which machines address problem solving. Some notable examples of this human-autonomy interaction include:

- System for Accessing Complex Contextual Attention and Dynamic Engagement (SACCADE) is designed to improve individual performance by going from a normative model to one where the operator is actually placing their attention. SACCADE is using cognitive neuroscience and behavioral measures to see where the eyeball is on the screen and where in the brain is actually paying attention to where eyeball is at.
- A program named CAMP-TM is a variety of cognitive models baselining as a team by checking working memory, reaction times, and recall. Then, autonomously in the background, personal task adaptation to human teammates is broken down to boost overall team performance.
- A program named AHMP-SET is a set of system engineering tools for real time monitoring of the time it takes for humans to complete and characterize a task. This boosts team performance and dynamically recomposes human-machine teams, and it changes teams and machines on the fly to maximize performance.

There is danger in neglecting the autonomy of the socio-cognitive state. Humans and machines need to interact, and we need to treat humans and machines the same way (see DARPA explainable human intelligence). Beyond just theory of mind, we need to understand how teammates think and then we need to apply this understanding towards adversaries so we can better understand how to get things done.

We face several vulnerabilities. First, the importance of the training set cannot be understated—the data that is fed into the network is largely important—so we remain vulnerable to corrupted data. Second, there is work being done to build capacity to confuse autonomy (e.g., face recognition spoilers). Third, vulnerabilities exist in other methods of diffusing recognition through physical materials. Fourth, vulnerabilities exist via higher order cognition jamming (e.g., wearables that facial components and, therefore, mess with the facial recognition algorithm). Finally, deep learning exploration representations within deep learning networks could be vulnerable.

Ultimately, humans and autonomous machines will be increasingly integrated in the future. We cannot neglect this, so we must start taking a cognitive systems intelligence analysis approach to our problems.

Dr. Diane DiEuliis (NDU)

Dr. Diane DiEuliis remarked that over the past decade, we have begun to see the purposefully engineering of biology in both research realms and to make consumer and commercial products, the novel gene editing tool, CRISPR, has been responsible for enabling this revolution, and synthesizing DNA is becoming more routine. The ramifications of this have been dominating bioethical conversations. Genetic manipulation capabilities such as these are now becoming available to a much wider group of actors, including those who are not trained biologists.

The manipulation of agents for use as bioweapons is potentially possible given the advent of new biotechnology tools. In the neurobiology realm in particular, as we learn more about genotypes and phenotypes that govern the brain, it is conceivable that we can manipulate agents that work directly on the brain. This means that we could directly act on those genes that control proteins and cellular pathways that control aspects of human behavior. That is, bioweapons may be developed, not for "mass destruction" and lethality but to rather control individuals' behavior. Given this, it would not be outlandish to presume that our adversaries may be looking to create mass disruption via neurobiological agents.

The DoD has done human performance research for a long time—we have always been interested in optimizing warfighter performance, even with fairly simple methods like use of caffeine to keep pilots awake in the cockpit. Today, the Human Performance research portfolio has considerably advanced, and emerging biotechnology is a potential tool affect such things as mood, performance, providing greater concentration, less fatigue, etc. However, it is important to remember the dual use side of neuroscience in that our adversaries are looking for the same things to use against us—to degrade performance. So, while we may have ethical constraints against any genetic manipulation of warfighters, our adversaries may pursue such agents and we need to be prepared to defend against them.

Dr. James Giordano (Georgetown University Medical Center)

Dr. James Giordano noted that the Oxford Dictionary defines the term "weapon" in two ways: 1) as something designed or used for inflicting harm or damage and 2) as a means of contending against others. Dr. Giordano explained that neuroscience and technologies can be used as weapons in either or both of these ways. For example, brain science can be used to foster power, which can be variously leveraged: from economic tourism, to providing information and tools to affect engagements between agents and actors, to overt development of methods and instruments that can be employed in conflict and warfare. But, brain sciences can also be employed to disrupt such enterprises, by providing information and tools to mitigate aggression, violence, and warfare. For example, we may employ

neural and cognitive sciences as adjuncts to human and signal intelligence (HUMINT and SIGINT). This approach, termed "neuro-cognitive intel" or NEURINT, can serve to foster deepened understanding and insight to human psychological and social processes, so as to both fortify intelligence assessment, and to develop approaches to alter individual and group thought and actions. While such methods are primarily oriented toward preventing the escalation of violence, brain science can also be weaponized, and there is increasing concern about dual use applications of the neural and cognitive sciences to develop more overt forms of weapons. Such neuroweapons include drugs, microbes, toxins, and devices that can assess and affect the brain, and the (relatively new, still incipient, but steadily developing) use of small scale neurotechnologies that can interact with insects' nervous systems and remotely control their movements, in order to create "cyborg drones" that can be used in surveillance or infiltration operations.

Dr. Giordano summarized by asserting that the brain can be seen as the next battle space. In this light, he stressed that it will be important to pose and address two important questions. First, to what extent can these technologies be leveraged to exert power in political, military, and warfare domains? And second, given such considerations, how should research and use of the neurosciences be best engaged, guided and governed? Giordano stressed that these questions are ever more pressing, as major neuroscientific developments are being achieved internationally in spans of 5-10 years, and dual-use and direct-to-military applications of brain science, inclusive of the weaponization of neuroscientific techniques and technologies, are therefore advancing in years, not decades. Of particular note is that such enterprises are also being undertaken by nations – and groups of non-state actors – that do not share the interests or intents of the United States and its allies. This represents a clear and present threat to international biosecurity. Dr. Giordano claimed that a simple precautionary principle will not work in light of the current palette, scope and pace of international activities in the brain sciences. Rather, he called for a stance of preparedness, and the importance of sound ethical footing as we meet the challenge of dual-use and ever more likely military, intelligence and political employment of brain science on the 21st century world stage.

Dr. Jason Spitaletta (Johns Hopkins University Applied Physics Laboratory)

Dr. Jason Spitaletta highlighted that the Asymmetric Warfare Group (AWG) is doing an exceptional job at applying concepts from the social and behavioral sciences into narrative analysis and engagement and advancing neurocognitive insights and tools to the operational environment. However, the US needs to do more development along with test and evaluation in order to improve our ability to influence adversaries and deter potential adversaries.

The US needs to leverage an asymmetric advantage in neurocognitive science in order to create and exploit an operational asymmetric advantage. There are two areas, in particular, that the US should prioritize: influence and credibility assessment. We need to better use and apply our understandings from social, behavioral, and/or neurocognitive science to our influence operations. We should create interdisciplinary research designs and examine how neuroscience could be applied operationally. The second area that needs improvement is our credibility assessment capacity. This is a law enforcement, intelligence community, and military requirement. There is a growing body of scientific literature on the psychophysiological and neurocognitive detection of deception from countries like Russia, China, and Iran, and thus credibility assessment research and development should be not only a research but also a scientific and technological intelligence priority.

Discussion

In response to defeating facial recognition, are there more subtle ways to show that you are trying to hide?

Dr. Casebeer responded that hidden representations are being interwoven into visual images and may not be detectable by the human eye. So, while the obvious things are there, people are choosing the covert options.

What is the potential for something really bad to happen in an uncontrolled environment?

Dr. Kruse noted that there is opportunity for bioterror and issues of biosafety in DIY labs and community biological laboratories. People are increasingly playing with biology, so we are seeing development of biosafety guidelines, including things like outreach from the FBI to engage with the DIY labs and communities. The DIY community says it will not go beyond the dangerous stuff, but this is only a promise and may not be adhered to.

Are there any examples of neurocognitive work that adversarial nations are doing that we are not?

Dr. Giordano noted that China has its own version of DARPA, which is trying to specialize in neurocognitive sciences, drug delivery systems, and military AI systems. Chinese medical universities are also looking to neurotoxin research, and China has lifted its moratorium on the use of non-human primate for brain research—which may have significant dual-use implications.

Dr. DiEullis added that China is making an effort to acquire genetic data and sequence information. Some say that we are in an arms race for genetic data.

Dr. Kruse noted that there could also be similar research going on without ethical oversight that we would not be aware of.

Panel 4: The Neurocognitive Science of Persuasion

Panel members:

- Dr. James Giordano (Georgetown University Medical Center), moderator
- Dr. Christophe Morin (Fielding Graduate University)
- Dr. Ian McCulloh (Johns Hopkins University Applied Physics Laboratory)
- Dr. William Casebeer (Lockheed Martin)
- Dr. Nick Wright (University of Birmingham)

Dr. James Giordano (Georgetown University Medical Center)

Dr. James Giordano moderated the panel. Dr. Giordano stressed that the neurosciences are making notable progress in understanding the structure and functions of the brain, and this panel aims to highlight how we can employ knowledge from the neurocognitive sciences to address how to best influence individual and group psychology and behavior.

Dr. Christophe Morin (Fielding Graduate University)

Dr. Christophe Morin underscored that we need to pay attention to what is going on in the brain as a first step in any messaging activities. We have now wasted incredible amounts of money on producing messages to persuade people that are completely ineffective because they disregard how persuasion works in the brain. We can now show empirically that the effects on the brains of people receiving most of the messages we produce is negligible.

The brain has evolved over time and in layers. Predictions and judgements are performed in the frontal lobe, which is the last part of the brain to have evolved and to mature. The cortex is of course critical, but what lays below the cortex—what Daniel Kahneman referred to as "system one" and others referred to as the "crocodile" or "reptilian" brain—was the first part of the brain to evolve and is in fact where persuasion takes place. As a result, to be maximally persuasive, our messages must appeal to the less evolved portions of the brain.

Dr. Ian McCulloh (Johns Hopkins University Applied Physics Laboratory)

Dr. Ian McCulloh emphasized that in making decisions to behave one way versus another, people do not respond to logic-based arguments; they respond emotionally and then rationalize the data to correspond with and support our emotional responses. When we hear information that diverges from what we already believe, it simply is not credible to us and/or is discounted. As a result, a counter message that responds to an original message is almost by definition presenting discordant information, and people will not believe it. Thus, the question is: how do we breach this?

