

## Terms of Reference

### *Analytic Tools for Deterrence and Policy Assessment*

**1. Purpose:** To assist the defense community in understanding the evolving role of analytic tools (operations research, social science, etc.) in deterrence and policy analysis.

**2. Background:** The analytic processes used for Assurance/Dissuasion/Deterrence (ADD), theater security cooperation (TSC) and policy assessment have changed little since the Cold War, when defense analysts focused on mutual deterrence (primarily via threat of cost imposition) between two nuclear-armed adversaries. Since deterrence proved successful, and bi-polar competition remained relatively stable for decades, each government began to believe that it understood the other's values and motives. This understanding was mostly illusory, as shown by recent studies of the Cuban missile crisis.

Today, we are faced with different types of ADD and policy analysis. Our actions and policies target, or indirectly affect, entities that may or may not be legitimate governments, may or may not be conventional military powers, and may or may not share our cultural norms. Even between Western powers, military historians have identified distinct "strategic cultures" that inhibit mutual understanding and cooperation. The world is now a multi-polar environment, where our objectives against one player may be achieved or thwarted by our actions against another. Our deterrent actions include not only threats of cost imposition, but also threats of benefit denial and incentives for restraint. The effects of actions propagate through other players whose strategic interests are differently aligned, making the net effects difficult to predict beforehand or measure afterwards.

The Deterrence Operations Joint Operating Concept (DO JOC), V2, Dec 06 provides the doctrinal foundation for deterrence operations. Copied from the Executive Summary, below is the central idea of the DO JOC.

*"The central idea of the DO JOC is to decisively influence the adversary's decision-making calculus in order to prevent hostile actions against US vital interests. This is the "end" or objective of joint operations designed to achieve deterrence.*

*An adversary's deterrence decision calculus focuses on their perception of three primary elements:*

- *The benefits of a course of action.*
- *The costs of a course of action.*
- *The consequences of restraint (i.e., costs and benefits of not taking the course of action we seek to deter).*

*Joint military operations and activities contribute to the "end" of deterrence by affecting the adversary's decision calculus elements in three "ways":*

- *Deny Benefits.*
- *Impose Costs.*
- *Encourage Adversary Restraint.*

*The ways are a framework for implementing effective deterrence operations. These ways are closely linked in practice and often overlap in their application; however, it is useful to consider them conceptually separate for planning purposes. Military deterrence efforts must integrate all three ways across a variety of adversaries and deterrence objectives. Deterrence ways are not either/or propositions. Rather, when properly leveraged to convince an adversary his best option is not taking a course of action aimed against US vital interests, they are complementary and synergistic. Because future threats will be increasingly transnational, these military deterrence efforts will likely involve synchronized actions by multiple JFCs worldwide."*

Rather than plan defeat campaigns and assume they will assure, deter, and dissuade, we must now specifically plan to assure, deter, and dissuade. This workshop will examine new approaches to decision analysis to aid in such strategic-level planning. Areas the workshop will explore include:

- Development and assessment of actors' decision calculus, actors' decision-making processes, and other factors that influence decision-making (e.g., psychological, affective, etc.).
- Assess and track the efficacy of ADD, TSC and policy actions, both individually and as a grand strategy (to include implications of real-world constraints, direct and indirect effects).
- Represent uncertainty in assessments.
- Characterize the ripple effects of actions through the multi-polar world.

### **3. Objectives:**

The overall objective of the meeting is to examine the analytic processes involved in the assessing activities (ADD, TSC, policy) used to influence and shape the strategic landscape. The specific meeting objectives include:

- 1) A better articulation of the analytic challenge.
- 2) Enhanced understanding of current practices and perceived "state-of-the-art."
- 3) Identification of where practices fall short.
- 4) Identification of potential solutions to shortfalls and areas for further research.
- 5) An invigoration of the analytic community to address the challenges.

