Sandia National Laboratories

Exceptional service in the national interest

Optimizing Contextual Realism

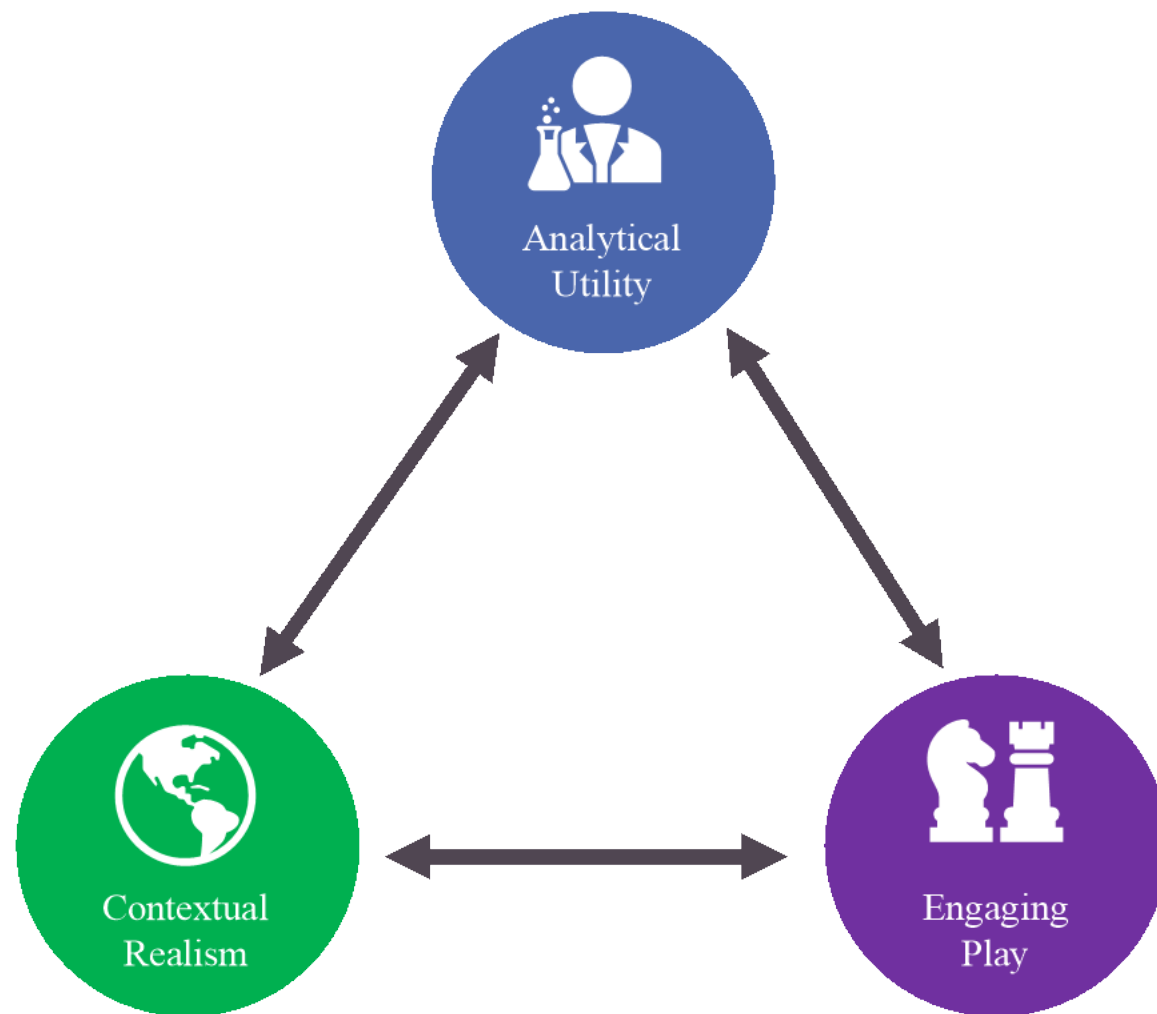How Much IRL is Enough?