We know a lot about the brain. Dr. McCulloh's recent work in Jordan with Dr. Munqith Dagher (IIACSS Research) has measured the activity in the areas of the brain associated with persuasion and influence when people viewed public health and other social marketing messages. The research found that there was no significant cross-cultural difference between these subjects and what Western-based research has shown about persuasion and the brain. Specifically, research indicating the system 1 basis of persuasion was robust at least in the case of people in Jordan.

Dr. William Casebeer (Lockheed Martin)

Dr. William Casebeer wondered how can we operationalize what we know about the brain? How can some findings from neuroscience research help us build better models of influence and persuasion?

Pascal's Wager was a consequence-based argument for why one should believe in God. Basically, the risks of not believing in God and being wrong far outweigh the effort of believing in God and being wrong. If you keep reading Pascal, however, he notes that this type of rational argument is not going to accomplish behavior and believe change. Rather, a change in behavior or belief more frequently occurs when you can put yourself in a context in which you can believe. For example, if you are questioning religious belief, you may start by putting yourself in places of worship—in a church, the high ceilings and dais may have an effect on your brain or being around others who believe may help change your belief. So, Pascal's argument is really about the importance of both social and place-based mechanisms that impact belief and thus behavior change. A rational argument just will not do it.

Four general types of the perceptual heuristics we use contain both social and place-based aspects. In fact, the human tendency to describe and interpret events in psychological and emotive ways is wired into our brains; it is a result of the social natures of our brains which comes with its own belief systems.

The reasoning and affective networks in the brain induce us to socialize and theorize about non-textual stimuli. A lot of the most effective radicalization information and messaging that we see online use technology to interact with this social nature of the brain. We know from neuroscience research that the social aspects of how our brains work require that we include social interactions in our messages if we want them to be persuasive. For example, you can influence someone to believe a message by telling them that their peers believe, and we know that radicalizing phenomena take place in the presence of influential leaders.

Dr. Nick Wright (University of Birmingham)

In discussing how we might operationalize decision theory and the theories related to persuasion and influence, Dr. Nick Wright began by asking, "What do we know, and how can we know it?"

Robert Jervis said you can find a historical example to back up any contention you want to make in international relations, and it is basically the same case in psychology. Can we be sure of the scientific evidence we have now about what we think impacts persuasion?

First, we should be aware of the replication crisis in the scientific literature in this area. In only about half of the studies in psychology can the findings of studies be replicated. This makes it very difficult to read the academic literature, and even among academics, people will tend to attribute credibility to the results of even a single study based on the reputation of the author. This is not good science.

Second, in order to accumulate robust scientific knowledge about the factors that influence people, we need to focus on empirical findings that 1) have been tested and replicated and 2) provide sources of corroborating information and convergent evidence. In addition, we should be careful not to simply apply findings from neuroscience laboratories and other settings to the real world without testing. As we try to move toward a science of persuasion and influence, we are going to have to stop referencing individual studies and do what happens in medicine to corroborate and replicate.

Third, there is a level-of-analysis problem. To consider influence and persuasion, you have to think about multiple levels simultaneously (e.g., about the regional level, the state level, and the level of the populations). The evidence you have at one level is not the same as, and does not apply to, other levels, so you have to ask yourself about the nature of the evidence that you have.

It is true that we do have a lot of good evidence, so how do we organize it? We should think in terms of classifying the strength of evidence behind each contention—as was done in the recent SMA Gray Zone Cognitive Report.

Discussion

How do we operationalize and untangle rationality from emotional response?

Dr. McCulloh noted frustration in the way that we spend money on social media against Da'esh, which, in fact, serves Da'esh, not us. By focusing on counter messaging, we are actually adding to popular perceptions of Da'esh's influence. All people have to do is believe that others believe, and that will affect their behavior. This is the majority illusion effect, although it does not have to be the majority of the people that have influence. We tend to come at counter messaging with facts when we should be trying to impact emotion. Persuasion involves the area of emotion in the brain. It is frustrating that we

are attempting to use facts and logic as our counter message to defeat Da'esh. What is the emotional appeal that we are using against Da'esh? There is not one.

Dr. Morin added that persuasion has a path and a speed. Emotions are chemicals. What neuroscience has allowed us to do is measure the activity in the brain. The advertisements that move people most are those that have to do with primal networks in the brain (system 1), which even today dominates. We need to amplify the emotional appeal of our messages.

The Saudi educational system is specific about Day of Judgement punishments from the very lowest grades. Is there research on the impact of this on the brain?

Dr. Casebeer stated that the development of an adult brain includes break points in the development of systems 1 and 2 in our brain. Both systems are important, and we can induce pathologies in decision making by disrupting either. The target audience of much of our messaging efforts is adolescent males, who unfortunately do not yet have strong connections between logic and emotive response. This makes it all the more important that we include emotional content in our messages.

Dr. Morin added that we have studied the effect of public health messages on teenage brains and found that age absolutely does matter when it comes to the brain. Different narrative factors have different effects on the brains of people of different ages. Messaging to young people—like potential ISIS recruits (18-25 year olds)—is different than it is to older people. For example, the brains of young men seek out and respond to thrills, something that adult brains do not.

If you want to persuade or influence people from the Middle East, you should start with their hearts, not their minds. In the US, when you start negotiations you start with facts to persuade people. In the Middle East, you have to start with emotions and emotional appeal in order to then reach the facts. If you want to influence Da'esh or counter Da'esh, then emotions are the most important. In Jordan, the people we researched demonstrated more brain activity when they watch counter-terror advertisements. In California, people respond to and care more about anti-smoking ads. The point is that the environment within which people are living really impacts how they can be persuaded.

Dr. McCulloh noted that USCENTCOM Information Operations is doing some of this type of emotional outreach in videos that it creates.

Dr. Wright added that there is so much research in so many areas. For example, for emotions, if you induce moderate levels of fear in people you can moderate their behavior, but higher amounts of fear can be counterproductive unless you provide an alternative behavioral option. We can be so much more effective if we take account of these scientific findings. We can identify a lot of things of which we are relatively certain and use check lists and simple and more comprehensive ways to do communications.

Can you comment on video games and technology as platforms for persuasion?

Dr. McCulloh stated that one of the things that a video game can do is create an immersion narrative effect. If there is a counter message going around in the game, you know you have reached some individuals. However, we really have to ask why we are using the video game? Have we determined that the game is appropriate to the question or the objective that we are after, or is it just a fad where people say, "Other people are using video games, so let's use one too?"

Dr. Wright added that there is no empirical evidence that having Skype interactions is better than text or email conversations. It depends on the context and the environment. Additionally, one of the key features of a messenger is whether or not they are trusted, so we should be finding and creating trusted messengers.

Dr. McCulloh noted that there is a dearth of DoD funding for social neuroscience. There is a lot on enhancing human performance, but the big national security challenge is whether Da'esh or Russia is using cognitive methods against us to disrupt operations and cause strategic effect, yet DoD is not funding neuroscience research that is relevant to those issues.

There is a time in decision making when emotion recedes and rationality kicks. If this were not the case, we would never get anything done in society. Are there studies that look at people who can separate emotion from fact versus those who cannot ever separate them?

Dr. Casebeer responded that there are differences between personality type that are reflected in how much weight system 1 and 2 are given in the brain in decision making. Video games and virtual reality give someone an opportunity to impact these systems and manipulate them. Video games probably manipulate system 1, but that has a downstream effect on system 2 and behavior.

Panel 5: Anticipatory Intelligence

Panel members:

- Mr. Collin Agee (Army G2), moderator
- Mr. Dave Gauthier (NGA)
- Dr. Gwyneth Sutherlin (Geographic Services, Inc.)
- Dr. Peter Suedfeld (University of British Columbia)
- Dr. Jeff Friedman (Dartmouth)
- Ms. Regina Joseph (NYU)

Mr. Dave Gauthier (NGA)

Mr. Dave Gauthier discussed the need to move from activity-based intelligence to anticipatory intelligence. Activity-based intelligence focuses on identifying targets and activities known to have occurred. This is problematic because analysts are spending their time confirming things we already know and therefore not adding value to missions. Anticipatory intelligence, on the other hand, involves looking for things we do not know exist but are yet to come.

Discoveries have to become part of a community database. NGA is currently working on cataloguing discoveries and then using this information to do predictive modeling. However, this is still not good enough. Analysts have lived in comfort because they could afford to make low-risk judgments. Low-risk judgments are likely to be true, but may be relatively self-evident and therefore add relatively little to our understanding. If we want to anticipate what will occur, there is a need to reorient intelligence analysis so that it is acceptable for analysts to make riskier predictions, which will, by definition, often be wrong. In effect, we need to be "prepared to get punched in the face" once in a while. Making riskier predictions will place analysts in an environment of stress and risk that will force adaptation and change how they do business.

Dr. Gwyneth Sutherlin (Geographic Services, Inc.)

Dr. Gwyneth Sutherlin discussed how influence and control are understood with human geography analysis. She described a concept of the information space as one that is made up of the humans that create and share information. By understanding the information space, and the associated analytic challenges as human geography, we are able to map this information as groups and individuals that produce information and consume it. These groups and key individuals are connected across a landscape both online and offline. The attributes of these groups, their values and beliefs can be mapped and understood at a localized level permitting fine-grained activity based intelligence analysis. The mechanisms through which influence and control flow from one individual or group to another becomes visible through human geography methods. For example, political units, like a state, are made of key influencers with relationships, and these are what we can affect. We can map these people and relationships. This network can become a foundation to integrate big data through social media or news and events in a meaningful way. Finally, we must not forget that the informational cues we are analyzing rely on multilingual and culturally specific cognitive schema. Human geography analysis provides a framework to leverage linguistic and cultural variables to enrich analysis in a localized manner.

Dr. Peter Suedfeld (University of British Columbia)

Dr. Peter Suedfeld discussed decision making under stress. Dr. Suedfeld began by noting Tetlock's original research on experts, which found that on average, experts were only slightly better than chance; however, in the Good Judgment Program, a small group of superforecasters were 30% more accurate than average. The characteristics of the super-forecasters, as described by Tetlock, closely resembled the features of high integrative complexity (IC). This is probably not coincidental. IC is a measure of how an individual or group processes information and makes decisions. High IC is marked by flexible planning, extensive information search, adaptive change, open-mindedness about others' beliefs, and tolerance of disagreement and cognitive dissonance. The drawbacks of high IC decision making are that it is slow, susceptible to overemphasis on false or trivial information, and may appear wishy-washy.

