

# **Admitting what we know & knowing what that means:**

**Exploring the types of Knowledge that Wargames (might) produce**

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# Admitting What we Know...

I. The Official Position

II. Evaluating Wargames' Scientific Value

III. Wargaming Expanded

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# I. The Official Position

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## Current Claims

- Wargames used to study ‘wicked problems’
- Evaluate and/or predict decisions
- Determine and evaluate strategies
- Generate insights

## Current Practice

- Literature and professional wargames also report:
  - System outcomes (e.g., how games ended)
  - System dynamics
  - Narratives
  - Causal Processes
- Often the most compelling findings of wargames
  - **BUT:** These findings not readily reconcilable with official claims

## So what?

- No clear way of determining value of wargames outside of intuition, community norms
- Clearer reconciliation with existing scientific approaches can help increase sponsor confidence and sharpen and develop wargaming methods

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# II. Evaluating Wargames' Scientific Value

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## Dominant Approach to 'Scientific' Wargaming

- Casual inference theory-testing
  - I.e., is cause present and working as theorized?
  - Emphasis on laws/generalizations
  - Requires stringent controls and multiple iterations
- Disconnected from most Wargames as practiced, which:
  - Typically possess looser rule sets and few iterations
  - Struggle to meet standards of internal and external validity
- Criticism
  - This approach sometimes reduces science to empirics and downplays or ignores other forms of scientific inference
  - Cannot explain Wargaming's successes

# II. Evaluating Wargames' Scientific Value

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## Alternative Scientific Interpretations of Wargaming

### Single Case Analysis (SCA)

- Trying to find sufficient explanation for why the outcome had been produced in the particular case
- Relies on strong empirics and detailed narrative

### Discovering Causal Mechanisms

- How different factors come together to generate outcomes
- Identifying conditions for triggering
- (note, mechanisms may be generalized)

### Organizational Modeling

- Collect empirical\* generalizations or facts into a single framework and/or generating classification schemes

**NOTE:** These approaches reflect wargaming as practiced much more. But payoffs are more theoretical rather than empirical\*

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# III. Expanding Wargaming

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## Benefits

- Can better defend individual findings to sponsor
- Improved reporting – can focus on relevant type of finding
- Highlights novel elements of wargaming as method, e.g.
  - Wargames can be used to create and evaluate **strategies**
  - Wargame outputs based on interaction of **objective** (i.e., the game) **and subjective models** (i.e., individual beliefs).

## Constraints

- Different forms of study may require different case study (scenario) selections
  - In wargaming, this might mean much clearer justifications for scenario setting and design
- Cannot expect wargames to do all of above in coherent way, meaning scoping might need even more metatheoretical as well as empirical\* precision
- Will require more conscious theoretical grounding in lead up to game and theoretical analysis post game
  - Must avoid temptation to think that all analysts equally capable!

# III. Expanding Wargaming

Type of Study	Scenario Selection	SME Importance	Rigidity of Design	Reporting Requirements
<b>SCA</b>	Prominent	Players and adjudicators	Loose or semi-rigid	Narrative focus
<b>Causal Processes</b>	‘High’ on anticipated factors	Adjudicators	Semi-rigid	Causal conditions, stages, and impact
<b>Organizational Model</b>	Illuminating	Players and adjudicators	Loose	Distinct factors and points of intersection/conflict
<b>Strategies</b>	Typical	Designers	Rigid	Decisions and outcomes

*Table 1: Possible Requirements based on Wargame’s Purpose*

# Questions

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## SELECTED REFERENCES (while we talk)

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# Thank you!

Find out more about the King's Wargaming Network at <https://www.kcl.ac.uk/research/wargaming-network>

Follow us on twitter at: [@kclwargaming](https://twitter.com/kclwargaming)

# Appendix I: Claims regarding Wargaming

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## Wargames used to:

- “produce results,” (Downes-Martin 2013)”<sup>1</sup>
- “investigate processes” (Perla 1990)<sup>2</sup>
- “confirm” something (Levine, Schelling, & Jones 1991)<sup>3</sup>
- “provide insight into the dynamics of competitions” (Pournelle 2017)<sup>4</sup>
- improve “understanding” about “ideas” (McGrady 2019)<sup>5</sup>
- “test hypotheses” (Sabin 2012)<sup>6</sup>

<sup>1</sup> Downes-Martin, Stephen. 2013. Adjudication. *Naval War College Review*. 66(3): 67-81, p. 71

<sup>2</sup> Perla, Peter P. 1990. *The Art of Wargaming: A Guide for Professionals and Hobbyists*. Annapolis, MD: Naval Institute Press, p. 9.

<sup>3</sup> Levine, Robert, Thomas Schelling, William Jones, 1991. *Crisis Games 27 Years Later: Plus C'est Déjà Vu*. Santa Monica, CA: RAND Corporation, p.16.

<sup>4</sup> Pournelle, Phillip E. 2017. Designing Wargames for the Analytic Purpose. *Phalanx*, 50(2), 48-53, p.52.

<sup>5</sup> McGrady, Ed. 2019. Getting the Story Right about Wargaming. *War on the Rocks*. Nov. 8.

<sup>6</sup> Sabin, Philip. 2014. *Simulating War: Studying Conflict Through Simulation Games*. London, UK: Continuum books, p.6.

# Appendix II: Philosophy of Science

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## What counts as good science?

- **Karl Popper** – empiricism in form of testing hypotheses derived from theories and seeking to falsify them.
- **Thomas Kuhn** – Working within the intellectual expectations, reconciling anomalies with paradigm until too many build up and then ‘revolution.’
- **Imre Lakatos** – scientific research programmes possess a (i) hard core, (ii) negative heuristic, (iii) positive heuristic, and (iv) protective belt of auxiliary hypotheses. ‘Generative’ SRPs empirically verify ‘novel facts’ that adjust hard core or use positive heuristic to generate new findings.
- **Michael Strevens** – ‘Iron law of Explanation’ requires that all purpose of science is to empirically verify claims, eliminate alternatives, and ‘objectively’ justify arguments with reference to empirics not principles.

# Appendix III: Scientific Inference

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- **Deductive Inference** – begin with premises: If premises true, conclusion must follow.
  - Example: Game Theory
- **Inductive Inference** – move from premises about observed objects to conclusions about same unobserved objects.
  - Example: Statistics.
- **Inference to Best Explanation** – reasoning from existing data to a theory or hypothesis that best explains data
  - Example: Single Case Analysis.

# Appendix IV: Using Models

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- **Features**
  - Limited, partial, purpose relative (Clarke & Primo 2012, 59-60)
  - Models are neither true or false but are “representations” where we study a real thing (the “phenomenon”) by studying the model (Clarke & Primo, 13)
  - Not describing world as is, but seeking “empirical adequacy” (Okasha, 58)
- **Purposes of Models (Clarke & Primo 2012, 2007)**
  - Foundational models can (i) provide results that act as basis of more modeling or (ii) that can be applied to substantive questions
  - Organizational (structural) models collect empirical generalizations into a single framework” and/or create classification system.
  - Exploratory (explicative) models “investigate the putative (causal) mechanisms or motivations underlying the phenomena of interest” (2012, 90). These kinds of models can lead to counterintuitive or unexpected findings, even if in only one case (helps sense-making).
  - Generative – Produce non-obvious areas of future studies
  - Predictive models - very rare.