Simulation for Women, Peace and Security Training

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ABSTRACT

This paper describes an innovative methodology recently used in two unclassified joint exercises associated with modeling and simulation to support the Women, Peace and Security (WPS) Act of 2017 training requirements for deployed US forces and US agencies which may benefit our partners and allies. Simulation in the field of gender advisor training to support WPS is critically important to the US military because it supports improvements in promoting meaningful participation of women in conflict prevention, management, and resolution, as well as post-conflict relief and recovery efforts, by forecasting behaviors that are more realistic, reliable and repeatable among non-military populations. To date there has been insufficient modeling of the representation of women in military advisory roles within the operational environment (OE) and their value-added effects on the OE with respect to military decision-making.

The objective of this research led by TRADOC G-2 Modeling and Simulation Office is to design and develop a novel and fully automated method of implementing the DoD WPS Strategic Framework and Implementation Plan by using simulation as a means to support training and mainstreaming of a gender perspective into theater plans, in order to enable joint forces to develop inclusive security strategies that advance gender considerations. This effort leverages recent unclassified and notional exercise results to demonstrate how simulation can support joint and Army training for WPS at the grass-roots level in the several "battleground areas" and shows what quantitative benefits might accrue to civilian security. This modeling approach supports other equities besides DoD including international partners, who may benefit from DoD simulation when providing technical assistance, advice and training to female partner nation force negotiators, peace builders and stakeholders such as non-governmental and private sector entities engaged in or affected by conflict prevention and stabilization, peace building, security or related efforts.

ABOUT THE AUTHORS

Mr. Mel Cape, Lieutenant Colonel, USA (Retired) and Director of TRADOC G-2 Modeling and Simulation Office has 25 years of experience with modeling and simulations, holds a Master's Degree in Information Technology Management. Currently he is the subject matter expert with respect to Operational Environment representation in models and simulations across the virtual, constructive and gaming domains; the greater Army M&S Enterprise of M&S-enabled Communities; and for Synthetic Training Environment development.

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INTRODUCTION

The concept described in this paper involved a deterministic tool approach and a simulation called Athena was used. Athena was selected because stochastic modeling does not account for broad sociological constructs or algorithms adequate to test predominately qualitative data. This paper is focused on modeling the political, military, economic, social, infrastructure, information, physical environment, and time (PMESII-PT)-related factors in two recent notional training events, one involving operations below the level of armed conflict and the other centered on a Humanitarian Assistance (HA) operation. These table-top exercises were not intended to evaluate the effectiveness of implementing Women, Peace and Security principles (WPS) within an operation but were used in this way because the opportunity availed itself. WPS (NATO, 2017) requires that relevant DoD personnel receive training in the following areas: (1) Training in conflict prevention, peace processes, mitigation, resolution and security initiatives that specifically address the importance of meaningful participation by all genders; (2) Gender considerations including training regarding international human rights law and international humanitarian law, as relevant, as well as protecting civilians from violence, exploitation, and trafficking in persons; and (3) Effective strategies and best practices for ensuring gender considerations are included in military planning and operations. This is intended to recognize that the diverse role women play in preventing and mitigating conflict is substantial.

Executive and legislative branches of government tasked the US Departments of State, Homeland Security and Defense (DoS, DHS, DoD), as well as the United States Agency for International Development (USAID), to create implementation plans that would become a whole-of-government approach towards WPS. The US is the first country to make WPS law with an intent is to promote women's participation in conflict prevention (PfPC, 2016). Since the goal of WPS is to promote national security, the use of modeling and simulation (M&S) to aid in better understanding WPS dynamics should be at least as essential as the use of simulation in other training. WPS implementation within the military has led to DoD's identification, assignment and deployment of Gender Advisors (GENADs) and Gender Focal Points (GFPs).

Gender Advisors

A GENAD is the trained principal advisor on approaches for integrating gender into the command. The term Gender Advisor is not unique to DoD. This role can be found in UN Peacekeeping Operations and other organizations, including NATO, partner nation militaries and even some civil society organizations. GENADs promote and support gender-responsive approaches to policy and program work within the context of a given mission, operation, or command. They provide strategic advice in planning and policy making processes, in coordination meetings and task forces, as well as through existing gender units or GFPs. GENADs may be responsible for things like: advocacy and

awareness; training and capacity building; assessment, monitoring and evaluation; reporting; and technical advice and support. Additionally, many subordinate unified commands, joint structures and subordinate component commands have their own Gender Advisors and Gender Focal Points.