IC analysis draws a distinction between differentiation (recognition of different perspectives) and integration (appreciating the relationships between differentiated viewpoints). IC demands a high cognitive load, and openness to technical resources and expertise helps. Disruptive stress leads to drops in IC, such as when cognitive load is too high or is sustained for too long. Studies have shown that excessive cognitive load often leads to a drastic simplifying response: sometimes to an attempt to solve the problem by violence, or to end it by surrendering or giving in.

Research on international political and military leaders reliably confirms these patterns; leaders typically exhibit a drop in IC 2 to 3 months before conflict. In terms of gray zone research, Dr. Suedfeld's team noted drops in Israeli IC prior to heightened violence of the Israeli Defense Forces (IDF) in Gaza, assassinations of Iranian scientists, and the Stuxnet cyber attacks on Iranian facilities. Dr. Suedfeld has also found that the IC of successive Ukrainian presidents dropped after the Russian incursion in Crimea, but that President Poroshenko's IC rose during the Fall of 2014 negotiations with Russia, in the same time period as Ukraine's parliamentary elections, and again during the Spring of 2015, the time of negotiations between Ukraine and a number of other entities, including (but not limited to) Russia. In looking at Syria's Bashar al-Assad, Dr. Suedfeld has found that Assad's IC increased ahead of Russian airstrikes, appearing as though Russian aid alleviated Assad's stress and cognitive load. Other research has found that historically, some leaders actually showed increased IC when they were under stress, and Dr. Suedfeld considered whether they could have qualified as superforecasters.

In summary, IC can alert analysts to possible changes or absence of change in leadership decision making and therefore have an anticipatory effect.

Dr. Jeff Friedman (Dartmouth)

Dr. Jeff Friedman focused on assessing subjective probability. Most important judgments are highly subjective; however, when judgments are too subjective, it is hard for analysts to parse them (i.e., to estimate the probabilities with precision). There are two main concerns regarding subjective judgments: 1) decision makers may not be receptive to subjective estimates and 2) quantitative estimates can lead to false confidence and false accuracy.

Dr. Friedman referenced the IARPA Good Judgment Project in which analysts provided 1 million forecasts, and forecasters were asked to provide probabilities. These probability estimates were then checked against the record of what really happened. Forecasters were able to parse out meaningful probabilities in 10% units on average, with exceptions for super-forecasters, who could parse their probabilities more finely. Therefore, it seems analysts can likely parse out useful probabilities, and by not doing so, we lose information.

In another study, decision makers responded to subjective probabilities based on 1,000 officers surveyed on decisions under risk. The study found that decision makers were quite sensitive to subjective probabilities. More precisely, the study found that presenting decision makers with estimates did not lead to false confidence, but did make the decision makers more interested in the estimates and further information.

These studies, taken together, seem to illustrate that analysts are better at parsing probability estimates, and decision makers are more respondent and fluent in assessing probability estimates than we thought.

Ms. Regina Joseph (NYU)

Ms. Regina Joseph argued that a multidisciplinary approach lends well to internalizing different cognitive abilities and styles. It is also important to be aware of the stochastic nature of the world. If individuals and systems accept randomness (and with it, the potential for human fallibility), more resilient anticipatory intelligence strategies can result. When structured carefully and paired with a sophisticated understanding of information and human cognitive behavior, technical forecasting formats within anticipatory intelligence programs can be central to preserving an asymmetric edge.

Ms. Joseph explained that four vectors of the information era (veracity, volume, variety, velocity) create a paradox: information overload is inevitable, but within that data dominance landscape lie significant opportunities for forecasting. Currently, our approach to asymmetric advantage focuses on manufactured technologies such as robotics, automated systems, and UAVs; but these hardly provide an advantage, given that manufactured materials can be replicated by adversaries—and in some cases, like drones, the US does not enjoy unchallenged dominance in their manufacture. True asymmetric potential may rest in how information and its distribution differ between Western societies and others. Advancements such as publically available and easily accessible open source information, databases, news, social media, etc., provide unprecedented potential for the forecasting realm. Interestingly, liberal societies with free speech and press offer an asymmetric advantage that authoritarian societies cannot.

Societies that privilege diversity and allow their citizens freedom of speech and thought can tap that "wisdom of the crowd" into more accurate forecasting—a potential national security edge. Societies that tamp down diversity and suppress information freedom impede their ability to harness the complete field of vision required for eliminating strategic surprise.

However, Ms. Joseph warned that too much data can induce paralysis on how to ingest it all. Also, ease of manipulation of information and disinformation is a liability; problems can arise in determining what is real and what is not. Ms. Joseph argued that there is a need for structured assists to aid forecasters and the public to sort through and identify valid information. Education is key, and the Good Judgment Project found that forecasting is a trainable skill that yields statistically significant gains in forecasting ability. People need to better learn how to frame meaningful questions that can be answered.

Undoubtedly, facts, beliefs and judgments can be difficult to differentiate. Thus, we should ask ourselves, how can structured techniques and group compositions (such as gender, female teams) help us improve these tasks? The unclassified nature of the Good Judgment Project was a great aid for exploring information, but bureaucracy of government sometimes fails to operationalize things that we learn. We need to continue to harness the creative work of media, news, and advertising specialists, since these professionals excel at messaging, gauging social behavior and uncovering information.

Discussion

How do you deal with forecaster uncertainty?

Ms. Joseph responded that forecasters reflect on their mistakes to build up their base rates through experience and revise how questions are asked.

Bureaucracy is resistant to change and does not allow for risk taking. Are there any experiments or thoughts on how we could change this?

Mr. Gauthier noted that NGA is creating an information incubator where it is safe to take risks. The incubator is hoping to include hundreds of analysts.

Panel 6: Metaphor for a New Age: Emergence, Co-Evolution, Complexity, or Something Else?

Panel members:

- Dr. Val Sitterle (George Tech Research Institute), moderator
- Dr. Allison Astorino-Courtois (NSI)
- Dr. Corey Lofdahl (SoSACorp)
- CAPT (ret) Todd Veazie (NCTC)

Dr. Val Sitterle (Georgia Tech Research Institute)

Dr. Val Sitterle moderated the panel. The panel was asked to identify an appropriate metaphor to describe our world in a continually evolving post-Cold War security environment and to evaluate what they think the outcome of the changes that we perceive (and the changes that we do not) will be. The

speakers were also asked to consider what metaphor would describe the coming age and how that metaphor can inform our understanding of future security challenges.

Dr. Val Sitterle made some additional remarks on the esoteric subject of paradigms, why this discussion is important to us, and why implementing systems to eliminate these paradigms is difficult. We usually see a simplified view of how this system that eliminates paradigms is used, and we essentially try to codify terms into something new. Paradigms are normative; they define what assumptions you make and how you see the world. Many paradigm concepts like a co-evolutionary system are incorrect. They imply a continuous system and continuous change, but the world we live in is both non-uniform and discontinuous. Technology, for example, does not just remove spatial barriers to produce enhanced connectivity and speed of dissemination but also creates filters and echo chambers that serve as discrete percolation points influencing beliefs and behaviors.

So, what should we do? If we need new paradigms, is there sufficient common ground to determine if a new one is better? Or, are any new metaphors incommensurate, meaning that we have insufficient common standards of description and measures to compare them? There are so many different lenses we can apply, we need to understand how to reconcile these challenges. This matters because of how we typically capture and use paradigms, integrating tools, execution, and context. We need to create re-actionable information; we need the proper tools, and we need to use those tools properly.

The paradigms we apply to create, characterize, explain, and extrapolate from our knowledge base for any given problem slot the dimensions of that problem into some pattern that in turn guides and constrains what we look for, how we look for it, and what we expect to find. We need to convert our bodies of knowledge that include textual analyses, exemplarily models, geographically referenced characterizations, etc. into executable analytical products that convey the proper context for effective interpretation. It is one thing, however, to articulate analyses and even frameworks for analyses. It can be quite another to translate these ideas into executable code, much less generate context.

Context tends to be a buzzword that we toss around because we are all aware that we need it, but it is not something that implement seriously. We used many paradigm-based assumptions to create the knowledge base, with no guarantee that everyone was working from the same paradigm of set of assumptions. Further, assumptions that matter are all given under a certain context, and even the most advanced technology that we have still cannot interpret context well. We do not know necessarily what gaps in that knowledge base we would miss during the computer's implementation or how theses gaps should be treated in constructing insightful responses for users. Consequently, we still need many humans in the loop when doing this type of work.

Some great ideas turn into programs of record, and the end product derived from an idea turns into something that describes a completely different, unintended world. As our community develops great ideas and strong, cross-domain knowledge corpi, we need to mature our abilities to incorporate this work into efficient, usable tools that offer meaningful contextual insight correctly derived from the knowledge.

Dr. Allison Astorino-Courtois (NSI)

Dr. Allison Astorino-Courtois began her remarks by defining a paradigm. A paradigm can be described as a lens or pair of eyeglasses for the brain. A paradigm helps others see the world as we do and is composed of our theories, our models of reality, our assumptions, our standards of what is good and

what is not, and our standards of what is interesting and what is not. It also conditions what data and analytic methods we think are important.

We often forget that our model of the world is not the unbiased truth, but rather it is the truth through our lens. We have become so familiar with seeing the world through our lens that it becomes difficult to consider alternatives or to fathom them since these alternative worlds seem so far out of the realm of possibilities to us. Our lens can also distort our own reality. On the other hand, having a paradigm provides an important framework and lens to make ourselves aware of the assumptions that we are making and what we are doing in terms of our research and findings.

The world has changed, threats have changed, and power has diffused over time. We are seeing different types of threats than what we are used to. We have heard this many times before, though. So, why do we keep commenting on the fact that the world is so different than it used to be? In the Cold War era, we had a very US-centric view of world events. We believed that we were in a bipolar world, and we were interested in other countries' actions purely because they would impact us. We also adopted this sentiment of coercive power, and that became our ultimate motivator. We thought that we lived in a split world between democratic regimes and non-democratic regimes, and we believed that the source of conflicts was ideological.