Ruby E. Booth

MORS Pacific

Agenda

- Wargame Designer's Trilemma
- Contextual Realism (CR)
  - Relevant Contexts
  - Why CR Matters
  - Designing with CR in Mind
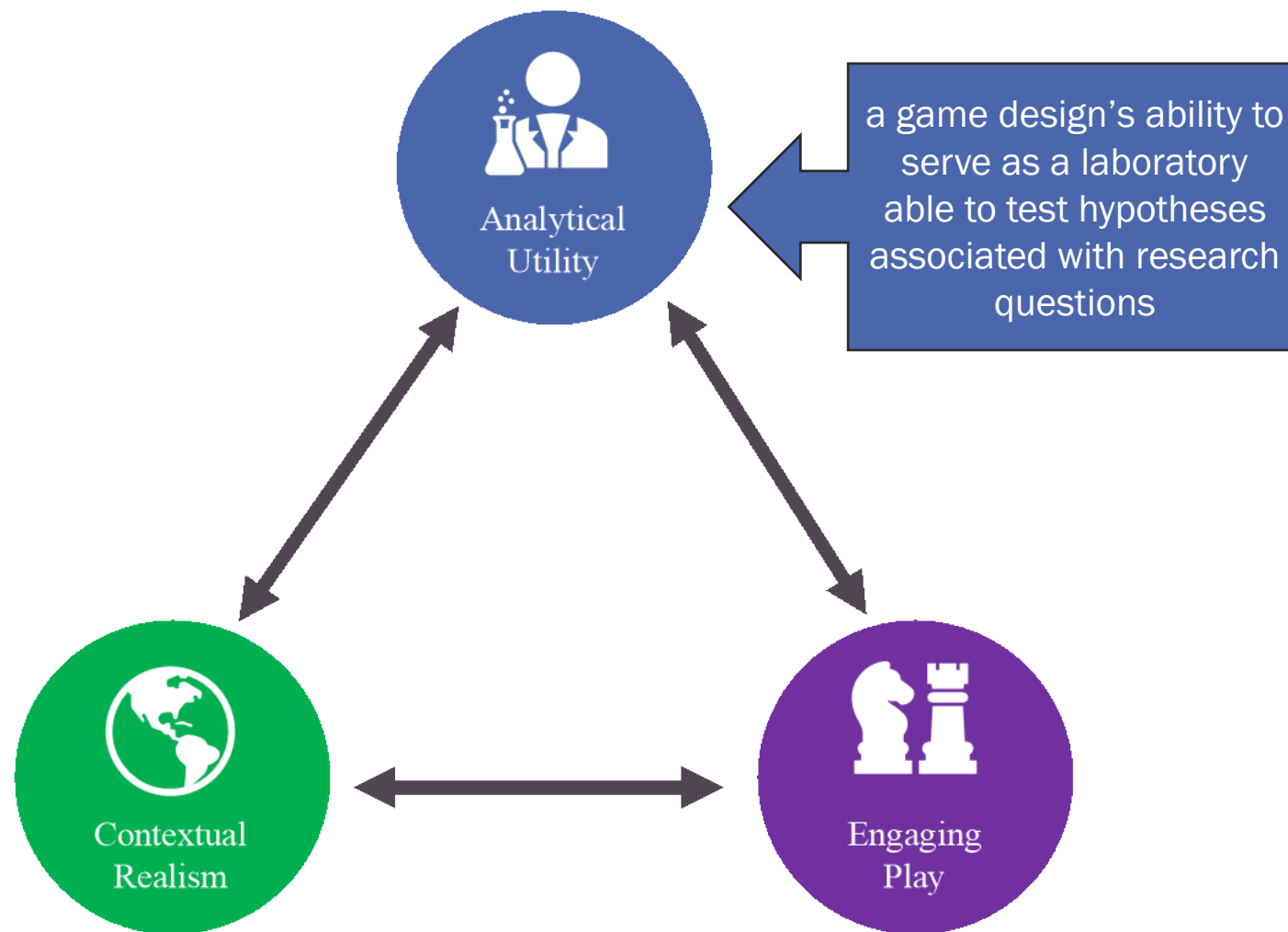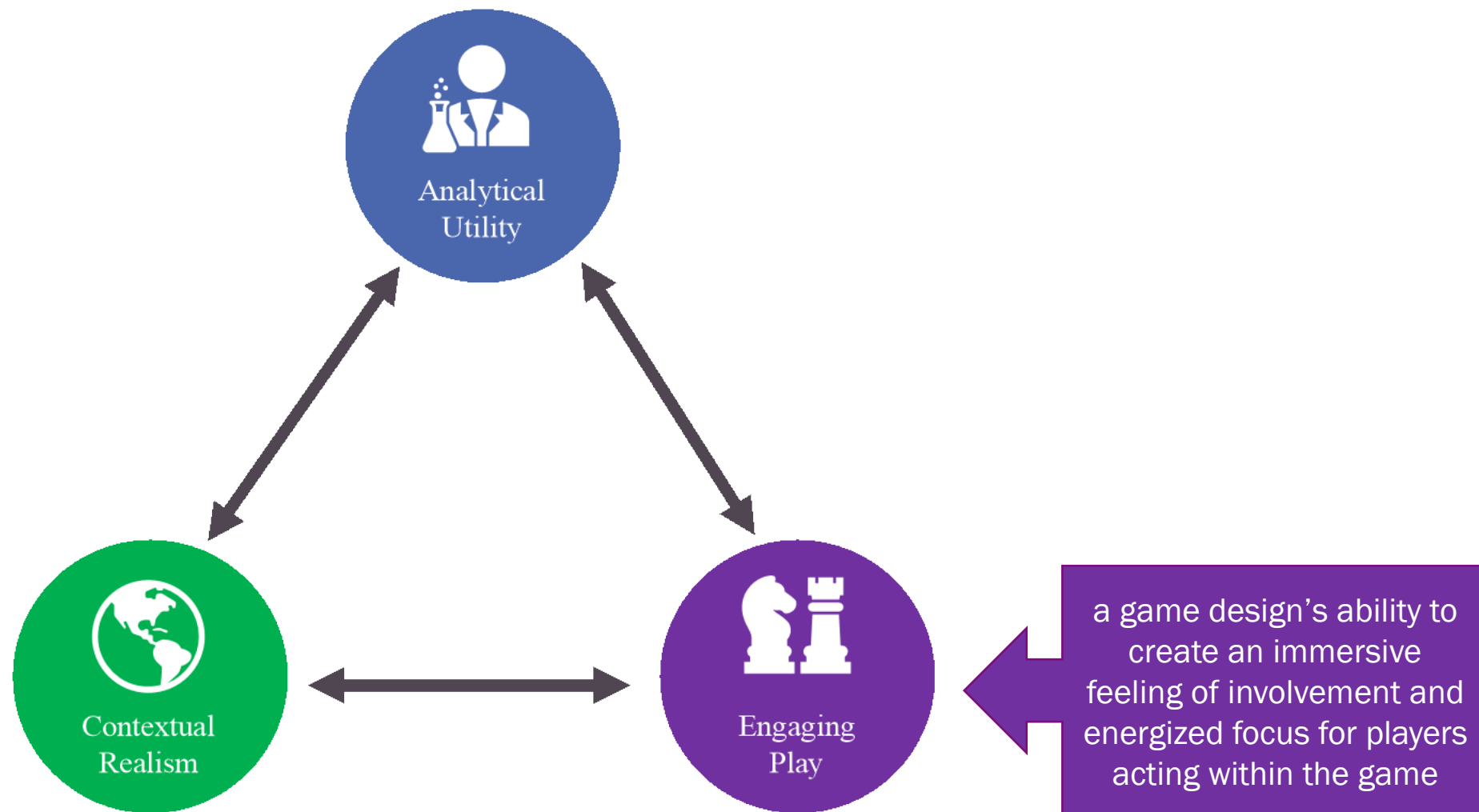 - Simplicity and Salience
- Examples from Life