**4. Process:** Organizers will distribute preparatory readings from military, academic, and interagency sources, and a keynote speaker will provide additional context for the discussion. Other invited speakers will deliver presentations on various aspects of deterrence analysis and policy assessment. Participants will discuss these presentations and suggest topics that should be explored in the final report.

The workshop will address the following specific aspects of ADD and policy assessment:

- Modeling actors' decision-making:
  - Modeling actors:
    - Who is an actor?
    - Non-state actors: Can they be modeled? Can they be deterred?
  - The cost-benefit calculus of adversaries, allies, and ourselves.
  - Cultural, historical, and psychological influences.
  - Applicability of political theory (e.g. realist, institutional, constructivist) to real-world decision-making analysis.
  - Types of uncertainty and means of representation.
  
- Assessing actions:
  - How to assess effectiveness of ADD actions beforehand?
  - How to measure effectiveness afterwards?
  - How to assess indirect effects across actors? Afterwards?
  - How to represent uncertainty?
  - How to optimize global policy and ADD strategy?

The workshop will address the above questions by dividing into the following three Context Working Groups. These working groups may be sub-divided based on number of attendees.

C-WG 1: Theories and factors of decision-makers: working group will assess alternative constructs and methodologies for analyzing decision makers and decision-making, examining their applicability to ADD, TSC and policy analysis. Attention should be given to emerging theories that attempt to include the effects of nontraditional factors like strategic culture, emotional involvement, and decision framing on cost-benefit calculus and risk propensity in their assessments.

C-WG2: Prior assessment of ADD and TSC actions and policies: working group will explore means to assess the potential impacts of ADD actions and policies before instruments of national power are committed. The group will propose means to determine whether an action or policy will achieve the intended effect, how much effect it will have, and whether it will have other effects within the overall objective and/or cross into other national objectives, as well as means to manage uncertainty and indirect effects. When considering other effects the working group will examine unintended (positive and negative) effects. One challenge is how to include these effects in the assessment of proposed actions. The assessment process will include individual actions or sequence of actions within a strategy through an assessment of the entire strategy. The group will survey and evaluate tools for such assessment.

C-WG3: Post-decision assessment: working group will address the difficult problem of determining whether or not actions and policies were taken as intended and achieved the desired effects, including the problems of identifying indicators and evaluating multiple and possibly contradictory indicators. The working group will examine unintended (positive and negative) effects. One challenge is how to include these effects in the assessment of actions taken. The group will also address the difficulties of causal attribution inherent in

determining success, particularly when time may elapse between action and attributed consequences. The assessment process will include individual actions or sequence of actions within a strategy through an assessment of the entire strategy. Potential solutions identified by the group should include means to account for uncertainty and indirect effects.

#### Context Working Group Rules of Engagement

- 1) No more than 50% of time can be used for presentations.
- 2) WG chairs will develop by mid- to end-November an outline containing the questions they will explore, desired presentation topics (not necessarily the exact presentation – e.g., a presentation on causality in the post WG).
  - a. This will be used to focus the WG's efforts and build collaboration between WGs.
- 3) Where applicable, WGs will post re-aheads, outline, etc. before the meeting so participants can be more prepared when they arrive.
- 4) Develop strong linkages to the Symposium WGs (e.g., WG 1 - Strategic Operations, WG 3 - International Security and Proliferation, WG 8 - Information Operations, WG 28 - Decision Analysis, WG 29 - Modeling, Simulation and Wargaming, WG 32 - Warfighter Performance and Social Science Methods):
  - a. Solicit input from Symposium WG chairs for topics/attendees.
  - b. Develop outbriefs tailored to a symposium WG.
  - c. Suggest briefs to also be presented at Symposium.