Nowadays, the components of the operating paradigm remain the same with only a few discrepancies. Our essential presumptions, for instance, remain the same. We are rationalists, US-centric, and liberalists. We also subscribe to political realism, which is the presumption that military coercive power is overwhelmingly seen as the ultimate motivator. This is not true in all cases now; there is a currently a shift where individuals desire to break that part of our paradigm.

We also subscribe to state-centrism. We believe that most global interactions between powers are important influences on our thinking, and there is a significant change in the recognition that intra-state conflicts deserve our attention due to the contagion effect. In other words, these conflicts may have national security implications to the US, so they deserve our focus.

Finally, we are interested in evaluating the source of conflicts. Ideology is one common source, but there is also a much broader implication that nationalism and grievances are a much stronger source of conflict and have implications towards us (like the battle against ISIS).

Dr. Corey Lofdahl (SoSACorp)

Dr. Corey Lofdahl spoke about complexity and system dynamics. Jay Forrester, a Nobel Prize winner who created a paradigm modeling simulator at MIT called system dynamics, argued that you can break complexity down into three components: stock flow and integration, time delays, and feedback. Complexity is understood with its relationship to cognition. Much of the things that we are trying to comprehend are highly complex; so, when you put them all together, the human mind becomes overwhelmed. Therefore, we should assign this cognitive work to a computer, which will perform these computations more efficiently. Humans, in the meantime, should do what they do best, which is pattern mapping.

System dynamics can allow humans to test ideas to determine whether or not something is significant. It allows you to quantify your assumptions and have a group critique them. Decision lessons in system dynamics involve a combination of short-term and long-term trade-offs.

There are soft and hard variables when evaluating a problem. The soft variables include stress and other attributes of human behavior, but you cannot put a meter on your brain to measure these variables. The hard variables are the attributes to which physical laws or other mathematical rules apply which can be accurately measured and quantified. We need to have both of these variables when evaluating a problem.

DARPA is currently looking at engineering insights and then applying those insights to a social science model. High-level decision makers are involved in these experiments. A recommendation is made based on the system, and then these experts provide counterintuitive insight. So, there is an established relationship between the general and analytic staffs and the computer. There have been some interesting interactions between the groups, and they have provided the board with sound information.

There is also government research being done on human-machine interactions. Within these efforts, the human-machine interface should be baked in, not simply sprinkled on.

Ultimately, we must consider the concept of hierarchy versus distributed complexity. We need to push decision-making out to people that can actually do it, and there is important work coming in the near future related to this concept.

CAPT (ret) Todd Veazie (NCTC)

CAPT (ret) Todd Veazie emphasized that metaphors and paradigms are important. Everyone applies metaphors to enhance cultural, political, economic, organizational, and biological sense-making. These paradigms provide us with a mental structure that helps us frame and understand the operational environment and relate to the world. To the practitioner, they provide a scaffold to which we can tether our policy and planning assumptions and decisions. However, these are imperfect representations of a real-world *system*. Therefore, we have to understand their limitations to avoid misapplying them and running the risk of overextending their usefulness or drawing the wrong conclusions from them. Their explanatory power ranges from tactical to strategic and the greater the complexity of the environment, the greater the explanatory potential of the metaphor. Applying the classic example of geese in flight in which three simple rules allow emergent behavior from a random or chaotic system and allows the geese to fly with far greater efficiency as a collective than as individuals. Those three rules describe the relationship between the actors (geese) and their environment, including their fellow geese. In this case the rules set behavioral expectations.

We can ask ourselves the following question: how do we apply a set of rules in an environment of high interactive complexity? At a tactical level, just like those geese in flight, highly trained special operations formations are able to move, fight, and compete with unmatched effectiveness in chaotic and hostile urban environments through rules-based individual action on behalf of the unit collective. Again, this is possible because of a shared set of TTPs and ROEs that define their relationship to one another and their environment and fosters emergent behavioral patterns that are efficient, effective, and highly adaptable.

As we attempt to understand and cope with the global national security environment, we must also challenge our assumptions about legacy paradigms that are underperforming in the face of rising interactive complexity. How do we update our understanding of the rules of the system(s)? To overhaul our assumptions about the state-based monopoly on power to include the expanding influence of non-

state actors? To supplant notions of control with those of credible influence? All of this most certainly applies to understanding the interplay between terrorism (red), the US government (blue), and the environment (green) in which we both must operate. Over-reliance on ossified strategic paradigms are unhelpful and even dangerous. It follows that as strategists and policymakers it is also inadequate to merely study and react to the terrorist threat (red) in isolation and hope to develop effective strategies to counter it. We need to consider interplay between red and blue in the context of green as a means to building a shared and holistic appreciation of the contextual dynamics. This is the necessary diagnosis that leads to effective strategy. The ability to understand the forest *and* the trees is the goal of strategic net assessment.

So, when forming up our CT net assessment shop, we hosted a workshop to explore useful metaphors to guide our CT net assessment work going forward. We invited leading thinkers from a range of disciplines to contribute. Among them were scientists who apply biologically inspired metaphors like ecosystems to explain human organizations. Ecosystems are of course, a set of animate and inanimate nodes that share functional relationships to other nodes in the system. The ecosystem metaphor is illuminating when diagnosing the power dynamics in places like the Middle East because it forces us to consider multiple actors and their relationships to one another. Now, even this is an imperfect metaphor since ecosystems are based on competitions in nature, and an organism's only goal is to find food to fuel procreation. So, the flaw here is that the framing is only based on competition, and solely focusing on competition in the past has gotten us to places where we did not want to be. A rival metaphor was also introduced during this workshop, and that metaphor involves a cell and the components within and between cells that all work together to fight a disease. This of course, sidesteps the issue of competition in favor of cooperation. Overall, applied appropriately, there is value in both of these metaphors.

Now, we can take the results of this workshop and see their applicability to the situation we confront in the Middle East. We can look at areas of hostility. There are many distinct conflicts happening on the ground simultaneously—civil wars, state on state, sectarian, ethnic, and Great Power conflicts are all present. This is not excluding the effects of this ecosystem on the broader ecosphere that includes the US and Europe. In each of these confrontations, political power relationships are the fulcrum, not terrorism. The insights gained from applying this metaphor of an actor-based ecosystem each with its own goals and associated dynamics might lead one to conclude that we do not need a new "counterterrorism" strategy in the Middle East; we need a new Middle East strategy where counterterrorism is a feature not the dominant orienting principle.

In the midst of the current Age transition from Industrial to Information where the relational rulesets are transforming fundamentally, we must challenge the persistent paradigms and metaphors that drive our intellectual framing and anchor our decisions because increasingly they no longer fit. For example, to see the locus of power and leverage points in the geostrategic landscape as the exclusive provenance of nation states is increasingly flawed. Further, it is also wholly inadequate to simply treat violent non-state actors as if they were nation states simply because we have not found a more appropriate paradigm. It requires us to rethink the nature and derivation of power to account for "movements" and stateless networks.

CAPT (ret) Veazie concluded by stating that the legendary environmentalist and systems thinker Donella Meadows taught us that there are twelve leverage points in any system, and he listed the top five. These leverage points include: 5) the rules of the system; 4) the power to add, change, evolve, and self-

organize a system's structure; 3) the goals of the system; 2) the paradigm out of which the system arises; and 1) the power to transcend paradigms.

Discussion

With respect to new paradigms, how do we move past our current lenses?

CAPT (ret) Veazie stated that as humans, we seek meaning and belonging (identity) from our first breath, especially in things like religion. So, it is going to be a very difficult process to get around this lens.

Dr. Sitterle noted that as a community, we need to be able to convince everyone that a new paradigm is better and not just something new.

Dr. Astorino-Courtois explained that there are bigger fissures in our paradigm than we have realized, but that does not mean that we have to discredit the entire paradigm—we can make adjustments to the paradigm that we currently have.

Panel 7: Social Media…Fatigue or Here to Stay?

Panel members:

- Dr. Randy Kluver (Texas A&M), moderator
- Dr. Jen Ziemke (John Carroll University)
- Dr. Dave Warner (MindTel)
- Dr. David Broniatowski (GWU)
- Dr. Laura Steckman (MITRE)
- Mr. Emerson Brooking (Council on Foreign Relations)

Dr. Randy Kluver (Texas A&M)

Dr. Randy Kluver began with a brief discussion of the powerful influence that the Internet and social media have had, including on the 2004 election cycle (with Howard Dean and Meetup.com as one example). Other notable developments include the advent of Facebook in 2004, the social movement created online in support of Obama, the emergence of Twitter, and the rise of WeChat (with 800M Chinese users)—the latter of which represents the next evolution in social media.

Dr. Kluver posed the following question to each of the panel members: What is the one take-away?

Dr. Jen Ziemke (John Carroll University)

Dr. Jen Ziemke discussed ways in which social media could be useful, including bringing change. She noted that the era of social media involves inter-generational dialogue fostering bi-directional learning. Youth (18-25) function as subject matter experts or "digital natives." Dr. Ziemke also briefly discussed

counter-ISIS simulations that were conducted, where emotional elements were used, and where they resonated with people.

Why use social media? Dr. Ziemke argued that for youth, it contributes cool and a sense of belonging, and its gaming environment is appealing.

Dr. Dave Warner (MindTel)

Dr. Dave Warner asked, "How do we do weaponized information?" He described an operation in East Afghanistan, wherein his team met with locals and worked with the children there. The idea was to influence at the entry level. He emphasized that we are in a communication age, not an information age, and that we are in fact wired to communicate. The Pashtuns, for example, are hyper social. Despite speculation that their team would need to teach social media to the children, they did not have to be taught. Counter-insurgency messaging was enabled in real time.

Due to social media, it is now possible to get rapid assessments on the ground of bombing. This stands in contrast to the prior period (and engagements such as Tora Bora). Social media can also be used by the "bad guys" to spread propaganda about the purpose behind US activities. In the case of the recent "MOAB" bombing, the name is actually more damaging than the blast. Unfortunately, we have no cognitive agility to combat such propaganda with counter-measures at any precision level.

Ultimately, social media is changing humans—who are sensors. There is in fact a growing cyber culture.

