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Past, Present, and Future Irregular Warfare Challenges: Private Sector Perspectives

Barry Costa
Director, Office of Technology Transfer
The MITRE Corporation

Chairman and members of the subcommittee, thank you for inviting me to speak today about irregular warfare challenges, specifically the value of sociocultural situational awareness and the technologies and data that enable this awareness and support rapid and effective decision making.

What I will describe is 21st century "radar" . . . i.e., technology that can provide us with rapid and effective insight into the changing scenarios for irregular warfare, as well as other missions. Just as airborne cameras give us a view of the physical terrain, there are now technologies that give us a view of the human terrain, including populations, networks, groups, and behaviors.

The ability to rapidly understand the human environment around the world is becoming increasingly important, as we have all seen in the past few years. It is critical to the security of the United States to understand the sentiments and actions of people throughout the world, and to be able to appropriately engage with words and deeds to positively shape the environment.

While technology can't replace deep human insight, MITRE firmly believes that understanding this human domain is possible and is best supported by technologies that are both empirically derived and scientifically grounded. What we have discovered, achieved, and transitioned in the past 10 years has shown great promise and applicability, despite just modest investments. There is a case to be made for continued, and perhaps larger, investments in this area so that additional progress can be made more quickly.

The not-for-profit MITRE Corporation operates a number of federal agencies' Federally Funded Research and Development Centers and manages an independent research and development program, which leads research in this area. In addition to conducting research, we help our government sponsors apply this new technology to their missions, including irregular warfare, counter-proliferation, counter-WMD, and even public interest healthcare issues. MITRE's "Social Radar" vision helped drive the Department of Defense's thoughts and investments in this area and, for that, we are proud.

To understand the global human environment, we need to look beyond the places in which the United States has forces, including Afghanistan, and consider all potential places for conflict, which could form very quickly. The technologies that MITRE and others have been developing and transitioning for the past several years are the principal tools of phase 0 military operations, when we must positively engage with allies and adversaries. The tools are also enablers for irregular warfare since they allow us to determine the networks, groups, key influencers, and audiences with whom we should engage.

We are also convinced that by working together with academia, industry, and government, we can more quickly bring the right combination of expertise together to solve these tough challenges and get capabilities into the hands of the warfighter. Collaborating

with this broad community also improves MITRE's ability to transition our intellectual property directly to sponsors and industry, when appropriate. By transferring our technology to customers, other U.S. government agencies, commercial entities, and academia, these tools can be of broad value to our sponsors and the U.S. government.

As we continue to research and transition social radar tools and technologies, we look to increase affordability and effectiveness by finding new ways to use these technologies to support multiple mission domains.

It was more than 10 years ago, when working on a U.S. Special Operations Command (USSOCOM) program, that we began to envision and build tools to provide insights into the human domain. Six years ago we helped the Department of Defense (DoD) begin and execute the Human Social Culture Behavior Modeling Program. This led to the creation of indications and warning capabilities that can alert us to significant changes in the human environment, such as long-term worldwide instability or the kind of changes we saw during the Arab Spring. Over these 10 years, the DoD has made great progress with a modest investment, but there is much more to be done.

The need for these capabilities was publicly recognized around 2006, after years of experience with non-conventional conflicts spanning multiple operational phases in culturally complex and unfamiliar terrain in Iraq and Afghanistan. These years gave the U.S. military a deep appreciation for the importance of sociocultural understanding. Success in these conflicts depended on close, effective interaction with an array of actors, including local populations, governments and military forces, allies, and non-governmental groups.

This experience led an increasing number of military leaders to

articulate the need for enhanced capabilities rooted in social and cultural factors to understand behaviors. For example, when Lieutenant General Benjamin Freakley was in Afghanistan as Commanding General Combined Joint Task Force-76, he said, “We must develop the ability to understand the complex human factors and must incorporate them into all facets of operations.”

Overall in the last six years, the defense community has built a science and technology foundation for understanding this human domain and has improved capabilities for understanding behaviors driven by social and cultural variables. We are now better positioned to pursue effective courses of action in the full range of military operations. In fact, the research community has already delivered some of these tools to organizations including: USSOCOM, as well as the U.S. Southern, Strategic, and Pacific Commands, International Security Assistance Force, and U.S. Army Training & Doctrine Command Analysis Center. The adoption of these technologies is not limited to the Department of Defense; the Intelligence Community and Department of State are also adopting technologies in this domain.