Gender Focal Points

While GENADs help manage strategic-level WPS implementation, GFPs are critical at the operational and tactical level, because they are the individuals who will enable true gender mainstreaming within the organization. GFPs are the ones who will be responsible for identifying gender considerations within their functional areas of expertise and applying them to the day-to-day work within a command. Training for GFPs is primarily about equipping them with a gender perspective, which they will bring with them to every meeting, planning conference, or engagement they attend. GFPs are the advocates assigned on staff to help mainstream gender factors and understanding throughout functional and combatant commands.

THE OPERATIONAL PROBLEM

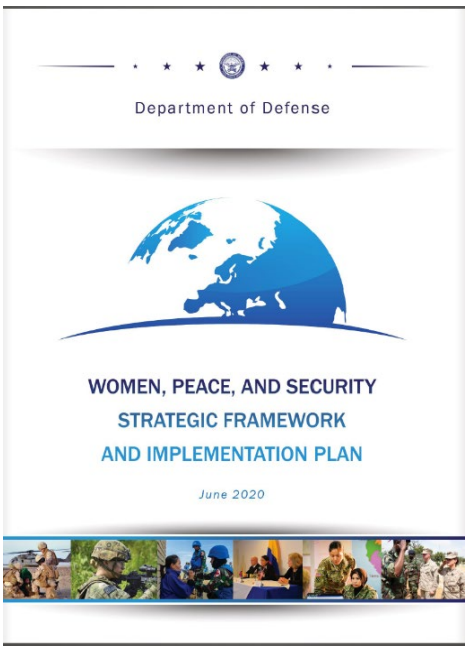

Figure 1. SFIP

The United States Department of Defense Women, Peace, and Security Strategic Framework and Implementation Plan (SFIP), June 2020, provides DoD with objectives and tasks to implement the 2017 WPS Strategy. The SFIP highlights gender as a key identity characteristic to inform DoD planning. It recognizes that relevant DoD personnel must understand how gender factors influence the OE and partner nation militaries. The SFIP points out the need to understand how gender influences religion, tribal affiliation, ethnicity, and other sociocultural characteristics. The SFIP highlights the need to more inclusively incorporate the perspectives of men, women, boys, and girls to assess risk to mission accomplishment and to identify opportunities to increase the roles for women in defense and security. When a problem such as how to improve compliance with the SFIP is complex, expensive or time-consuming to examine in real operational context, computers and numerical simulation becomes a practical means to gain a better understanding. Complex algorithms such as non-linear equations and Bayesian Time Influenced Networks are often used for these calculations. Even so, they are limited due to the qualitative nature of the modeling inputs. GENADS and GFPs may be able to use the plausible and independent results from simulated gender variables in exercises to demonstrate for commanders and staffs how gender considerations can improve operational outcomes. In this case, quantitative methods are used for this analysis; however, the source data are actually qualitative.

Gender is a key component of the OE, and it is imperative that gender dynamics be understood, integrated and synchronized across all facets of military operations. The fundamental problem is the absence of tactics, techniques, and procedures (TTPs) for using simulation to provide situational awareness of gender effects. This limits a commander's ability to fully visualize the OE, much less interpret it correctly. The Army has a documented need to improve PMESII-PT based modeling and simulation of the OE and research shows that M&S specifically lacks methodologies to adequately incorporate WPS factors into simulations. In addition to providing an improved operational understanding of the OE, gender considerations incorporated into simulation can assist in illuminating the need for additional programmatic resources. For example, the SFIP identifies the need to increase the number of partner-nation women participating in annual training exercises and engagements, as well as the importance of all-female engagements with partner-nation militaries. Simulation which includes WPS factors can effectively inform funding decisions for recruitment, training, force mix decisions and many other areas. Further, the SFIP supports the deployment of mixed teams of male and female US personnel when executing security cooperation missions in order to "lead by example" in diversity and inclusion when engaging with partner-nation militaries. The aim is to integrate WPS concepts into annual security cooperation activities in order to build professionalism and improve the standards of conduct within armed forces. Approaches such as the use of simulation described in this paper are needed to promote

relevant and widespread training opportunities for service personnel on WPS principles, to include pre-deployment training.