Dr. David Broniatowski (GWU)

Dr. David Broniatowski indicated that social media is definitely here to stay, continuing on to note that we are on the cusp of greater rigor for how to study it. A key point is that we must develop the same rigorous standards for the use and study of social media as we have developed for survey methods over the past several decades. This comes about through the combined use of statistical techniques, an understanding of culture and narrative, and the use of psychological experimentation.

Some social media are indelible. Because of this, it is useful to track both information and misinformation/disinformation. Reddit and special interest sites can operate as conduits for influence and can be rigorously studied. To date, 71% of adults are on social media. These days, a large percentage of people get their news from social media. Of these, 30% is from Facebook. Among millennials, 61% get their news from major social media.

Social media are especially important when studying misinformative and disinformative narratives online (the "Battle of the Narrative"). Narratives establish the reasons for and desired outcomes of conflicts (FM 3-24). For example, people might incorrectly attribute symptoms of autism to vaccination because they occur at the same time, even though there is no causal link. Compelling narratives "connect the dots" between facts and (potentially false) background knowledge to create meaning. However, people often infer causality between these various pieces of information where there is none.

Dr. Broniatowski provided a brief overview of Fuzzy Trace Theory (FTT)—a leading empirically-validated account of mental representation, which predicts decisions, especially those related to memory and reasoning. According to FTT, people mentally represent events at multiple levels of detail—verbatim

traces (detailed, but brittle, representations) and gist traces (categorical, and memorable, representations). People prefer to rely on gist when making decisions.

Over the period of December 2014-2015 (the "Disneyland" measles outbreak), they performed a test of the theory. Consistent with FTT, they found that articles expressing a clear, bottom-line meaning ("gist") about vaccines were 2.3 times more likely to be shared. Of these, articles expressing support for both sides of the argument but ultimately expressing a clear gist were shared 57.8 times more often. Articles expressing verbatim statistics were also slightly (1.3 times) more likely to be shared. In contrast, articles with stories but no gist or verbatim statistics were not more likely to be shared. This means that narratives are most likely to be effective if they contain a clear gist and that stories alone are not effective.

Dr. Broniatowski emphasized that the basic message here is that we must combine all three approaches (methods from survey research, social media analysis, and empirically-validated psychological theory) to create a more rigorous approach to narrative.

Dr. Laura Steckman (MITRE)

Dr. Laura Steckman similarly indicated that social media is here to stay and presented a complex problem. Dr. Steckman presented two aspects to this difficulty.

First, the social media industry is very competitive, and products may evolve. With the recent introduction of Facebook Live, we have seen some controversy. Whether Facebook will stay number one in the long-term is unknown. Twitter is being overtaken and has suffered from the constraints of its medium. Elsewhere, we have seen solutions like Google Hummingbird, which may serve as an antidote leading to more elaborated and relevant content. Many platforms are being shaped based on customer demand. For example, if a platform does not meet the needs of a computer scientist in India, then something new will evolve. The bottom line is that there is ongoing innovation yielding new tools.

Second, the social media environment is not the same across the world. We can look to other countries or regions. Look, for example, to Zalo in Vietnam or KakaoTalk in South Korea. Notably, we rarely see these platforms mentioned in US papers on social media. Blackberry Messenger and Line are two other popular platforms. In Nigeria, we see the use of indigenous platforms. Additionally, different platforms are used for different purposes—one may see political talk on Twitter in English but other kinds of discussions in native languages on other platforms. Generally speaking, there is a moving away from English discussions—which should be explored further. Governments are purposefully trying to change how social media works in their countries.

To stay ahead of these issues, the US government needs to understand how these different platforms are used in different ways in different locations (countries). It also needs to understand at the most basic level how they are using social media.

Dr. Steckman also briefly discussed how social media usage within countries can lead to unintended effects. For example, social media can further divide people when they learn that others have different values (which are now often made apparent through this medium). Thus, we now have both a digital and cultural divide.

Mr. Emerson Brooking (Council on Foreign Relations)

Mr. Emerson Brooking highlighted several key points. First, social media is important even for people who are not on the Internet, as television and others get cues from the rapid social media conversations that are now constantly happening. Second, social media moves fast. High school is now the generational divide. For example, in 2011 we saw the advent of Snapchat, and those who were out of high school by then are less familiar with this platform compared to those in high school. Third, aspects of social media—such as Instagram likes—have now become a form of currency. The Chicago police discovered in a recent year that 80% of the violence they were encountering could be attributed to a spat that started online. In other words, online interactions transitioned seamlessly to offline interactions. Fourth, the Internet is maturing. Dating back to the 1990s, there was talk of rapid churn. We are moving past that now, however. As concrete examples, consider Facebook and Google—the universal platform that has been widely adopted and is presently investing in emerging companies. Fifth, in the broad scope of communications networks, social media is the latest of the inventions, following the telegraph and the telephone, among others.

Ultimately, Facebook and Google will persist. Consequently, peer to peer, ad hoc networks will drive the conversation and what is happening on public platforms. It seems as though these public platforms are the best place in which to be investing money and resources.

Discussion

What does the overwhelming force in the social media world look like?

Dr. Warner noted that the most powerful force would be first, early, and accurate.

Dr. Broniatowski added that repetition of a clear gist, not just verbatim facts, is likely to be effective. Decontextualized facts are minimally effective; the gist provided in cultural context is more effective. Gists must be factually accurate, but must communicate the simple meaning of the message in its cultural context. Repetition of, and exposure to, a clear gist is likely to be effective.

Dr. Steckman agreed that the message should get out first and fast and then be repeated. Messages should also be targeted to specific audiences. For example, ISIS has different messaging strategies with respect to different target audiences, which has been quite effective in recruiting vulnerable individuals.

Mr. Brooking noted that if you look at the messaging strategies of Russia and China, they are not limited by the same kinds of rules and lines that limit the US. We may not want to cross those ethical lines, but they do limit us when compared to actors like Russia and China.

Dr. Warner added that it is also important to get the information in the hands of the right people (i.e., the most influential messengers).

To what extent should we think about new platforms?

Dr. Broniatowski stated that new platforms should target and tailor. We should understand the cultural backgrounds of the users of these platforms and construct our messages accordingly. This could involve multiple platforms with different strengths and weaknesses regarding communicating with different groups and delivering different messages.

Mr. Brooking added that the popularity and salience of social media has to be considered in analysis. Some platforms matter more than others—even beyond simply numbers of users on various platforms.

What do narratives look like on social media?

Mr. Brooking noted that narratives are driven by volume. The narratives that rise through are the ones with thoughts that stay in your head and are continuously shared. An example of viral ideas is BuzzFeed and its invention of the listicle. Most of these news bits do not take off, but the ones that do really work.

Dr. Steckman stated that social media does not comprise the narrative. Social media can shape, expand, and/or change the narrative, but it does not create the narrative.

Do you agree that repetition equals penetration, and penetration equals impact, but impact on key influencers is more important than volume?

Mr. Brooking stated that volume works, but it works better when it includes people who have big audiences.

Key Note Speaker (LTG Michael Nagata, NCTC)

The National Counterterrorism Center's (NCTC) Directorate of Strategic Operational Planning's responsibility is to formulate a whole of government counterterrorism strategy and assess how well the USG implements that strategy.

LTG Michael Nagata's goal is to convey the necessity of coordinating with allies on counterterrorism issues in the face of rapidly accelerating global change. The environment and the enemy are changing at a faster rate than ever before, and it continues to accelerate.

An actor's point of view—or "paradigm"—matters in this rapidly evolving world. If you look back into history, there are instructive accounts of the reactions of Japanese observers witnessing the arrival of ADM Perry's black fleet in Japan. The ships were so far beyond the comprehension of the Japanese people, that several witnesses stated they could not physically see the ships. That poses the question of whether the USG is consistently able to "see" new phenomenon; particularly when radically different from expected norms.

LTG Nagata stated that his own paradigm revolves around defending US interests in this rapidly changing environment. There are three questions we must continuously ask ourselves:

1. What is the nature of the adversary?
2. What is the nature of the environment in which we contest the adversary?
3. Who are we both as a Nation and as a People, and are we perhaps changing at the same time either our adversaries or our environment are changing?

The most challenging question is the last, the "who are we?" Humans often dislike looking in the mirror for fear of what they will see there. However, if one cannot honestly examine oneself, the likelihood of

going astray rises significantly. More broadly, there is always some correlation between our ability to answer these three questions and our ability to reliably generate success.

Here is my own examination of the adversary. First, our current and future adversaries are increasingly unconstrained by tradition, custom, or law; while the United States must remain bound by them. Second, power is increasingly moving into the hands of non-state actors (NSAs). Some NSAs have already achieved parity, or have exceeded parity, with the states they reside in or with nearby states. This is one area where we are sometimes unable to see reality, much like the Japanese people who could not see ADM Perry's black fleet. Third, the accelerating pace of advances and ubiquitous availability of the Internet, smart/connected devices, and encryption technology are creating enormous advantages for NSAs that we would be wise not to discount. ISIS is mastering cheap/readily-available small drone technology and its operational employment in terrorist and military operations. ISIS is also demonstrating unprecedented ability to inspire, motivate, and radicalize people to do its bidding across the globe.

When thinking about the world environment, we are facing a present and a future where all conflicts and problems will be multi-layered and complex. By way of example, Syria today combines such elements as a civil war, several types of proxy wars, a sectarian conflict, a counterterrorism struggle, etc. in ways that are almost bewildering in their complexity.

We are also immersed in a period of disruptive geopolitical change. For example, in Western Europe, we are seeing growing political rivalries and disruptions driven by the impact of large-scale immigration patterns from North Africa and the Middle East. People are becoming more wary of each other, and this is having significant political consequences. This is being compounded by dramatic demographic shifts from both of those regions; fueling the already disruptive immigration patterns.

Another disruptor is the rising power of the individual and the NSA that he/she often becomes a part of; both of which are increasingly independent of the traditional reliance, state-based sources of information and power.

