An Introduction to Wargaming

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# An Introduction to Wargaming

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The views expressed in this briefing are those of the speaker and do not necessarily represent those of the Air Force Research Laboratory or the United States Air Force.
My Bio

• Civilian positions
  – Professor of Wargaming, ACSC
  – Research Associate, SAAS

• USAFR Assignments
  – Senior Reservist, AFRL, Info Directorate
  – Chief Wargaming, AF/XOOC (Checkmate)

• Co-author Gulf War Fact Book
Why Should I Care?
Why Should I Care?
Overview

• History
• Definitions
• Applications
• Lessons from the History of Wargaming
A One Slide History of Wargaming

Wargames are literally as old as civilization...

...and they have often been credited with making the difference between victory and defeat.
What is a Wargame?
What is a Wargame?

Armed Conflict

Multi Sided

Simulation

Model

Proportional Representation

Reality

Wargame

Sim Game

Over Time
What is a Wargame?
What is a Wargame?

Types of Wargames

- Each has advantages and disadvantages
- Some wargames include all three
What is a Wargame?

Methods of Adjudication

Rule Based or BOGSAT

Umpires
What is a Wargame?

Methods of Adjudication

- Rule Based or BOGSAT
- Umpires
- Computerized M&S
- CONSTRUCTIVE
- LIVE
- VIRTUAL
Types of Constructive Wargames

- Miniatures/Terrain Table
- Map/Chart/Paper
- Computerized
Applications

Civil Use of Wargaming

• Recreational
• Educational

Defense Uses of Wargaming

• Develop Strategist – Professional Development
• Develop Strategies – Decision Support
Spectrum of Military Wargaming Today

Develop Strategies
- National
- Theater
- Local

Develop Strategists
- Strategic
  - War College
- Operational
  - Staff College
- Tactical
  - Branch Schools

Decision Support

Professional Dev
Develop Strategist -
Professional Development

- Strategic
- Operational
- Tactical

Develop Strategists
- War College
- Staff College
- Branch Schools

Professional Dev
Develop Strategist - Professional Development

Strategic

Operational

Tactical

Initial    Intermediate    Senior
Develop Strategies - Decision Support

Develop Strategies

National

Theater

Local

Strategic

Operational

Tactical

Decision Support
Defense Planning Systems

INITIATION

II CONCEPT DEVELOPMENT

III PLAN DEVELOPMENT

IV PLAN REVIEW

V SUPPORT PLANS

JOPES

CPG

JSCP

JSPS

JQRR

QDR

JV 20xx

NMS

OSD

TCS

JCS

Comb.Cdr

PPBS

President's Budget

FYDP

PBDs

BESs

BUDGETING

ACRONYM SOUP

QDR

JV 20xx

NMS

JSCP

CPG

OSD

TCS

JCS

Comb.Cdr

PPBS

President's Budget

FYDP

BESs

BUDGETING

Federal Budget Process
Wargaming as Decision Aide
US Government, DoD/CoComs/Services

Strategic Planning
National Strategy

Campaign Planning
Theater Strategy

Force Planning
Service Strategy

Pol/ Mil

Theater Wargaming

Title 10

AFRL
Strategic Wargaming and The Defense Planning Systems

Strategic Planning
National Strategy

Pol/ Mil
National Strategy Pol/ Mil Wargaming

- Joint and Interagency
- BOGSAT adjudicated
- Not only secret – very close hold
Strategic Wargaming and The Defense Planning Systems

Immediate - Orders
Mid term – JSCP*

Campaign Planning
Theater Strategy

Strategic Planning
National Strategy

Theater Wargaming

JSCP = Joint Strategic Capabilities Plan
Theater Strategy, Campaign Wargaming

Deliberate Planning

Initiation
Concept Development
Plan Development
Plan Review
Supporting Plans

No Plan

JSCP

IPL

Event

Crisis Action Planning

Situation Development
Crisis Assessment
Course of Action Development
Course of Action Selection
Execution Planning
Execution