OVERALL ANALYTIC FRAMEWORK AND APPROACH

The focus of this paper is on the experiential value of the approach taken. It would take more investigation to address many questions raised during the recently conducted Joint exercises including:

- Is there a realistic way that WPS principles within a security cooperation and disaster relief situation could be simulated?
- Can a PMESII-PT model such as Athena be used by joint force commanders, staffs, GENADS and GFPs to improve WPS implementation and outcomes within mission area/theater?
- Could this simulation be used as a way to support training aimed at integrating WPS principles and gender perspectives within campaign and contingency plans, including task orders?
- Would simulation of WPS facilitate training of headquarters staffs on WPS principles, particularly during new analyst and advisor in-processing?
- Could simulation be used to leverage military-to-military partnerships to advance WPS principles across partner nation security sectors?
- How might simulation be used to integrate WPS principles within security cooperation, humanitarian assistance, joint and multilateral exercises, and warfighting seminars?

The overarching Athena-WPS employment concept described in this paper was implemented within a standard warfighting scenario and in a humanitarian assistance exercise. These two venues provided a framework for addressing gender considerations in conjunction with Athena's computational modeling processes. Gender considerations were implemented through access, replication, and delivery of WPS effects in an OE-relevant context. These unclassified exercises provided the conditions, circumstances and influences in which the implementation of gender considerations shaped the decisions of the joint force commander. This proof-of-principle was imbedded in a technology-assisted analytic framework using the Army's award winning Athena Simulation. The TRADOC G-2 M&SO employed this approach as an early foray into experimenting with WPS analytics and as a tool to help its Army and Joint clients better understand and visualize gender aspects of the OE.

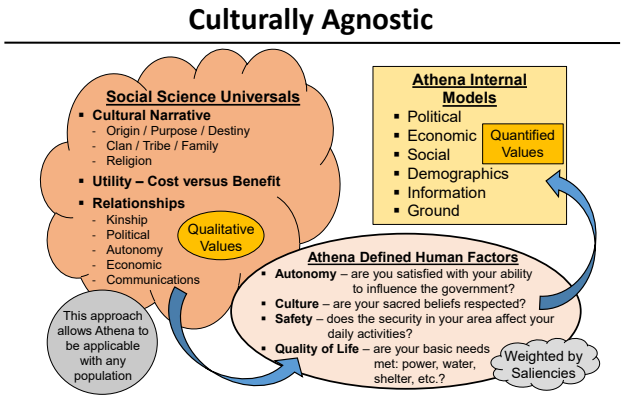

Figure 2. Athena Simulation

The analytic results of this PMESII-PT based modeling produced insights that improved the understanding of commanders and staffs during the exercises. The approach provided an improved, contextual picture of the impacts of gender considerations upon military operations, as well as insights into the sensitivity of critical trust relationships formed with the civilian populace in what can be a complex, congested, and competitive operating environment. Athena is a qualitative tool to support the decision-making process. Athena's outputs do not hold quantitative, numeric weight.

A large body of work surrounds the representation of PMESII-PT factors in simulation and training. This paper differs from other approaches by focusing on how the Government Rights Athena Simulation can be used as a decision support tool for WPS oriented training of military staffs, GENADS and GFPs preparing to deploy for operations worldwide. It addresses strategic, operational and tactical level uses of Athena to train individuals on challenges which may be best resolved through the application of gender-based dynamics. This paper examines short-term and long-term opportunities for improving Joint Force, Army, and GENAD/GFP pre-deployment training effectiveness by using simulation to identify and explore non-standard variables that may not have been considered.

ATHENA SIMULATION

The Athena Simulation was developed by NASA/JPL for the Army and placed into service to address the Army's capability gaps with respect to PMESII-PT focused modeling. Athena is a deterministic sociocultural modeling capability and decision support tool which supports staffs, commanders and/or other key decision makers by providing both a framework to better understand complex PMESII-PT based problems, and a simulation for computationally assessing the long-term consequences of employing various engagement options across the OE. Athena enables the analysis of second and third order effects upon noncombatant groups and their possible responses in order to discern potential outcomes from political, military, economic and social interventions. Athena allows leaders and analysts to understand the intended and unintended consequences of their proposed actions through a simulation process that incorporates social science "universals" into course of action analysis and campaign planning.