All of this creates steep challenges for those of us who must grapple with the complex nature of counterterrorism…for we cannot and must not assume that either the adversary, our environment, or we ourselves are invulnerable to rapid and disruptive change. In fact, we must do the contrary—we must embrace the complexity if we are to make sense of it, and most important, if we are to find the path to greater effectiveness against terrorist threats and actors. It will require us to constantly experiment with alternative ideas, alternative approaches, and alternative solutions…recognizing that many of them may fail or be unsatisfying. But it is only through such ruthless experimentation that we are likely to find the path to lasting success.

On a lighter note, Churchill once said, "You can depend upon the Americans to do the right thing. But only after they have exhausted every other possibility."

Discussion

How much does our focus on counterterrorism actually generate more terrorism?

LTG Nagata stated that he sees no evidence that because the USG exertions against terrorism have, therefore, made it significantly worse or stronger. But we are still struggling to match what we do with what we know. We do know kinetic action is never the complete and durable answer against the threat of violent extremism. Kinetic actions do buy the USG time and space to enable longer-term, mostly non-kinetic/non-military activities to successfully take place. But sometimes we struggle to make our actual investments of resources and policy support match with this more sophisticated approach. We have an enormously strong arm in kinetic action, but are comparatively weaker everywhere else.

Has the USG considered permitting ISIS to transform into a legitimate political movement?

LTG Nagata stated the United States is very unlikely to ever view ISIS as a legitimate political actor given their extreme ideology. But he also rhetorically asked, does it matter if the US refuses to see it as a legitimate actor if a significant (and growing) part of the world does accept it as such?

How is our eroding credibility expressed?

LTG Nagata stated that the US created a post-World War II world where most of the world looks to the US as the preeminent leader. We wanted it that way, and the United States has inarguably benefitted from that perception. However, it is a perception that requires constant nourishment and exertion if it is to be maintained. Unfortunately, we sometimes are perceived today as being less willing to do either, and instead appear to be sometimes saying that we expect our allies and partners to "do more" without commensurate American participation. Whether true or not, we need to remember that this is a struggle over how the US is perceived and, as many of us have lived many times in our travels abroad, perception sometimes *is* the reality.

What makes ISIS more effective in using limited resources than the good guys? Is it because they understand the population better?

LTG Nagata stated that first, ISIS is a learning organization. It was built on the remnants of al Qaeda in Iraq and learned from their failures. It learned to counter our strength. It has adapted to us. Too often, US and Coalition actors have been less quick to recognize the need to adapt as well. Second, we underestimated how attractive ISIS' vision of apocalypse can be to those around the world it wished to inspire and rally to the Black Flag. Third, too often leaders in the international community have mistaken temporary or tactical progress for strategic success, and have declared that success only to be tragically disappointed by continued ISIS attacks. We need to more realistic about how long a struggle this will actually be.

Key Note Speaker (Lt Gen Charles Brown, USCENTCOM)

The time horizon of this SMA Conference encompasses a 30-year outlook. However, with the rapid pace of events in the US Central Command (USCENTCOM) Area of Responsibility (AOR), we all too often must operate in 30-minute intervals.

This fact, together with today's agenda—which ranges from neurocognition to social media to persuasion to complexity—illustrates what a substantial and important conference this is. The SMA network offers valuable input to USCENTCOM and provides a framework for future operations,

challenges, and assumptions. The SMA community also helps us think through the long-term impacts of the range of actions we undertake in the AOR.

On behalf of General Votel, who has a long and valued relationship with the SMA community, I am incredibly honored to be speaking to this distinguished group. I would also like to thank our DHS, NCTC, and DNI/NIC colleagues for hosting the conference, and to extend a special thank you to Dr. Cabayan and Ms. Egan for organizing this event.

Before I discuss why the topic you have chosen for this conference is so relevant to the USCENTCOM AOR, I will quickly touch upon the USCENTCOM-SMA Reach Back Cell process.

Last year, the SMA network and USCENTCOM formalized our relationship and feedback processes. The resulting effort has drawn upon the knowledge of 164 subject matter experts across nine countries, and products have ranged from quick studies to literature reviews and simulations, primarily focused on three major themes:

1. The military defeat of ISIS
2. The implications of ISIS's defeat for the region
3. Drivers and buffers of regional stability

While these three questions are obviously interrelated, the last question, focused on what we should do to stabilize the region, lends itself most directly to the theme of this conference, "*From Control to Influence: A View of—and Vision for—the Future*."

The conference theme parallels one of the major challenges we are contending with at the Department of Defense. We have shifted from a Cold War paradigm to an environment characterized by the diffusion of power, where states have a decreased degree of control in the international system, eroding the degree to which states can exert traditional control. As a result, we find ourselves in a world where we must instead examine the nature of influence.

And, as noted in the conference overview, when we look at influence, it requires the US Government to use multiple elements of power. It also requires us to shift our thinking about how to assess threats and measure success. Responding to today's security environment requires the employment of a full range of levers of power and influence in current and future engagements. Threats and challenges will be trans-regional, multi-domain, and multi-functional.

To be more specific, the Chairman of the Joint Chiefs of Staff, General Dunford, has described that "in today's strategic environment five key challenges—Russia, China, Iran, North Korea, and Violent Extremist Organizations—most clearly represent the challenges facing the Joint Force."[1] Further, General Dunford notes that, in this environment, "the Joint Force requires a balanced inventory of capabilities and capacities to act decisively across the range of military operations."[2]

One of the spaces for which we most need this balanced inventory is referred to as the "Gray Zone."

[1] Posture Statement of General Joseph Dunford Jr., USMC, 19th Chairman of the Joint Chiefs of Staff, before the 115th Congress, Senate Appropriations Committee Defense. Budget Hearing. 22 March 2017.
[2] Ibid.

The SMA Conference last year focused on this topic and it is a concept that General Votel has described.

The conference defined the Gray Zone as "a space between normal economic competition and open warfare, where state and non-state actors seek to operate; a place where unseen hands deliver ideas and messages; where actors collaborate, compete, and collide to achieve their ends."[3] While ISIS and Iran are probably the most visible actors within the USCENTCOM AOR operating in the Gray Zone, we also deal with influence from Russia, China, and North Korea in the region.

The ISIS challenge provides an acute illustration of the concepts of control and influence. ISIS initially exerted its control by taking and dominating territory in 2014. However, the success of the Counter-ISIS Coalition's efforts has now forced ISIS to focus more on influence operations as its ability to control diminishes. ISIS utilizes the Internet for recruitment and incitement via the "virtual caliphate," which is beyond the kinetic elements of our campaign to counter entirely. Doing so will require all elements of national power—Diplomatic, Information, Military, Economic (DIME)—working together to ensure enduring regional stability. This is one of the key issues on which SMA research for USCENTCOM has recently focused.

And, as we work towards the goal of ensuring enduring regional stability, USCENTCOM's overall strategic approach is based on the concepts of prepare, pursue, prevail.

- **Prepare** means to be ready in advance, which includes cooperation with partners on such issues as access, basing, and overflight
- **Pursue** depends on developing a military culture of communication, collaboration, and always looking for ways to seize the initiative.
- **Prevail** means we need to win our current fight and plan to win the next one. Prevailing is a protracted struggle; there are no easy victories or parades. We seek to preserve access, sustain relationships, and preserve decision space—operating by, with, and through our partners.

The SMA research has helped USCENTCOM in all three of elements of our strategic approach. For example, SMA' s most recent work has helped us examine the nature of ISIS. SMA contributions have helped us sort through polling for populations favorable to ISIS and what the best approach is to influence and inform audiences, helping us to calibrate our messaging and prepare the environment for sustainable security.

SMA materials have also helped USCENTCOM assess key factors for regional reconciliation and influential underlying political dynamics. This has helped USCENTCOM vector efforts to best prepare a foundation for enduring regional security.

Additionally, the SMA community's recent work has helped us to better assess the interests and intentions of various countries and regional actors in Syria and Iraq, helping USCENTCOM to pursue opportunities where our interests coincide, creating an environment where long term security can flourish.

[3] Strategic Multilayer Assessment Conference Proceedings of General Joseph Votel, Commander United States Special Operations Command, 29 October 2015.

Further, the SMA research has helped us understand the role that various groups will seek to play in a post-ISIS environment—which will help us prevail in conflict and define end states that will solidify sustainable gains.

In conclusion, as we try to plan for regional security in the post-ISIS environment, your work will continue to be critical in helping us identify emerging/developing trends and we have not yet begun to think about.

An initiative like our developing "Project Noor" with the SMA network is an example of what this might look like in the future. It will seek to automate analysis and visualization of large unstructured data sets, helping to improve red teaming efforts, and helping to make data more immersive and contextualized.

In order for USCENTCOM to break free from the 30-minute time cycle, we must ensure our efforts are scoped with an understanding of the 30-year security horizon. The SMA network plays a crucial role in helping USCENTCOM to do this and we look forward to our continued partnership.

Panel 8: Net Assessment: Implications for Homeland Security

Panel members:

- Ms. Gia Harrigan (DHS), moderator
- Dr. Erik Dahl (NPS)
- Mr. Tim Moughon (NCTC)
- COL William Edwards (USSOCNORTH)
- Dr. Gina Ligon (University of Nebraska Omaha)
- Mr. Nawar Shora (DHS)

Ms. Gia Harrigan (DHS)

Ms. Gia Harrigan moderated the panel. This panel was tasked with addressing two themes. The first theme was how net assessment, the practice of considering how strategic interactions between the United States, adversaries, and the environment, may play out in the future and may be adopted to advance homeland security (especially as related to threats that emerge outside the homeland). The second was how to incorporate evolving understandings of emerging technologies (especially communication technologies), and better understanding of neurocognitive developments, into the net assessment process.

Dr. Erik Dahl (NPS)

Dr. Erik Dahl stressed the importance of net assessment for both homeland security and homeland defense. Defined by Dr. Dahl as an exercise wherein both one's own, and an adversary's, capabilities are clearly defined and understood, net assessments are uncommon in the United States government. Dr. Dahl gave a history of the existence of certain net assessment offices within the United States government, and broadened the approach to include not just appraisals of kinetic capabilities, but also understanding the technological dynamics, but also social and political actors; he also underscored the necessity of taking a long-term approach in the process of net assessment.