The workshop will also employ **Discipline Working Groups (D-WG)** that will serve to focus attendee discussions around their particular disciplines. Three to five D-WGs are likely. Initially, the D-WG will be in the following areas:

- D-WG1: Social Science.
- D-WG2: Operations Research.
- D-WG3: Risk and Uncertainty.
- D-WG4: Information Operations.
- D-WG5: Game Theory

Based on interest and number of attendees these groups may be further divided. For example, Social Science D-WG may be broken sub-discipline working groups for economics, political science, and psychology; or Operations Research D-WG may be broken into sub-discipline working groups for decision analysis, models and simulations, etc.

- Goals of D-WG:
  - o For a set of disciplines that apply across the three working groups, identify similarities, differences, and opportunities for cross-fertilization between the discipline-related activities of the working groups (foundations of decision making, prior assessment and post-assessment) in the following three areas:
    - Techniques, tools, methods, ideas, philosophies, or other elements pertinent to the discipline that were brought up in the WG's
    - Identify emerging/on-going research in the discipline that was brought up in the WG's
    - Identify gaps identified in the WG's in which further research is necessary

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- Provide a venue for discussion and collaboration amongst practitioners of the discipline
- Provide the opportunity to focus on these disciplines during the workshop
- Provide a mechanism to synthesize findings/activities across the working groups to achieve a larger view and understanding of the impact, role and potential for these disciplines in the context of deterrence and policy assessment
- Implementation
  - Each D-WG will have a chair who is also a member of the Synthesis Group
    - Chair will conduct discussions for the purpose of achieving the above objectives
    - Chair will provide a summary of the findings (scripted slides) for the meeting report
    - The discipline WG's will not be separately outbriefed. Rather, the results of the D-WG's activities will be the basis for much of the Synthesis group report.
  - Meeting times (3-4.5 hrs during the workshop)
    - 1hr at the end of Tuesday and Wednesday
    - ½ hr over lunch on Wednesday and Thursday
    - Some attendees will participate in 1.5 hours on Thursday mornings when working group chairs collapse WG's to smaller groups to generate outbriefs (workshop attendees can choose to stay in working group or attend discipline WG discussions)
  - All attendees at the workshop will be assigned to a primary WG and assigned to a D-WG
    - Attendees will be asked to state a preference for the primary and discipline WGs on the registration form. Final assignment will be determined Tuesday a.m. as part of the charge to the working groups.
  - Rules of Engagement during the meeting
    - No presentations are allowed in the D-WGs sessions
    - Templates will be provided to D-WG chair
    - As with all working groups – attendees will be assigned to a D-WG but are free to roam between D-WGs
  - Effect on Context Working Groups C-WG
    - Discussion in the D-WG will assist in the cross fertilization of ideas between C-WG
    - C-WG can have (and are expected to have) briefings and discussion on tools, gaps, and proposed research. These discussions are carried into the D-WG to provide cross flow of information.
      - Overlap of discussion is to be expected and actually desired
      - The D-WGs are the mechanism to synthesize these discussions around the disciplines
    - Time loss: actually mitigated because we have to be out of the rooms anyway at 1530

Illustration: Models and simulations: it may be that models and simulations are identified as key tools in all three working groups. The Discipline WG would discuss things like:

- What role do they play in the function of each WG?
- To what extent are these roles similar or distinct?
- What tools exist within the communities associated with the WG's?
- How important is it that tools that do similar functions by commonly used in these communities?
- Are there new developments in tools that are known to one community (say Post Assessment) that would be applicable to one or both of the other communities?

- What are the deficiencies of the tools from each community's perspective?

The D-WG will form the core of the of **Synthesis Working Group**.

**5. Attendees:** Initial interest in this topic was expressed by Air Force A9 and STRATCOM. Other interested agencies may include the OSD (P), DIA, CIA, DOS, DTRA, the Combatant Commands, and the War Colleges. Because of the application chosen, and also because of the concepts' broad applicability to many other areas of the study of decision-making, the workshop promises wide appeal to the analysis community; beyond this target audience, the workshop should welcome disciplines including history, political theory, regional studies, psychology, and sociology. Invitees will span academia, the military (including allies), and the interagency.