The Athena program was established by the US Army as an innovative approach to modeling the OE. Critical to this modeling effort was a solid underpinning of social science theory to substantiate the sociocultural results generated by Athena. Normally a two-member team operates the system, one operations research analyst (ORSA) to design the experiment and engage the staff, and one modeler/analyst to operate the simulation. These individuals are often augmented by a researcher during database development. The simulation is scalable and has been used to support studies of megacities and countries, and in some cases, multi-nation regions. The simulation runs very quickly and efficiently, a three year run will normally be completed in 15-20 minutes allowing multiple runs to be conducted in a relatively short period of time enabling the several courses of action (CoAs) to be compared and contrasted.

The predominant use of Athena has been in support to the Joint Staff and COCOMs (studies have been done for CENTCOM, INDOPACOM, SOUTHCOM and AFRICOM). Athena also supported an operational deployment to Jordan to look at the early stages of the Syrian refugee crisis; in Tampa, FL (SOCCENT J5) to help better understand ISIS; and in Kuwait in support of Operation Inherent Resolve (CJTF OIR). Studies and/or experiments have also included the use of the simulation in support of the Defense Threat Reduction Agency (DTRA), the US Army Special Operations Command (USASOC), the Mission Command Battle Laboratory, and the Unified Quest experiment. Finally, Athena has been employed to support leader development, training and education in venues such as the School for Advanced Military Studies, the US Army War College and the Joint Forces Staff College.

GENDER CONSIDERATIONS MODELED IN ATHENA

The Athena modeling team conducted cultural and historical research into each of the PMESII-PT variables affecting the scenario area, while paying particular attention to those that might be most susceptible to adversarial actions to manipulate populations and/or tamper with gender fault lines.

These variables and their interrelationships determine the nature of an OE and how it might affect or be affected by a military operation. The OE data sources, include, but are not limited to:

- Strategic partners (e.g., NATO, UN, World Bank, international community)
- Interagency partners (e.g., DoS, USAID, DoJ, CIA)
- Multinational partners (e.g., host nation governments)
- Non-governmental organizations (e.g., women's organizations)
- Industry and academia
- TRADOC G-2 Global Cultural Knowledge Network and Foreign Military Studies Office
- Operational Environment and Threat Analysis Directorate

Secondary research provided sufficient fidelity for the notional warfighting scenario. PMESII-PT variables and sub-variables were used as inputs for the Athena simulation runs. Athena was used to calculate initial relationships between and among forces (police, militias and military) and civilian groups. The OE represented in this warfighting scenario involved significant levels of interaction with the local civilian populations. When accounting for civilian population dynamics, WPS implementation is relevant, if not vital, to many aspects of these PMESII-PT based operations.

The WPS literature review indicated that when gender considerations are acted upon, there are a number of applications frequently mentioned as potential areas for military operation improvements. Improved gender