The Wargame Designer's Trilemma

See: Reddie, Andrew W., Ruby Booth, Bethany L. Goldblum, Kiran Lakkaraju, Jason Reinhardt. (2023) Wargames as Data: Addressing the Wargamer's Trilemma in Cyber Wargaming: Practical Research and Education for Security, Georgetown University Press. (forthcoming)

The Wargame Designer's Trilemma

Analytical Utility ← a game design's ability to serve as a laboratory able to test hypotheses associated with research questions

Contextual Realism

Engaging Play

See: Reddie, Andrew W., Ruby Booth, Bethany L. Goldblum, Kiran Lakkaraju, Jason Reinhardt. (2023) Wargames as Data: Addressing the Wargamer's Trilemma in Cyber Wargaming: Practical Research and Education for Security, Georgetown University Press. (forthcoming)
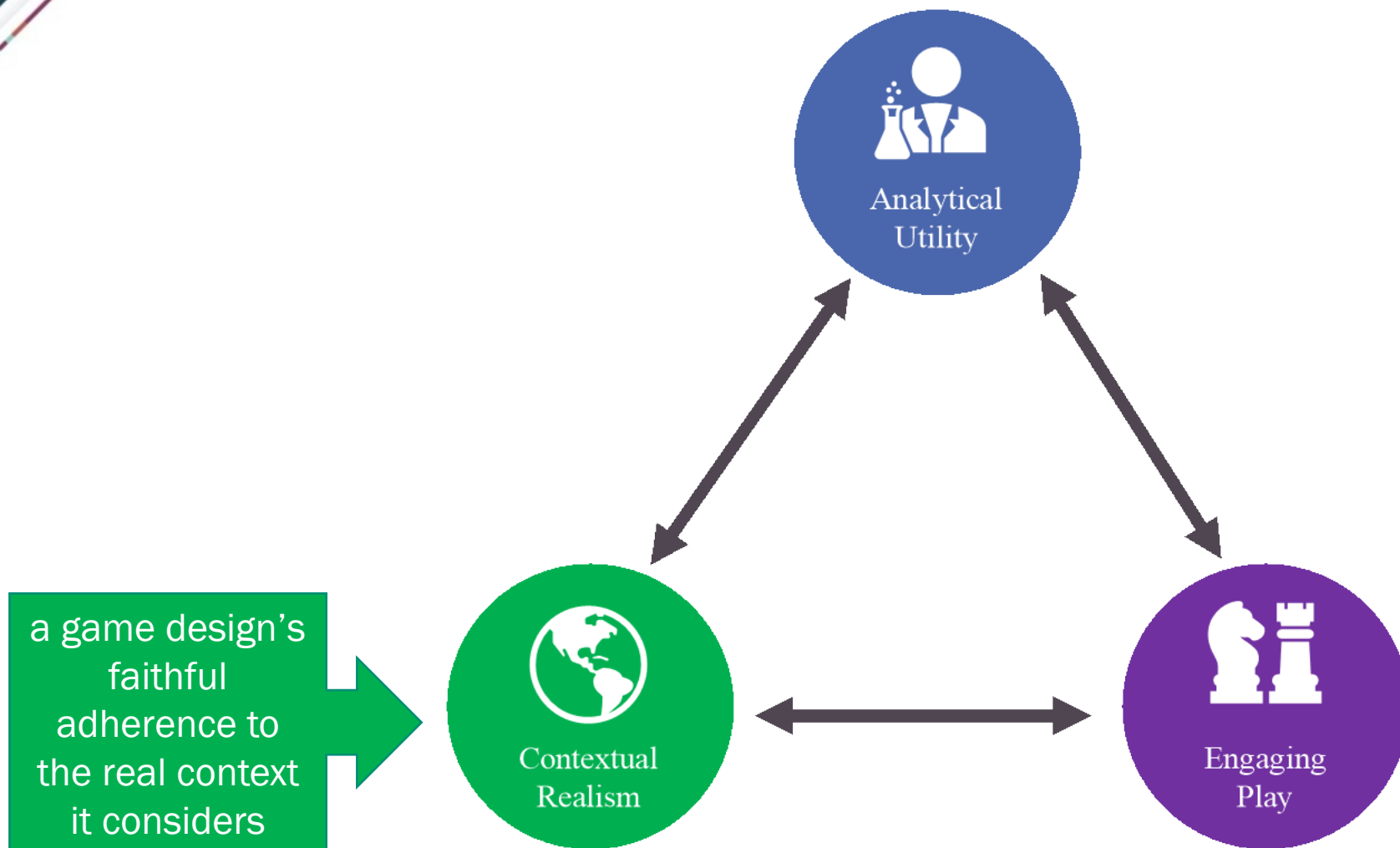
The Wargame Designer's Trilemma

