

Analytic Wargaming Education from Over a 100 Analytical Games

Dr. Robert Burks Connections OZ December 2018

The Nation's Premier Defense Research University

Monterey, California WWW.NPS.EDU

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"Reinvigorating" DOD Wargaming

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ideas. Question existing practices, stimulate innovation, and develop new operational concepts in a risk-friendly environment.

CNO U.S. Navy



28 PHALANX - MARCH 2015



What is Wargaming?

Wargaming is ...

A dynamic representation of conflict or competition in which people make decisions and respond to the consequences of those decisions.

Analytic wargames are designed to collect and analyze information from wargame play, and these results either feed directly into a decision, or are used to develop other analytic products.

Outputs of analytic wargames such as concepts of operation (CONOPS), courses of action (COAs) and operations plans (OPLANs) are commonly used to 'feed' other analytic activities or serve as the operational foundation for computer-based combat simulation analysis.

Training and Educational wargames are not usually considered analytic games, as the product of these games are better trained or educated players. Planning wargames, if they are done with rigor, can be analytic wargames.



Brief Bio

Colonel (R) Robert Burks, Ph.D.

- Associate Professor, DA
- 32 years of U.S. Army service
 - Over a decade as Enlisted Infantryman and Infantry & Quartermaster Officer
 - 17 years OR/Systems Analyst
- Served as analyst team leader for over two dozen analytical efforts including;
 - Interim Brigade Combat Team (IBCT)
 - Strike Force,
 - Division XXI Mobility,
 - Army Medical Reengineering Initiative,
 - Interim Division,
 - Future Combat System (FCS)





Over 100 analytical wargames of experience



A Common Factor - Education

Wargaming Education of an Operation Research Officer





The Craft of Wargaming

1988

Wargaming – Art, Science or Craft.



Welcome to Computer Simulation POSTGRADUATE

CALL"DUTY

Developed in late 1976 for use by V Corps in Germany as an analysis and training tool.

NORM KOGER'S

THE OPERATION

An open, two-sided, time preservin Monte Carlo, manual wargame pla dimensional terrain board with res

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per 4 x 8 section in board for US Battalion force and Soviet

From a Wargaming Perspective - What do you lose with Simulation?

-75 for disks and r per exercise.

RATEGY GAME oble Knight Games

mpf manual wargame created at CGSC, Ft. two CGSC students named...

.....

Five Phases of Wargame Creation



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(Major tasks, not all inclusive)



Analytical Wargame Challenges

Five Common Challenges ...

1. Forming a wargaming team without the necessary skillsets





Wargaming Team Composition

Worst Practice





Wargaming Team Composition

Better Practice





Wargaming Team Composition

Best Practice



BEST PRACTICE: Analysts must participate in the game's design.



Best Practice

UNCLASSIFIED

Wargaming Team Composition

CENTCOM Integrated Wargaming



CCJ8 Wargaming Cell (CWC)

TASKS: <u>Advise</u> J5 and J3 planners in development and execution of wargames, workshops, tabletop exercises, and rehearsals of concept and <u>facilitate</u> the application of various wargaming tools and methods as required

PURPOSE: Illuminate elements of complex problem sets to improve planning and operations

UNCLASSIFIED



Five Common Challenges ...

- 1. Forming a wargaming team without the necessary skillsets
- 2. Accepting the sponsor's initial objective and issues without clarification or scoping



14



Worst Practice

Problem Statement: The U.S. Army must determine how to achieve combat vehicle overmatch in close combat against near-peer threats and to deliver decisive lethality as part of a combined arms team in the future operating environment.

Wargame Scope: Assess how the integration of emerging technologies and characteristics into the design of the Optionally Manned Fighting Vehicle (OMFV) provides overmatch while shaping future urban Combined Arms Battalion operations.

"Often, the sponsor's goals will be unclear, or the utility of gaming for achieving these goals uncertain."