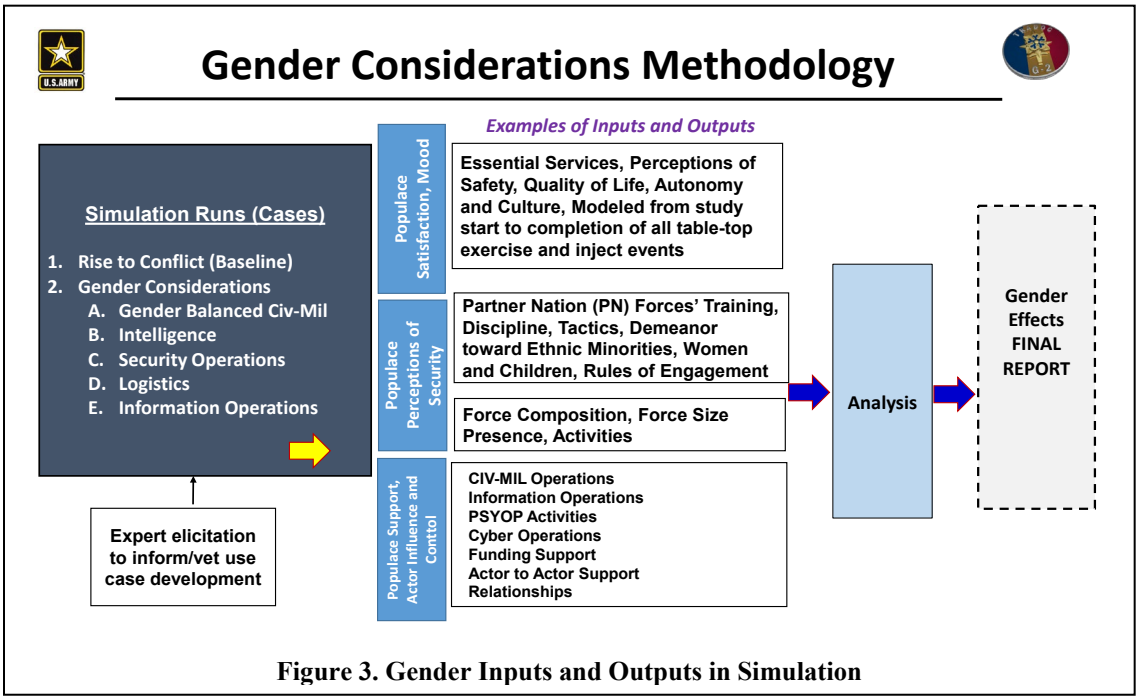

Figure 3. Gender Inputs and Outputs in Simulation

representation in the five areas below are commonly mentioned. These functional areas indicate opportunities for simulation. Underserved and underrepresented populations might develop improved *trust* for joint forces when gender-imposed barriers are removed in these areas. This trust may develop simply as the civilian populace learns more about the intent of the military operations in their neighborhoods. Our goal was to see if simulation confirms or denies operational improvements when implementing gender considerations in training exercises as required by DoD policy. The Athena team ran the simulation in two ways, with and without gender considerations to determine the value-added of implementing and accounting for WPS factors in military operations.

The five selected areas for simulation as shown in Figure 1 were as follows:

- **Gender Balance (Engagement and Civil-Military Team Composition)**. This research team modeled in Athena recruitment and retention a change to the traditional composition of Civilian-Military Operations (CMO) teams which improved gender balance (i.e., this change was made to Civil Affairs teams which may be populace facing in mission areas). In the Athena simulation, this gender-balanced force is modeled as a force group with a belief system that is more understanding of concerns and fault lines of underrepresented and underserved individuals based on gender.

- **Intelligence.** The research team modeled gender perspective impacting intelligence collection (i.e., human intelligence, risk assessments, analysis, and production). In the Athena simulation, this is modeled as a civilian population that is more cooperative with Host Nation authorities based on *trust* that is earned by Host Nation forces as a result of those forces demonstrating concern with fault lines of underrepresented and underserved individuals based on gender. Greater cooperation by the civilians in the simulation leads to improvements in overall targeting of adversaries.

- **Security Operations**. The researchers modeled women's security situations and gender analysis, supporting the planning and execution of operations, particularly at check points, and during patrols, and search operations. The Athena simulation suggests a greater probability for local civilian populace to participate in routine economic and other activities necessary for stability if the threat of contending with male-only checkpoints is eliminated.

- **Logistics.** The authors of this paper modeled logistical activities which have an impact on gender relations; for example, temporary sheltering, internally displaced persons (IDP) facilities, medicine, water, and access to communications devices, etc. In Athena, getting the right medicine and shelter impacts both safety to civilians but also quality of life. GFPs and GENADs know to work with local organizations to get the right humanitarian relief measures in place. This leads to improved trust and compliance with population management directives (e.g. remain in place).

- **Information Operations.** Lastly, this research team modeled audience reach and messaging effectiveness when gender aspects are given appropriate attention within communication planning and outputs to support the overall strategic and operational intent. The predominant issue here was not merely orienting messages to women; but rather, creating the messages themselves with an understanding of gender dynamics in the local area. Likewise, if voice was deemed the best way to reach women because of structural discrimination in implementing girls and women literacy, then leaflets with words or narrative chat messages may not be the best way to reach women and girls. Athena modeling reflected this problem in several ways. For example, lack of access channels, lack of message relevance (in Athena referred to as "payload" and "regard"), lack of means for women to actually hear messaging, safety listening to messaging, etc.

Inclusion of women in the five areas identified above, leads to improved understanding and visualization of the drivers of instability. These five areas indicate a need for more meaningful implementation of women in better understanding local civil reconnaissance and civil networks in the OE. The simulation results support the authors' hypothesis that Civil Affairs and Information Operations present key entry points for gender balancing and mainstreaming. These two fields involve direct interaction with civil society and establishing trust which is essential for gaining opportunities for engagement with traditionally underrepresented and underserved women and children.