Much remains to be done, however, to evolve and adapt sociocultural behavior sense-making capabilities to play a vital role in current and future missions. Recent, rapid, and profound shifts in the geo-political context have brought renewed attention to challenges such as hostile non-state actors who may be pursuing weapons of mass destruction, nation-state instability driven by drug economies and transnational criminals, humanitarian and disaster relief, and cyber threats. Continued sociocultural behavior research can make significant contributions to all of these missions.

The nation must adapt its methods and create new tools that reflect the realities of national security in the new age of real-time global information flow, and we must understand and engage in the public dialogue created by these new communication media.

While social media is only one of many different data sources necessary to achieve this human domain awareness, and is best used in conjunction with traditional data and methods, its importance is growing rapidly. It is a wired world in which 2 billion people have mobile broadband and 4.8 billion people have cellphones. We expect most of the world's population to be connected to the internet in some way within the decade. As this happens, more and more people will use social media and similar mechanisms to describe their locations, themselves, and their environments.

The challenge is to find the valuable signals amidst an enormous amount of data. Lieutenant General Michael Flynn, Director of the Defense Intelligence Agency, has argued that we "must develop a sensory capability to better detect the precursors to political change, a social radar that enables policy leaders to make informed decisions that maximize national influence left of bang."

There are many very difficult challenges in this area, some of which will take decades to solve, but there are things we can do now to detect meaningful signals amidst the data deluge, support more timely alerting of change, and better understand the effectiveness of our words and actions upon various audiences.

The Assistant Secretary of Defense Research & Engineering's Human Social Culture Behavior Modeling Program drove many of today's successes, including the Worldwide Integrated Crisis of Early Warning System (W-ICEWS), which forecasts long-range nation state instability, and the Identifying and Countering Terrorist Narratives project, which allows us to go beyond what is explicitly stated and understand the deeper underlying narrative. In addition, the program developed network-based metrics for discovering change in dynamic networks and identification of emergent leaders, issues, and trends; and it developed a simulation-based workbench combining computational models that allows

users to experiment with the effectiveness of alternative actions to influence audiences.

In addition, MITRE has developed proof-of-concept Social Radar tools that support understanding of rapidly changing sentiment and emotion across the globe.

Innovative ideas for research, science, and technology are essential to long-term success in building DoD sociocultural behavior capabilities. Experience to date suggests an exciting future in which global information, applied research, and analytics are fully and dynamically integrated. However, DoD and the nation are not at that desired end-state. To get closer, DoD should maintain the momentum created over the past several years by supporting promising research thrusts that will result in the capabilities most relevant to future national security demands.

The recommendations that follow reflect the experience of the last six years in the Human Social Culture Behavior Modeling project, including our understanding of current commercial technology and research efforts under way in this domain.

1. DoD needs a robustly funded research and engineering program to address the range of capabilities users need. The area of applied sociocultural behavior research and engineering is still relatively young. Specified requirements remain relatively limited, despite widespread acknowledgment of needs. While the Services are conducting research in this domain, funding cuts have blunted the creation of the scale of programs needed.
2. The Services should prioritize Science & Technology for the development of sociocultural behavior capabilities, building on some of the innovative work already under way. This needs to be supported by specification of current

sociocultural behavior-related capabilities and the requirements of Service communities. To maximize the success of the first two recommended actions, DoD needs to intensify coordination across the sociocultural behavior research space. Using mechanisms such as the Office of the Secretary of Defense Human Systems Social, Cultural and Behavioral Understanding sub-area group, DoD should increase coordination both horizontally (across the Services and at any given level of research) and vertically (from Basic through Applied research and on to Advanced Technology Development and Prototyping programs).

3. DoD should identify a center of excellence for sociocultural modeling, integration and analysis, focused on application of technology to user needs, rapid transition to users and Programs of Record, metrics, data interoperability, model validation, and model reuse and generalizability. This center should emphasize moving sociocultural behavior tools into operations as quickly as possible.

Let me leave you with this thought: If the DoD had ended its research investment in pulsed radar technologies after just five years, the program would have ended in 1939, at the start of World War II, leaving us with a rudimentary capability for long-range sensing, as well as a glimmer of its tantalizing potential.

The research in human domain situational awareness may prove just as important. We must continue to support this research, as well as the quick transition of capabilities to the organizations that need them.