Dr. Dahl noted that in addition to evaluating technical capabilities, practitioners must also assess the impact of those capabilities. He referred to the comments of a conference-goer in an earlier panel, who had noted that the social impact of the recently-used Massive Ordnance Air Blast (MOAB) had not been carefully considered; Dr. Dahl used this example to illustrate that net assessments apply not just to a homeland security context, but also to gray zone conflicts and traditional kinetic measures. Similarly, he presented the need to think proactively about other threats, particularly those where the United States military capabilities are deployed, such as natural disasters and potential disease outbreaks. Dr. Dahl concluded his remarks by noting that one way to get a better sense of national capabilities is through a process of net assessment.

Mr. Tim Moughon (NCTC)

Mr. Tim Moughon followed up on a few Dr. Dahl's points, from the perspective of someone within that organization, which was given a congressional mandate to conduct net assessments. Mr. Moughon conceded that within the context of terrorism, the traditional practice of net assessments is difficult to apply; compared with a Cold War context, actors are not binary, because of the implicit battle within civilian populations. During the Cold War, a near-actuarial process of counting weapons and constraining oneself within treaty structures was sufficient, but today's operating environment is markedly different and requires a different methodology.

Mr. Moughon also discussed the difficulty in measuring power, particularly in the context of the declining relative utility of kinetic action. He noted that kinetic action has a psychological impact—one that messages very clearly (e.g., the impression that the use of the Massive Ordnance Air Blast left). Related to the difficulty of measuring power is the difficulty in measuring influence, something that Mr. Moughon argued might be a more advantageous tool in today's operating environment, particularly when influence is wrapped up in the idea of soft power. National security professionals must understand within the soft power construct that states are losing market share to non-state actors. This shift has critical ramifications for those who seek to employ state power to achieve their objectives.

Mr. Moughon underscored the point that today's operating environment bears little resemblance to the Cold War dynamic where red actors and blue actors interacted over a passive set of green actors. Today, he argued, that "green space" is a collage of active participants who wield a tremendous amount of influence. He concluded his remarks by comparing the present-day paradigm to the stock market, wherein two actors are trading a stock; the best way to influence the perception of the price, Mr. Moughon argued, is to influence the environment, and your counterpart will react accordingly. He stressed the need to provide this broader perspective to policymakers.

COL William Edwards (USSOCNORTH)

COL William Edwards began his remarks by placing his organization as one that is relatively new to Special Operations Command and the Department of Defense. This was important to note, he argued, because it required SOCNORTH to fit into an existing Homeland Security and Homeland Defense operating environment. He asked what the environment looks at from a blue network perspective. He mentioned supporting law enforcement agencies from a counterterrorist role and the necessity of conducting social network analysis to disrupt and defeat existing networks. Off that point, he did note existing cultural differences between organizations in a whole-of-government perspective and approach. In this context, he posed a series of questions that inform his work that focused on

information-sharing, collaboration, bridging those aforementioned cultural gaps, and building lasting relationships beyond individual tours and assignments.

Dr. Gina Ligon (University of Nebraska Omaha)

Dr. Gina Ligon started her remarks by telling the story of Abdi Nur, a 20-year old community college student in Minneapolis who was last seen holding a semi-automatic weapon in Raqqa. Dr. Ligon suggested that influence, specifically leadership influence, ought to become a component of the net assessment process. She suggested that there are two barriers to its inclusion—one practical and one psychological. The former, she asserted, was that due to title authorities and collaboration around the Department of Defense and the Department of Homeland Security; in short, practitioners are not getting the whole picture from the existing data. Dr. Ligon postulated that the net assessment process could be a vehicle to traverse that distance between that which national security professionals can do overseas and domestically. The psychological barrier, Dr. Ligon argued, exists within the way national security professionals dehumanize adversaries the way they dehumanize us; specifically, the idea that leadership is a capability of adversaries is uncomfortable for professionals and changes the way questions are framed. It also serves to homogenize the outgroup in a way that makes them monolithic and impervious to exploiting differences within that group.

Dr. Ligon presented a way forward, namely by convening concerned individuals to serve on cross functional teams, inviting domestic and international partners to think about the problem in the same way. She underscored earlier points by panelists who conceded that to count weapons and measure territory is easy; however, she argued that assessing leadership is very difficult and urged conference-goers to look at leadership as a psychological process.

Dr. Ligon closed her remarks by harkening back to the story of Mr. Nur, who she posits may return to Minnesota with new grievances, capabilities, messages, and within the sphere of influence of leaders where he was. She asked the audience to think about this scenario, and consider what it would all mean, from a homeland security perspective.

Mr. Nawar Shora (DHS)

Mr. Nawar Shora picked up on Dr. Ligon's depiction of Mr. Nur's case, and asked rhetorically what could have been done to convince Mr. Nur to go down a different path. He urged an internal assessment, wherein policymakers assess their own capabilities and tools. Mr. Shora drew on his own experience within the Interagency, as an operator on the ground, working with communities. He remarked that the greatest challenge before control and influence is a lack of trust that exists within these communities towards law enforcement and government agencies. He suggested that this was due to a lack of communication and a lack of understanding, and suggested that the presence of these two dynamics will eventually yield trust. An honest appraisal of the United States capabilities, Mr. Shora argued, will expose the fact that many tools are lacking to address some of the issues facing the nation.

Discussion

Can you elaborate on the cultural differences within the military and law enforcement nexus?

COL Edwards responded that while all concerned parties see the problem, and are motivated to act towards that problem, the challenge exists within cultural differences that make information sharing difficult.

How effective are metaphors, and how might they be useful in assessing influence?

Mr. Moughon answered by saying that understanding the paradigms are critical, particularly the paradigm that informs how policymakers view power, which represents a paradigm shift from others within the United States government. Assessments, he continued, come back to both hard and soft power. Regarding the latter, he reinforced the necessity of a powerful narrative. He continued on the idea of narratives, saying that simply fighting an adversarial narrative is insufficient; instead, policymakers must present a different set of principles that starve the other idea of attention.

Ms. Harrigan added that memes, for example, are most effective when repeated, and suggested that principle of repetition as a challenge to the content that the United States public circulates.

How can our allies better connect with United States bureaucratic elements for coordination?

Ms. Harrigan noted the existence of a memorandum of understanding between the United States Department of Homeland Security Science and Technology directorate and their Swedish counterparts, which has been helpful in this sense.

Mr. Moughon added that the National Counterterrorism Center is trying to expand their partnerships, both among governments but also beyond them. Noting the growing importance of soft power, Mr. Moughon continued, then the list of potential partners for his organization might also include corporate and nonprofit entities as well.

Net assessments are a relatively broad tool. Are there any other tools that allow users to obtain greater level of specificity?

Mr. Moughon noted that while the United States is good at understanding red aspects (due to strengths within the intelligence communities) and blue aspects (strategists, planners, and interests are understood well), the green area is where the United States government is weakest, particularly with respect to the influence of the United States government. If the goal remains to influence some actors, the government must understand those actors.

Panel 9: From Concepts to Capabilities: Implications for the OPS Community

Panel members:

- Lt Gen (ret) Dr. Bob Elder (GMU), moderator
- CAPT Phil Kapusta (USSOCOM)
- Mr. Jason Werchan (USEUCOM)
- Mr. Marty Drake (USCENTCOM)
- Mr. Mark Sisson (USSTRATCOM)
- Dr. Bob Toguchi (USASOC)

- COL Seth Sherwood (USNORTHCOM)
- Maj Gen Eric Vollmecke (Joint Staff, J5, USAFRICOM)

Lt Gen (ret) Dr. Bob Elder (GMU)

Lt Gen (ret) Dr. Bob Elder noted that over the past two days, the SMA Conference has talked about the implications of changes in our environment, how actors are capitalizing on these changes, and what it all means for the US. Lt Gen (ret) Dr. Elder explained that this panel would provide operational feedback to some of the discussion that has taken place throughout the conference.

CAPT Phil Kapusta (USSOCOM)

CAPT Phil Kapusta pointed out that sometimes, even when we have all of the best information, we still end up making bad decisions. Thus, we should not overestimate what we can do. The best thing we can do is begin by defining a strategy.

It would not hurt to have a grand strategy to guide our actions. In the conflicts of today, we do not end up with perfect end states, so it would behoove us to transition away from the idea of perfect end states because in our current environment, we are in a constant state of battle. The term "nation building" no longer seems relevant because we have not really "built a nation" since the 18th century. Furthermore, the concept of traditional partnership has evolved in our current environment—we now increasingly encounter non-traditional and adaptive partnerships.

Mr. Jason Werchan (USEUCOM)

Mr. Jason Werchan noted that Russia is in USEUCOM's area of responsibility (AOR), and Russia is arguably the best nation state at executing what it defines as a strategy of indirect action. Russia's strategic objectives are not a problem solely for USECUOM or the US DoD, they are a problem for the entire US government. Unfortunately, we are currently failing as a government in combatting Russia's strategy of indirect action in the USEUCOM AOR.

When Russia invaded Crimea while subsequently supporting proxy groups in eastern Ukraine, the USG responded with the European Reassurance Initiative (ERI) and has since obligated roughly $6 billion in ERI. For USEUCOM, $6 billion is a lot of money—particularly since at the time, USEUCOM was looking at Russia as a strategic partner. However, much of the $6 billion investment in ERI was spent on kinetic activities and capabilities. While the significant investment in kinetic options did portray strength, it did little to advance the United States' information operations (IO) capacity in the region.

The reality is that Russia is advancing its strategy of indirect action but the US is not. The US does do some IO and military information support operations (MISO) in the USECUOM AOR, but in comparison to Russia, the US is currently falling short.

Given these shortcomings, what does the US need to do going forward to close the gap with Russia? Part of the problem is that the US is not properly organized to effectively take a whole of government response to what Russia has been doing in the USEUCOM AOR. While there are things like the Russian Engagement Group, the Global Engagement Center, and the Russia Strategic Initiative, the proper solution might actually be something else. In addition to the work the US government is doing in terms

of examining Russian strategy and aggression, it would be beneficial to develop something like a Joint Agency Task Force in Europe.