RESULTS AND LIMITATIONS

Results of Joint Force Exercise #1: Continuum of Competition (Operations below Armed Conflict)

The primary objective of Athena was to model joint force operations across the continuum of competition to conflict and a return to competition, and through that modeling process, to identify key engagement points for the US forces. Those key nodes represent points where the US forces can most effectively generate influence in a region by using their skills, particularly in the process of training and equipping the various host nation militaries and/or providing an effective liaison between the host nation and the whole-of-government resources of the US and NATO.

Due to the variability of potential futures in an operational area, this study could not definitively ascertain every possible effect of WPS on regional stability. Accordingly, neither generalizability nor inferentiality can be implied. Nevertheless, what became apparent through the course of the analysis is that the presence of sociocultural fault lines, including some with inherent gender issues, can be exploited by a near-peer adversary to impact the security and satisfaction levels of local noncombatant populations within of any of the countries, provided a means for both state and non-state actors to significantly influence potential regional futures. An understanding and monitoring of these fault lines by the joint force commanders, staffs, GENADs and GFPs, coupled with the establishment of an enduring and responsive presence with pre-approved authorities to engage proactively with Partner Nation forces in conducting activities in the early stages of the Competition Continuum, was shown through Athena modeling to be an efficacious means of mitigating the success of a near-peer adversary in this scenario.

Affording the joint force engagement teams with the opportunity to include gender considerations during their engagements with Partner Nations forces resulted in a significant positive impact across the region. Providing technical assistance, advising and training to female Partner Nation force negotiators, peace builders, and stakeholders (private sector and non-governmental entities engaged in or affected by conflict prevention and stabilization, peace building, security, or related efforts), demonstrated that the involvement of women during these interactions had a positive and lasting impact on civilian security leading to a concomitant improvement in the readiness of the Host Nation Partner States to respond to the threat of adversarial incursion.

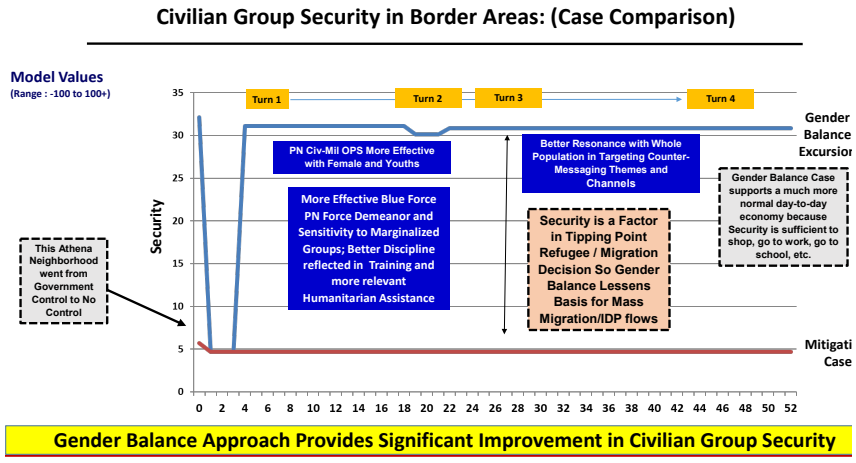

Figure 4. Gender Perspective in "Battleground" Areas

Description. This project was designed to assess whether underlying assumptions behind the *Women, Peace and Security (WPS) Act of 2017* could be modeled at the grass-roots level in the five near-peer "battleground areas" and if so, to determine what quantitative benefits might accrue to civilian security. This excursion models civilian-military (Civ-Mil) operations, supported by Department of State (DoS) and the United States Agency for International Development (USAID): (1) providing technical assistance, advising and training to female partner nation (PN) Force negotiators, peace builders, and stakeholders (non-governmental and private sector entities engaged in or affected by conflict prevention and stabilization, peace building, security, or related efforts).