Expand
Modify

Develop

OPLAN
CONPLAN
FUNCPLAN

Campaign Plan
OPORDs
Adaptive Planning

Activities, Functions, Products

Situational Awareness

Operational Planning

Activities

Planning Functions
Strategic Guidance
Concept Development
Plan Development
Plan Assessment (Refine, Adapt, Terminate, Execute)

Contingency Products
Approved Mission
Approved Concept
Approved Plan

Crisis Products
Warning Order
Planning Order
Alert Order
Deployment Order

Execute Order

IPR

BASE PLAN
CONPLAN
OPLAN
OPORD
Strategic Wargaming and The Defense Planning Systems

Strategic Planning
National Strategy

Defense Planning Guidance

Force Planning
Service Strategy

Title 10
Service Strategy, Title 10 Wargaming
Example Air Force

Execution

Even Year
AF/XOX

Odd Year
AF/XPX

Lessons Learned from Joint, Service, Other Events
Lessons Learned to Further Explore
Service & RCCs
RCCs
POM 2 X POM

Service Responsibility
Lessons Learned to Further Explore
AF Corporate Structure
POM
Actionable Insights

Lessons Learned to Further Explore
Lessons From The History of Wargaming

So far we have covered:

• What wargames are
• What are their applications

Now we will cover:

• How to receive the maximum benefit from wargaming
More Value From Wargaming

Professional Development

- Efficient
  - Minimize cost in $$
  - Minimize cost in time
  - Deployable

- Effective
  - Memorable
  - Fits curriculum
  - Avoids “dis-training”

Decision Support

- Efficient
  - Minimize cost in $$
  - Minimize cost in time
  - Deployable

- Effective
  - Fit to adversary/scenario being considered
  - Probability envelope of outcomes matches actual envelope
Assessing Relative Confidence In Wargame Outcomes

Hurricane Isabel
September 14, 2003
5 PM EDT Sunday
Advisory 35
Current Center Location 24.1 N 67.4 W
Max Sustained Wind 155 mph
Current Movement 13 mph

- Current Center Location
- Forecast Center Positions
- Potential Day 1-3 Track Area
- Potential Day 4-5 Track Area

AFRL
How Accurate Is Wargaming?

- Each wargame is one pass through a series of chance events - play many wargames and a range of outcomes will occur:
• Each **war** is one pass through a series of chance events – as such many outcomes are possible while some are more likely than others.
• Each \textbf{war} is one pass through a series of chance events – however what actually happened is not necessarily the most likely outcome.
At best the outcome distribution of our wargames should match the outcome distribution of reality—then wargames can suggest which outcomes are possible along with relative likelihood.
However BOGSAT adjudicated wargames are so time consuming they typically produce only one outcome. Even if the most likely outcome is determined the range and likelihood of other outcomes is not captured.
How Accurate Is Wargaming?

- Even when there are many runs the outcome distribution of wargames seldom matches the outcome distribution of reality.
Coping with Uncertainty

• Achieve the best accuracy you can given your goals and resources
• Honestly assess and communicate the “standard deviation” of your wargame
Sources of Inaccuracy

White

Situation Never Happens
- Unrealistic Scenario
- Heisenberg Effect

Blue

Blue does not follow plan
- Heisenberg Effect

Red

Red does not follow plan
- Faulty depiction of Red
- Heisenberg Effect

WG
Toward More Effective Scenarios

- Collaborative/Joint Development
- Increased use of “Move Zero”
“Players” during wargame need to be decision makers during actual event

• Combining Deliberate and Crisis Action Planning (CAP)
• Wargames increasingly Joint and Combined
• Increased interagency NGO participation

Also, increased professional development wargaming should increase overall quality of Blue play.
“This is not (exactly) the enemy we wargamed against.”

