Working Group 6
Aligning Games with Larger Studies
“There’s good money to be made in prolonging the problem”
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WG6: Integrating Wargaming with Other Analytic Methods

“All wargaming should adhere to a broad set of guidelines concerning strategic and operational scenarios, blue and red force structure, and the wargame’s experimental design. Institutions and time frame leads should also work to advance the wargaming state-of-the-art by using pathfinder wargames that incorporate innovative approaches, and throughout we need to make red-teaming endemic to our approach and work to advance the quality and impact of red teams as part of a broader Departmental approach to innovation.”

Robert Works, Deputy Secretary of Defense
Memorandum on Wargaming and Innovation 9 February 2015

Wargaming is one of a number of decision analysis methods that we can use alone, or in combination with other approaches, to better understand and improve decision-making. Other established decision analytic methods include analytical narratives such as historical analyses, case studies, expert analyses, and scenario-based net assessments; modeling; simulation; exercises; experiments; and network analyses. Creative wargamers often use some or all of these methods in developing wargame concepts, doing research for games, designing games, and developing, producing, delivering, and applying games.

Advances in research in artificial intelligence, computational science, and mathematics are producing new tools that can be used in decision analysis. For example, “big data” analytics provide a means to rigorously analyze structures, patterns, and trends in massively complicated and complex decision systems. Big data analytics could be used in the research phase of wargame design to provide data for design, and to provide inputs for game play.

Moreover the research advances that provide the basis for new analytic technologies also provide the basis for developing new operating systems such as cyber and autonomous systems. As these systems proliferate, they are and will continue to generate new types of decision-making questions and problems for wargaming and other decision analyses.

Each of our decision analysis methods – including wargaming – has strengths and limitations depending upon the nature of our decision problems and how they are evolving. The aim of Working Group 6 is to develop a better understanding of wargaming as a tool for decision analysis and research, and the necessities and potential for innovations that integrate other decision analysis methods in design, development, production, delivery, and application. The questions we will address include:
1. **Inventory**: What are our methods for decision analysis including established methods, new methods, and emerging methods? Are there methods that have gone out of use that we should bring back into practice?

2. **Comparison**: How can we compare the strengths and limitations of decision analysis methods in order to better understand human decision-making, artificially intelligent decision-making, and heterogeneous decision-making (a mix of human and artificially intelligent decision makers)?

3. **Selection**: Upon what basis might we choose one decision analytic method or combination of methods over another? Are there guiding principles that we can offer to sponsors?

4. **Innovation**: How can we fruitfully integrate other decision methods into wargaming in order to improve participant experience and produce better products?

We will explore these questions through a series of facilitated discussions. Each session will be launched with a brief TedTalk style demonstration by an invited “Provocateur.” The Chair and Advisor will facilitate and synthesize discussion. Participants should come prepared to actively participate in exploring these questions and contributing to consolidating and creating new knowledge about the practice of wargaming as a decision analytic research method.

**Chair**: Margaret M. Polski, Ph.D. Dr. Polski is an analyst and researcher who uses a wide range of methods including wargaming to address particularly wicked national security policy and strategy problems. Her research interests include the biological basis of human decision making and decision analysis in heterogeneous systems.

**Advisor**: Thomas C. Schelling, Ph.D. Dr. Schelling is a Nobel Laureate with long experience analyzing strategic decision-making. From 1957-1963, he designed and facilitated “Red v. Blue” wargames with senior national security officials to explore escalation and the imposition of limits in crisis decision-making.

**Provocateurs**:  
Mr. Jacob Cohen and Mr. Mark Gunzinger, Center for Strategic and Budgetary Affairs, will demonstrate CSBA’s Strategic Choices Tool and discuss their experience wargaming strategic rebalancing of DoD capabilities based on alternative fiscal scenarios. The tool allows participants to develop strategies to rebalance military capabilities and test the long-term force structure and funding implication of their decisions approach under different levels of budget constraints.  
Jimmie McEvers, Ph.D., Sr. Scientist, John Hopkins University Applied Physics Laboratory, will demonstrate emerging information, communications and cyber-related technologies.
Dr. McEvers has expertise in complex systems, systems engineering in complexity contexts, analytic approaches for dealing with complexity, and the implications of complexity for the structure and behavior of organizations and populations. He manages research and analysis efforts associated with network-enabled command and control, information and communications systems, and cyberspace operations.

Henrik Schmidt, Ph.D., Michael Benjamin, Ph.D., and LCMR Kyle Woerner, Laboratory for Autonomous Marine Sensing Systems, Massachusetts Institute for Technology, will demonstrate their decision analytic research using real-world and simulated multi-vehicle autonomous missions. The MIT Laboratory for Autonomous Marine Sensing specializes in developing new distributed ocean sensing concepts for oceanographic science, national defense and coastal management and protection: Dr. Schmidt is the Director of LAMSS, Dr. Benjamin is a staff member in the lab, and LCMR Woerner, who currently serves on the personal staff of the Chief of Naval Operations as a special assistant within the CNO Strategic Actions Group, is completing his doctoral research in the lab.

Mr. Glenn White, Program Officer, Fleet Integrated Synthetic Test and Training Facility (FIST2FAC), Office of Naval Research. Mr. White will demonstrate a proof of-concept for integrated training solutions for the Warfighter that employs popular gaming industry technologies and discuss potential applications for wargaming. FIST2FAC engages in practical evaluation of concept technologies that involve artificial intelligence, computer graphics, human-computer interaction, and computational complexity theory. It supports concept exploration in a standalone modeling and simulation environment, developmental testing in a networked modeling and simulation environment, and proof of concept demonstrations in an operational modeling and simulation environment.

Appendix: Decision Analysis Methods

Case Study
Exercises
Experiments
Historical Analysis
Modeling
Network Analysis
Net Assessment
Scenario-Based Analysis
Simulation