Discussion. The Athena modeling effort suggests WPS-influenced gender advising by changing some inputs to implicitly assess WPS-like impacts. The belief systems were adapted to show an inclination to prevent, mitigate, or resolve violent conflict; and enhance the success of mediation and negotiation processes. Simultaneously, the force

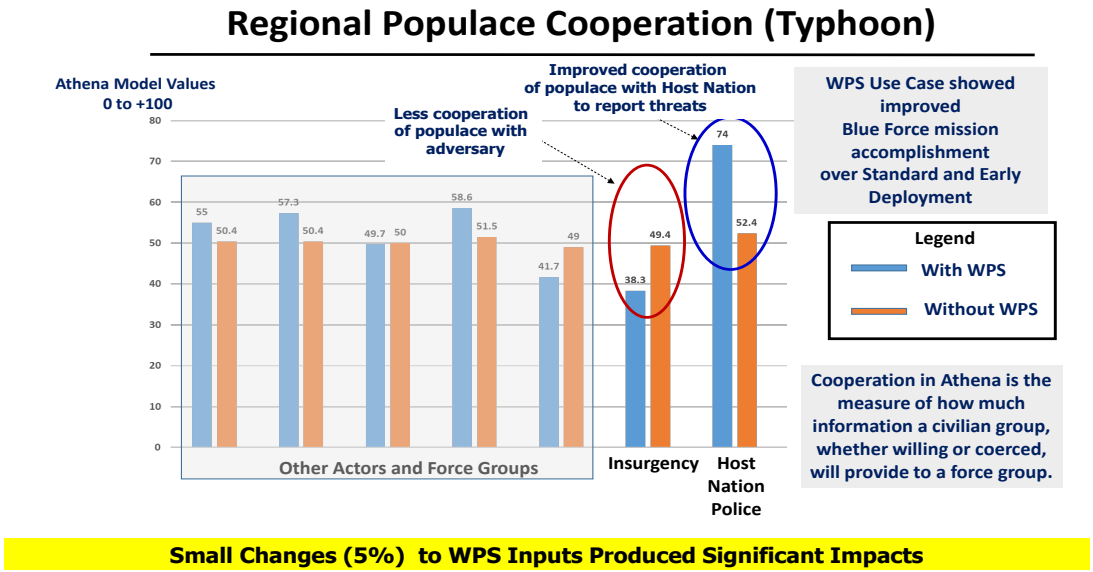

Figure 5. Population Cooperation

groups' demeanor, propensity toward violence was altered to reflect that gender-balanced PN security forces are more likely to work over time to address root-cause fault line issues and more likely to promote citizen confidence in democratic institutions. The ATHENA modeling was altered in this excursion to reflect improved resonance for information messaging by the joint-force messaging campaign among 75 percent of the battleground area populations, specifically women and children. Civ-Mil Operations-Law Enforcement operations involving PN Forces with women and children were given an increased efficacy factor based on assumptions underlying WPS of greater receptivity by women and children to women's participation law enforcement and rule of law. This approach is a method of modeling gender-informed advising and coaching PN Forces in addressing security-related barriers to women's participation; encouraging increased women's participation in law enforcement, rule of law, and military education training; supporting appropriate local organizations, especially women's peace building organizations; and expanding gender analysis to improve outcomes. Lastly, research suggests that women and children possess greater probability to cooperate with female police because women police are less likely to use excessive force. To determine the impacts of this assumption, the modeling was altered in the following two ways: Force Group demeanor (propensity toward violence) in the gender-balanced PN forces was lowered along with PN Force discipline toward the civilian population (in the Athena simulation this is called STANCE) and the Civilian group demeanor toward the PN Forces was modified.

Findings and Results. The results from perspective of Civilian Group security was that gender-balancing can be a force multiplier. That is without gender balancing, more forces are needed to achieve the same level of civilian security. Gender balance was modeled by altering force demeanor, civilian group demeanor, PN Force discipline through gender and cultural sensitivity training (in Athena this is called, "stance"), improving cooperation levels to reflect better intelligence being provided by women to police forces that are gender-balanced, as well as women-crafted messaging targeted by PN Forces IO campaigns reflecting better regard, acceptability and therefore better resonance and directed at 75% of the population sometimes forgotten (women and children) improving not just sensitivity to women, but also culturally / socially marginalized groups. Lastly, the modeling outcomes reflected more effective humanitarian assistance and slightly better compliance with PN Force instructions. Improvements in civilian security were substantial and the Gender Balance excursion supports a much more normal day-to-day economy because civilian perceptions of security were sufficient to shop, go to work, go to school, etc.