Lt Gen William Wallace
Commanding Gen V Corps
Operation Iraqi Freedom
Easy
• Study Red History
• Study Red Culture
• Study Red Doctrine
Depicting Red More Accurately

Less Easy

• Determine Objectives
• Determine Training Heritage
• Determine Planning Methods
Depicting Red More Accurately

Hard

• Determine how Red is actually training
• Determine how Red sees Blue
• Anticipate when Red will shift strategy/doctrine
### Assessing the Likelihood of Accurate Adjudication

<table>
<thead>
<tr>
<th>Factor</th>
<th>More Accurate</th>
<th>Less Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executions</td>
<td>Many</td>
<td>Few</td>
</tr>
<tr>
<td>Factors</td>
<td>Physical Sci</td>
<td>Social Sci</td>
</tr>
<tr>
<td>Scope</td>
<td>Detailed</td>
<td>Comprehensive</td>
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<td>Level</td>
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<td>Strategic</td>
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<tr>
<td>Adversary</td>
<td>Symmetric</td>
<td>Asymmetric</td>
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<td><strong>Doctrinaire / Centralized</strong></td>
<td><strong>Decentralized</strong></td>
</tr>
<tr>
<td>Technology</td>
<td>Old</td>
<td>New</td>
</tr>
<tr>
<td>Strategy</td>
<td>Attrition</td>
<td>Effects</td>
</tr>
</tbody>
</table>
Achieving More Accurate Adjudication

Historical Challenges

- Command interference in adjudication
- Failure to adjudicate key factor
- Failure to adjudicate full event
- “Bad” data
Achieving More Accurate Adjudication
Emerging Challenges

• New Threats
  – Asymmetric Adversaries
  – Global Terrorism
  – Anti Access

• New (and rediscovered) Concepts
  – Network Central Warfare
  – Effects Based Operations
  – Campaign Planning

• New (and rediscovered) Tasks
  – Rapid Adaptive Planning
  – Expeditionary Air Operations
  – Winning the Peace
Wargaming Today

Existing Models

By

Duration Depicted

“Months to Years”
Conflict Level

“Days to Months”
Campaign Level Models

“Hours to Days”
Mission Level Models

“Seconds to Hours”
Engineering and Engagement Models
Generations of Wargaming

3rd Generation - Effects System

2nd Generation - Attrition Force

1st Generation - Mind Strategy

Evolve the State of the Art
Third Generation Wargaming

- Adjudicates EBO through adding
  - Human Factors
  - System Effects
  - Decision Cycle
- Shrinks warfighter’s Decision Loop
  - Expeditionary hardware
  - Fast to learn and execute interfaces
  - Inherent reach back capability
Third Generation Wargaming’s Contribution

3GWG Benefits

Strategic

Operational

Tactical
Conclusion

- Wargaming can give us an important edge over our adversaries, or they can give our adversaries an edge over us
- Today tactical attrition wargames are more accurate than strategic effects wargames
- Better Blue, Red and White (adjudication) can increase the accuracy of all wargames - especially at the campaign and strategic
- Better Wargames can help us shorten wars - and win the peace
To Learn More

• History
  – The Art of Wargaming, Peter Perla, 1990

• Current Events
  – www.msrr.dmso.mil/
Assessing Confidence in Insights

<table>
<thead>
<tr>
<th>More Confident</th>
<th>Less Confident</th>
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</thead>
<tbody>
<tr>
<td>• Tactical</td>
<td>• Strategic</td>
</tr>
<tr>
<td>• Physics</td>
<td>• Human Factors</td>
</tr>
<tr>
<td>• Kinetics</td>
<td>• Non- Kinetics</td>
</tr>
<tr>
<td>• Red Similar Culture</td>
<td>• Red Dissimilar Culture</td>
</tr>
<tr>
<td>• Short Duration (battle)</td>
<td>• Long Duration (War)</td>
</tr>
<tr>
<td>• Many “Runs”</td>
<td>• Few or 1 “Run”</td>
</tr>
<tr>
<td>• Attrition</td>
<td>• Effect</td>
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</tbody>
</table>
A One Slide History of Wargaming
Forecasting the Future