**7. Products:** The workshop will contribute a Phalanx article as well as a final report. The proceedings will include this paper and all presentations given, as well as an executive summary of the workshop.

**8. Administrative:** The workshop, "Analytic Tools for Deterrence and Policy Assessment," will be held 5-7 February 2008 at the Johns Hopkins University Applied Physics Laboratory (JHU/APL) in Laurel, Maryland.

**Proponents:**

**Administration:**

Chairman:

Mr. Pat McKenna, STRATCOM

Mr. Greg Weaver, STRATCOM

Working Groups Leaders:

C-WG1: Steve Riese

C-WG2: Charles Worrell

C-WG3: Maj Todd Hamill

D-WG1: Social Science: Allison Astorino-Courtois

D-WG2: Operations Research: Greg Parnell

D-WG3: Risk and Uncertainty: tbd

D-WG4: Information Operations: Dr. Mark Gallagher

D-WG5: Game Theory: Dr. Stephen Downes-Martin

Synthesis Working Group: Greg Keethler

Organizing Committee:

John Andrews  
William Astley  
Allison Astorino-Courtois  
Judson Brown  
Colette Burgess  
Greg Canavan  
Brian Engler  
Col Tim Fay  
Jonathan (Todd) Hamill  
Lynda Jaques  
Greg Keethler  
Greg Keethler  
Lee Lehmkuhl  
Willie McFadden  
Michael McGinnis  
Pat McKenna  
Kirk Michealson  
Greg Parnell  
Robert Popp  
Mark Reid  
Roy Rice  
Jim Scouras  
Michael Shannahan  
John A Sokolowski  
Dave Spoerl  
Paul Szwed  
Don Theune  
Greg Weaver  
Jim Wertz  
Charles Worrell  
Steve Zavadil

Proposed Milestone Schedule:

6 months prior: Organizing Committee & Workshop Leads set & draft TOR written

5 months prior: TOR approved

4 months prior: Publicize Special Meeting/send appropriate invitations

2 months prior: Select read-aheads

1 month prior: Assign attendees to workshops & send out read a-heads

***Conduct Special Meeting***

1 month after: Brief Sponsors on results & complete written products/submit to MORS Office

**Draft Schedule**

Monday, February 4

1000-1700 Game Theory Sessions

- Application of Game Theory to the Chief of Naval Operations' Seven Deterrence and Escalation Tasks

1300-1630 Tutorials

- Deterrence Operations Joint Operating Concept
- Decision Theory

Tuesday 5 February

0800-0830 Welcomes (JHU, MORS, Sponsor) and Admin  
0830-0930 Keynote  
0930-1000 Stage setting/charge to working groups  
1000-1030 Break  
1030-1200 Context Working Group Session #1  
1200-1300 Lunch – could be working  
1300-1530 Context Working Group Sessions 2 and 3  
1530-1600 Break  
1600-1700 Discipline Working Group Discussion #1  
1700-1800 MIXER

Wednesday 6 February

0800-0930 Context Working Group Session #4  
0930-1000 Break  
1000-1130 Context Working Group Session #5  
1130-1300 Discipline Working Group Session #2 (1130-1200) & Lunch (1200-1300)  
1300-1530 Context Working Group Session #6 & #7  
1530-1600 Break  
1600-1700 Discipline Working Group Session #3

Thursday 7 February

0800-0930 Context Working Group Session #8  
0930-1000 Break  
1000-1130 Context Working Group Session #9 and/or Discipline Working Group Session  
1130-1300 Discipline Working Group session #4 (1130-1200) & Lunch (1200-1300)  
1300-1400 Outbrief Final Preparation Time  
1400-1530 Context Working Group Outbriefs (30 minutes each)  
1530-1545 Break  
1545-1645 Synthesis Outbriefs (incorporates Discipline Working Groups)  
1645-1700 Closing Remarks