Results of Joint Force Exercise #2: Humanitarian Assistance (Typhoon)

The Athena team ran the simulation in two ways, with and without gender considerations to determine the value added of WPS implementation. The results were encouraging.

- Improved throughput of Foreign Humanitarian Assistance (FHA). (better compliance of populace to receive HA in orderly fashion)
- Increased trust among populace (better message creation, better reach and better message focus)
- Increased cooperation of populace to report threats (improving security)
- Improved Population Management and Internal Displacements (better compliance with evacuation instructions and in some cases "remain in place" directives)
- Reduced casualties from disease due to exposure by shaping the relief to vulnerable populations (women with children 0-5 years; receiving appropriate medical assistance)

Small changes in WPS implementation led to substantially less time (non-linear result) on the ground for the joint force providing disaster relief. The use of Gender Focal Point to better tailor joint force response based upon simulation is a force multiplier.

Insights from Simulation of WPS

Iterative runs of this simulation support the author's hypothesis that gender considerations can lead to noteworthy improvements in both operations below the level of armed conflict and humanitarian assistance operations.
Simulation for required WPS Training can therefore be an efficacious tool. Indeed, such methods have already been generally accepted in deliberately considering variables in the OE in other areas, e.g. Intelligence Preparation of the Battlefield (IPB), Weather, Intelligence, Surveillance, Reconnaissance (ISR), Social Media, Infrastructure, etc. Simulation of gender perspectives at the earliest stages of joint operational planning as the DoD SFIP indicates will ensure the entire training audience, including commanders and their staffs gain awareness of gender perspectives.

Operations involving interaction with civilian populations are ripe for gender considerations being included as not just variable but objectives. How and whether a joint force implements or fosters roadblocks, checkpoints, decides upon rules of engagement (ROE), conducts and advises police action, patrols, searches, provides temporary sheltering, allocates aid provision, manages IDPs, establishes and enforces curfews, and trains about the dangers of violence against women and children, force discipline, etc., are good questions for simulation because these all involve SME-informed computation of civil populace trust and therefore relationships, attitudes, and support for the Joint Force.

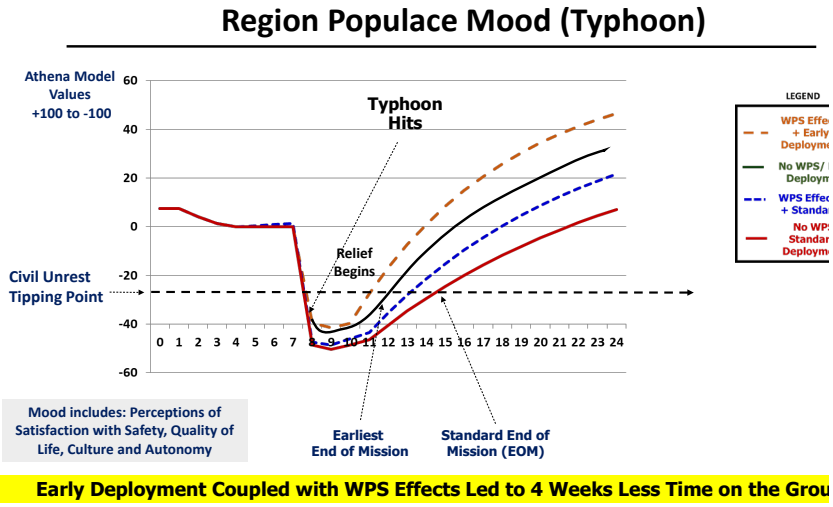

Figure 6. WPS Contributes to Early End of Mission

APPLICATIONS & FUTURE WORK

The implications of this research affects a number of currently existing WPS implementation and training programs and can additionally help shape new initiatives in ways that have not been considered before. There is inherent value in gaining an improved gender awareness in the OE using simulation not just for knowledge sake but to discover ways to improve Joint Force. Moreover, we are working to expand the list selected gender considerations modeled to include additional applications.

CONCLUSION

In this paper, we have presented our approach for simulating comparison of various Joint Force courses of action involving gender considerations using Athena. The iterative simulations runs were designed to determine what benefits may accrue to implementation of WPS. This paper also highlighted potential applications of using a PMESII-PT-effects simulation for training joint and Army commanders, staffs, GENADs and GFPs.

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