Better Practice

- Go to school on your sponsor
- Realize that you may have to work through a sponsor's staff
- Understanding what the sponsor WANTS is your first goal
- Educating your sponsor on what is feasible is the second goal
- Making what is feasible answer the sponsor's NEEDS is the final goal

"Ignorance can be overcome through education." -Mike Bauman



Best Practice

Minimum of Three Sponsor Interactions

- 1. Listen to the sponsor's objective and issues and clarify.
- 2. Verify the initial sponsor tasking—did I hear you correctly?
- 3. Develop a shared understanding with the sponsor of what you will deliver (NWC has a 'wargame proposal' that is developed by the wargamers and signed by the sponsor)

Use Constraints, Limitations, and Assumptions (CLAs) to form a contract with your sponsor

- **<u>Constraint</u>**: A restriction imposed by the study sponsor that limits the study team's options in conducting the study.
- **Limitation:** An inability of the study team to fully meet the study objectives or fully investigate the study issues.
- **Assumption:** A statement related to the study that is taken as true in the absence of facts, often to accommodate a limitation.



Five Common Challenges ...

- 1. Forming a wargaming team without the necessary skillsets
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- 3. Designing a game without an analysis plan



18



Analysis Plan - DCMP

A Data Collection and Management Plan (DCMP) is one construct for decomposing the sponsor's objective and issues into the information you need to extract from the players. It is the <u>foundation</u> of an analytical wargame's design.

	WARGAMING Data Collection and Management Plan (DCMP)															
Linkage fr	Core DCMP Elements											Wargame Management				
Sponsor's Issues	Constraints	Sub-issues	Sub-sub issues	Essential Questions (EQ)	Players	Scenario Details	Methods, Models, & Tools	Limitations	Assumptions	Requests For Info (RFI)	Player Information IN	Player Information FEEDBACK	Player Information OUT	Order	Location	Metrics

BEST PRACTICE: Create the DCMP that links the players' decisions to the sponsor's objective and issues.



Analysis Plan – Measurement Space POSTGRADUATE

Measurement space is a function of the scenario, MMTs, and database used in an analytic study. The objectives of the study can only be met if the measurement space *allows enough* latitude to permit the systems under study to be assessed throughout a sufficient range of the systems' critical capabilities and attributes.

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Build the Scenario, Database and MMTs so you can collect the players' decisions (via the DCMP) that will allow you to answer the sponsor's objective and issues!

"Once the sponsor, designer, and analysts have agreed upon the definition of the problem, and decided how it may be usefully addressed through a wargame, the actual design work can begin."



Best Practice

- The players are the critical component of a wargame's measurement space!
- If the players in your game don't have the requisite pedigree to produce relevant decisions in the situation the wargame places them, the best designed (and developed!) game will not produce useful results.
- The more senior your players are, the more likely it is that you will have to accept a last-minute player substitution!

Confirm who your players will be before completing your game design.



Five Common Challenges ...

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- 3. Designing a game without an analysis plan
- 4. Conducting a game without ever play-testing it



Playtesting (To Test or Not to Test)



- Take your initial design and 'develop' it.
- Development is done by 'play-testing.'
 - Does the game do what designer intends it to do?
 - Does it extract the information the analysts need?
 - Revise/update wargame as necessary.
- Once you do the first play-test, "design-develop" becomes an iterative process.
- Get a simple design completed quickly and develop (play test) it.
- Do NOT spend all of your time designing –there should be multiple (at least 3) design-develop cycles.
- Listen to James Dunnigan: "Keep it Simple" & "Plagiarize"



Five Common Challenges ...

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- 4. Conducting a game without ever play-testing it
- 5. Remembering some of the shortcomings



Course of Action Gaming Thoughts

- Command influence the ranking individual involved in the wargame deciding on the outcome before or after the wargame takes place.
- Uncooperative Enemy wargames may mislead if the enemy does not follow the strategy followed in the wargame. <u>Remember the enemy is</u> <u>adaptive.</u>
- Improper Adjudication wargames sometimes fail to adjudicate a decisive element of the depicted conflict.
- Capturing the Key Event wargame ends before a key event in the conflict may occur beyond the period depicted in the wargame. (Operation Otto).
- Capturing the Possible not exploring the full spectrum of chance may cause misleading outcomes. Wargames tend to focus on the most likely outcomes. Sometimes in war very improbable things occur.



Questions?

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