Mr. Marty Drake (USCENTCOM)

Mr. Marty Drake asked, "How do we take the huge amounts of data and information that we have and use it to make proper decisions?" We have more information than ever before, but we need to get better at properly analyzing the information so we can use it to make better decisions. In this sense, we face a number of notable challenges and questions:

1. We need to determine what we can sense. Though, sometimes we can sense far more information than we can actually use.
2. How do we sense things, and what mechanisms do we use?
3. What are we going to do with the information that is collected?
4. Who or what is going to do the analysis, and where will it take place?
5. What are the qualifications of the person or thing—it does not have to be an individual, it can be a technology—that is doing the analysis?
6. How long will the analysis take?
7. Does the analysis make sense?
8. Who needs to know the findings, and how do we ensure we get the proper information to them?
9. What are the feedback mechanisms?

Providing feedback is the hardest thing to do, but the work the SMA team has done in collaboration with USCENTCOM has been invaluable in gathering and capturing important feedback.

The data cycle process is essential. Pure data needs to be transformed into recognizable information. The information then needs to be used to create knowledge. The knowledge then must be used to create understanding. The understanding will help to make better decisions, which then helps to create wisdom. The people with wisdom will be the most likely to make the best decisions. Ultimately, the true challenge is in taking all of the available data and information and using it to move through the data cycle toward wisdom.

Mr. Mark Sisson (USSTRATCOM)

Mr. Mark Sisson pointed out that USSTRATCOM is notably focused on strategic deterrence, decisive response, and having a combat ready force. To properly operationalize, we need to properly measure. First, it is essential that we clearly define what measurement is. Second, we need to clearly define what we are trying to measure. Things like strategic deterrence, decisive response, and having a combat ready force are difficult to define—often times these things are contextual. Therefore, we need a very flexible toolset to help appropriately address these things.

Dr. Bob Toguchi (USASOC)

Dr. Bob Toguchi argued that in thinking about the idea of control versus influence, these two concepts are not necessarily competing with each other, and the US needs to both control and influence. The DoD is kind of like a large battleship—it does not turn overnight, and it is very slow in changing its basic

direction. To change things within the DoD will require time and proper vision. Given this, there are several things that can be done to cope with these challenges.

First, it is important to use the type of language and rhetoric that the Pentagon understands. USASOC G9 Directorate uses the term "maneuver." The DoD is very good at physical maneuver, but not as good at cognitive maneuver—where influence truly resides. It is important that we expand maneuver—improving capacity with respect to both physical and cognitive maneuver. We need to change doctrine—and think in terms of maneuvering forces and ideas, fires, and narratives, to affect both the enemy and the population.

Second, we need to change the mindset so people within the DoD start thinking about utilizing cognitive maneuver. Changing mindsets starts with education. This education should start with pre-commissioning, basic, and advance courses through the war colleges. We need ideas for how to develop cognitive objectives, and then we need to start using these ideas and objectives in the military planning process—cognitive objectives need to be at the front end of the campaign planning process and doctrine. They should be a part of the Commander's Intent and Concept of the Operation. Cognitive objectives in many cases should be the center piece of the future military campaign; from which both physical activities and cognitive activities are orchestrated to achieve US policy outcomes.

Third, we need to improve structure. Typically, when you have a hard problem, you assign it to an organization. We need to develop an organization that works as a data repository for all of the insights and lessons learned dealing with maneuver in the cognitive space.

Finally, we need to be patient. Making this change to embrace influence will not be easy. However, we can point to our adversaries and see that they are mastering this space while we are not really competing at all, so we need to start improving our capability and capacity.

COL Seth Sherwood (USNORTHCOM)

COL Seth Sherwood noted that USNORTHCOM has a different problem set than the other COCOMs—USNORTHCOM has an inverse problem in the sense that while other COCOMs are trying to contain problems in their AOR, USNORTHCOM provides homeland defense and works to keep bad things out of its AOR.

With respect to influencing and control, USNORTHCOM does not have a lot of control over troops in its AOR; however, USNORTHCOM does do a lot of influencing, primarily through military-to-military cooperation with partners. USNORTHCOM also spends a lot of time working with the Interagency on things like homeland security and homeland defense.

USNORTHCOM has an interesting mission set. Unfortunately, USNORTHCOM's mission is not helped by the fact that there is not a synchronized local COCOM that brings everything together.

Maj Gen Eric Vollmecke (Joint Staff, J5, USAFRICOM)

Maj Gen Eric Vollmecke noted that the DoD has been working on creating a transregional threats coordination cell. This type of coordination effort is really helpful to USAFRICOM. When you look at all of the problem sets in Africa, everything really boils down to the fact that the US is always going to trail

behind until we can start building trust with local populations and actually get locals to willingly flight for their country.

The US needs to figure out how to help push change without creating or becoming part of the problem in Africa. We have to start influencing change at the local level. Achieving the proper balance to do this will require a whole of government approach. We cannot just walk away from the problems in Africa, but we also must ensure that we do not make them worse.

Competition for influence is increasing throughout Africa. China, in particular, is putting noticeable effort into gaining influence on the continent. China has already begun building its first base in Africa, and it will likely not be its last. About 70% of US aid in Africa goes to SOF, while about 80% of Chinese investment in Africa goes to infrastructure. This difference is quite significant. Chinese investment in African infrastructure is paving the way for prolonged Chinese influence over the long-term, and this gives China a noticeable advantage over the US in the competition for African influence.

The US also needs to continue to improve its relationships throughout Africa. The US has an outstanding relationship with France in west Africa. This relationship has proven that with an effective force that has agility and freedom of movement, a lot can be accomplished. France has the strong relationships in west Africa that the US lacks. In addition to our relationship with France, the US needs to continue to build and improve relationships across Africa.

Discussion

What kind of changes have you seen in your COCOM to deal with this increasing focus on influence?

Mr. Drake noted that USCENTCOM has one of the largest IO forces in the DoD. USCENTCOM's IO WebOPS Team gets information from an array of sources as a means of gauging sentiment in the AOR, which then develops insights that can be folded into the planning process to help USCENTCOM make better plans and preparations. USCENTCOM's IO force operates 24/7 and continually polls USCENTCOM's AOR to help inform USCENTCOM decision-making.

Dr. Toguchi pointed out that there is a problem with properly sharing data. The data sharing process is quite stove-piped and needs to be improved. We also need to improve our processes for measuring the impact of our IO.

COL Sherwood noted that USNORTHCOM has put significant effort into building its influence capacity by working with the Interagency.

Mr. Werchan added that COCOM collaboration is important and something that USECUOM has been putting notable effort into increasing. USECUOM is also focused on working with countries that are most susceptible to Russia influence to help provide them with security cooperation to ensure that they are resilient and prepared.

Mr. Sisson noted that timing and shaping are critical components. We need to be proactive in our messaging.

Mr. Drake added that the SMA team has been very helpful in supporting USCENTCOM in the planning side of its IO capacity.

One of our challenges seems to be that our adversaries can bend the rules, whereas we have strict democratic and bureaucratic processes. How do the Commands deal with this?

Mr. Werchan noted that USECUOM has a particularly specific problem in this sense with Russia. Russia is insanely responsive and is able to act much more rapidly than the US. How do we counter this? USEUCOM's greatest strength is its European allies. Whereas we have restrictions with respect to authority and authorization, our European allies uniquely equipped to respond in certain ways that we cannot.

Mr. Drake stated that one could argue that if we are doing things correctly, we are not going to be surprised—we will be able to predict when a turn might happen and be prepared for it. The US seems to be pretty good at not getting caught off guard or being surprised.

Dr. Toguchi emphasized the importance of resilience. We need to build resilience so that we can be prepared for surprise. Resilience is more than just the narrative—it is also gained through our capabilities. We also need to look more closely at non-traditional indicators and warnings that an adversary like Russia would not expect. We have to be more innovative and creative with things that can provide non-traditional indicators and warnings, thus putting us ahead of our competition.

Mr. Sisson noted that this problem is not specific just to government. Businesses suffer with this type of problem daily.

What are we doing to control the information environment?

CAPT Kapusta noted that it seems like we want to control information. The DoD vastly overvalues classified information and goes out of its way to contract efforts to provide separate proprietary pools of information, which ends up leaving us with a bunch of pools of information that do not connect. Meanwhile, there is a huge ocean of unclassified information that we do not capitalize upon. We need to stop overvaluing these highly classified proprietary pools of information and start putting more value and focus on the rich supply of open source information. Ultimately, it seems we have an information problem, and the problem requires a paradigm shift to be solved.

Mr. Drake stated that we should not want to control the information environment. We should leverage the information environment in an efficient and useful manner, one that generates understanding and knowledge.

Dr. Toguchi added that we should also listen to our allies and learn how they are leveraging the information environment because we are not the only ones exploring this space.

Over the past two days we have heard many great ideas with respect to things that we wish we could do. That said, if you had to name one thing that is the most important thing that needs to be done but currently is not being done, what would it be?

Mr. Werchan noted that we simply cannot compete short of conflict with our adversaries by using the DoD on its own. We have to operate short of conflict as the Interagency. We need a person in power that deals with the whole of government response to short of conflict operations.

Mr. Drake stated that we need to update and improve the educational processes used for young soldiers as they come up through the ranks and start making plans and decisions. Things like information operations and influence operations need to be inculcated into our military education processes.

Maj Gen Vollmecke stated that we make a lot of promises in places like Africa, but our acquisition process typically slows us down in fulfilling those promises. It would be great for us to improve our acquisition process so that it is faster and more efficient.

CAPT Kapusta noted that USSOCOM largely focuses on two core functions: working with locals and direct action. However, roughly 90% of USSOCOM's effort goes into direct action—we have created the world's best killing machine, but we have not put the proper effort into working with locals, which is ultimately the longer-term piece of the puzzle.

Dr. Toguchi noted that the cyber realm is a real challenge—the US is falling behind in some of the cyber skillsets that we need.

COL Sherwood stated that we need a synchronized global COCOM plan. For example, when looking at the influence that Russia has in the Arctic, we need to also know how this effects other things like trade routes, homeland defense, etc. A synchronized global plan for all of the COCOMs would help with questions like these.

Closing Remarks (Dr. Hriar Cabayan, JS/J39/SMA)

Dr. Hriar Cabayan thanked participants for attending the 10th annual SMA conference. The SMA team greatly appreciates the moderators, panelists, and participants for the significant effort the put into supporting the conference.