

Irregular Warfare (IW) Research to Represent Civilian Populations in Stability Operations



**Briefing for MORS IW II Workshop
4 January 2009**

Purpose & Agenda

- **Purpose: To describe the status of irregular warfare related research at TRAC-Monterey.**

- **Agenda:**
 - **Overview.**
 - **Modeling.**
 - **Data.**
 - **Activities.**

TRAC-MTRY surges on IW related research over the next six to eight months.

MTRY IW Activities

- **MSCO sponsored work with JADM Steering Committee oversight.**
 - Representing Urban Cultural Geography in Stability Operations (FY07/08).
 - Representing the Impact of Insurgent Forces (FY08/09).
- **Scenario and data development methodologies.**
 - Data development methodologies are the focus.
 - Effort supports RUCG-SO ABM, but not exclusively.
- **Connections to Current Operations.**
 - Support to BCT (4/1 CD).
 - Human Terrain Team (HTT) interaction.
- **Peace Support Operations Model (PSOM) investigation.**
 - NPS thesis student MAJ Marlin.

RUCG-SO Objectives

- Deliver a **documented methodology and algorithms** to represent civilian populations and their behaviors in an urban environment during stability operations.
- Innovate a **modeling framework for cultures and societies** in the context of non-traditional warfare as well as the behaviors of the entities making up these populations.
- Implement a **stand-alone tool** focused on modeling cultural aspects of stability operations and the impact of insurgent forces.

Bottom Line: Knowledge acquisition and algorithms must apply to a wide range of M&S systems and community requirements.

Research Approach

- **Background research and problem definition.**
 - Social sciences.
 - Military doctrine.
 - Historical examples.
 - Contemporary examples.
- **Modeling Methodologies and Frameworks.**
 - Social.
 - Political.
 - Economic.
- **Implementation Examples.**
 - Pythagoras agent based model.
 - Agent based model of the civilian population.

Agent Based Model Development

- **The motivation is to create a scenario and run the simulation model to understand how actions, information, perceptions and beliefs affect public opinion about the legitimacy of the host nation's government.**
- **The Agent Based Model (ABM) is a social modeling environment based on the Ferber Multi-Agent System (MAS) definition for intelligent agent systems.**
- **This development approach is bottom up and theory based.**
- **Status.**
 - **Contractor is implementing the MAS prototype.**
 - **Partners are the MOVES Institute and MCCDC OAD.**
 - **Testing social theory implementations (social network, theory of planned behavior, etc.)**

Representing the Impact of Insurgent Forces

- **Insurgents were initially represented by scenario and policy inputs in the ABM rather than as intelligent agents.**
- **Now enhancing the agent based cultural geography civilian population model to include representation of insurgents as actors in the population.**
- **Research Approach:**
 - **Gather knowledge and input from the social sciences, historical examples and relevant military doctrine.**
 - **Develop models and algorithms to represent insurgents.**
 - **Implement models and algorithms into the.**
- **Status:**
 - **Background research underway.**
 - **Implementation begins 2QFY09.**

Data and Social Theory Considerations

- **Data is developed primarily through social science theories applied to the culture of the people.**
 - **Example: Ties in the social network are generated based on characteristics of the culture.**
- **Thoughtful models in the social literature are preferred to models from other fields, because these theories attempt to explain social phenomena.**
 - **Example: Social theories of persuasion like attribution theory are used.**
- **We avoid using methods that describe aspects of the operational environment through time delays, physical phenomena and other methods that do not relate to social theory.**
 - **Example: We reject using an epidemiological model for the spread of ideas to represent persuasion.**

Data Development Activities

- **Data Development Methodology.**
 - Techniques for eliciting data from cultural experts.
 - Developing data from open and other sources.
 - Applying social sciences methods.
- **Scenario Data Development.**
 - Refining data for unclassified, notional scenario.
 - BCT scenario based in real world data (soon).
- **Operational Experience.**
 - Leveraging deployed analysts in support of data development.
 - Consolidating relevant data from data sources currently available and cataloging sources.
 - Deploying a MTRY analyst as research manager on a Human Terrain Team.

Planned Activities

- **Focus is now on the ABM of civilian populations in stability operations (testing, enhancing, scenario, etc.).**
 - Seeking a validation event.
 - Data development & methodology documentation.
- **MORS IW II Workshop (FEB 09).**
 - Four MTRY/NPS in
- **International Data Farming Workshop 15, (MAR 09)**
 - NPS student will lead a PSOM working group
 - TRAC will lead a RUCG-SO ABM working group.
- **MORSS (JUN 09).**
 - Multiple presentations in multiple working groups.
- **Publications.**
 - Plan to write and publish 3 to 6 papers this FY.

Roles and Responsibilities

- **Jack Jackson.**
 - **Lead and RUCG-SO ABM.**
- **MAJ Jon Alt.**
 - **Co-lead, ABM testing, and support to deployed analysts.**
- **Maria Vedder.**
 - **Social & cultural theories, outreach, & HTT deployment.**
- **Tim Perkins (ERDC Analyst at MTRY).**
 - **Insurgents & Information Operations/Influence.**
- **Curt Blais (MOVES Institute).**
 - **ABM**
- **LTC Jerry Shaw (USAR ORSA).**
 - **PSOM testing.**
- **Jerry Pearman (ACI).**
 - **Documenting data development methodologies.**
- **Harold Yamauchi (R&A).**
 - **Lead ABM developer.**
- **Jane Wu (R&A).**
 - **Data development & text mining.**

Questions and Discussion