Analytical Utility

Contextual Realism

Engaging Play

a game design's ability to create an immersive feeling of involvement and energized focus for players acting within the game

See: Reddie, Andrew W., Ruby Booth, Bethany L. Goldblum, Kiran Lakkaraju, Jason Reinhardt. (2023) Wargames as Data: Addressing the Wargamer's Trilemma in Cyber Wargaming: Practical Research and Education for Security, Georgetown University Press. (forthcoming)

The Wargame Designer's Trilemma

a game design's faithful adherence to the real context it considers

Analytical Utility

Contextual Realism

Engaging Play

See: Reddie, Andrew W., Ruby Booth, Bethany L. Goldblum, Kiran Lakkaraju, Jason Reinhardt. (2023) Wargames as Data: Addressing the Wargamer's Trilemma in Cyber Wargaming: Practical Research and Education for Security, Georgetown University Press. (forthcoming)

Contextual Realism

Relevant Contexts

- Experimental wargaming
- Exploratory wargaming
- Educational wargaming
- National Security contexts with elite samples

This approach is less relevant to:

- Training games that require near complete fidelity (e.g., certain training simulations)
- Hobby games with absurdist elements

Contextual Realism

What is contextual realism?

- Formal definition: A game design's faithful adherence to the real context it considers
- Operationalization: Which elements of reality a game includes, the level of fidelity at which these are included, and which elements are simplified, elided, or omitted.

Why does contextual realism matter?

- Data validity – players' actions during play must reflect real-world decision making
- Face validity – decision makers, leaders, and sponsors expect games that reflect the world in which they work, not fantastic realms
- Generalizability/transferability – insights can only be expected to apply to other contexts with the same realities the game presents
- Player cognitive load – when the game deviates from expectation players must actively recall that difference when making decisions; adding to game complexity

Perfect is the Enemy of Good

Perfect Realism is Impossible

- Complexity – reality is too intricate to perfectly model
- Harms – reality is too dangerous
- Confounds – the chaotic nature of reality introduces unwanted confounds

Perfect Realism is Undesirable

Hurts player engagement

- Goldilocks zone – not too complex, not too simple

Hurts analytical utility

- Distracts from central questions

Determining when a game is sufficiently "real" to represent a problem of interest, but abstract enough to 1) eliminate undesirable confounds and 2) permit engaging play represents a meaningful and common design challenge.

Highlighting Reality: a Guided Tour

1. Acknowledge you cannot include everything
2. Identify the central question of interest
3. Review existing theory, literature, SME insights, conventional wisdom, and "common sense"
4. List all elements to include
5. Divide these elements into essential and nice to haves
6. Eliminate all your nice to haves
7. Repeat until you have Simplicity and Salience
8. Design review & playtests

Simplicity and Salience

SIMPLICITY

- Aligns with expectations
- All actions parallel real world corollaries
- Does not rely on players' memory or other information retrieval
- Minimizes absurdity
- Mechanics are in the Goldilocks zone

SALIENCE

- Aligns with subject matter expertise
- Includes factors of theoretical relevance
- Has face validity
- Relevant information needed for reasonable action is provided
- If attempting to forecast future behavior, design avoids over-characterization

Examples from Life

SIGNAL

- Focused on presence or absence of tailored nuclear weapons

ASSENT

- Identified real world blocks to effective action
- Elided multi-step process
- Omitted parallel committee

Tantalus

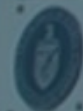- Relies on differentiating characteristics (i.e., what makes cyber novel?)

Questions?

Thank you.