IMAGINETIC
SIMULATION + DESIGN

Thinking...outside the box

Serious Games are Designed to

- Educate

- Train

- Inform

- Analyze

- REVEAL KNOWLEDGE
(remember this for later)

In an engaging, experiential manner

(Some) Serious Game Types

- BOGSAT
- Scenario Game
- Matrix Game
- Simulation
- Roleplay
- Kreigsspiel
  - Rigid
- Hybrid Games

Serious Games have 2 basic requirements

1. A quantifiable outcome

   A specific goal for the player(s)

   Educational or revelatory

2. Two rules systems
   1. Rules that define the construction set of the game
   2. The playing rules
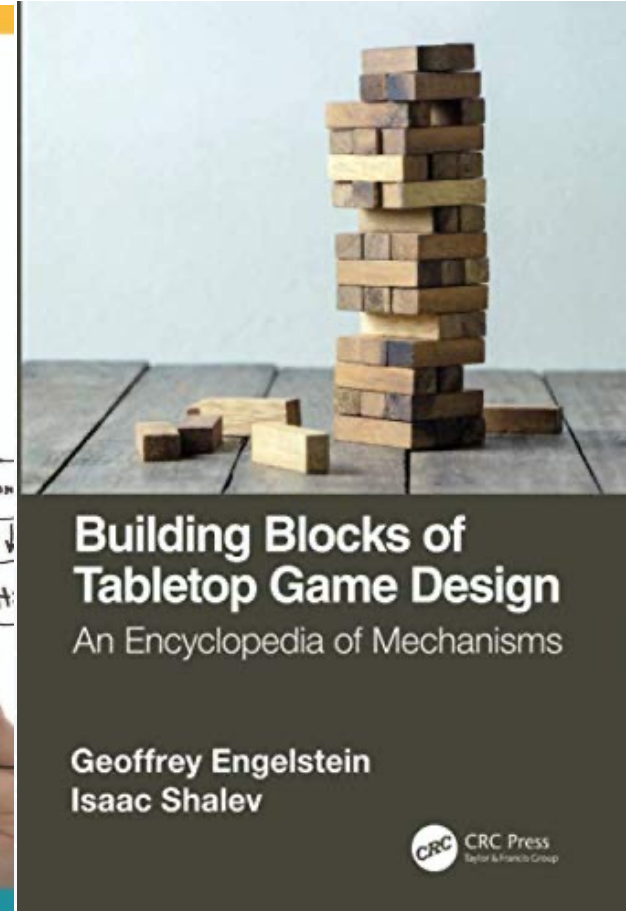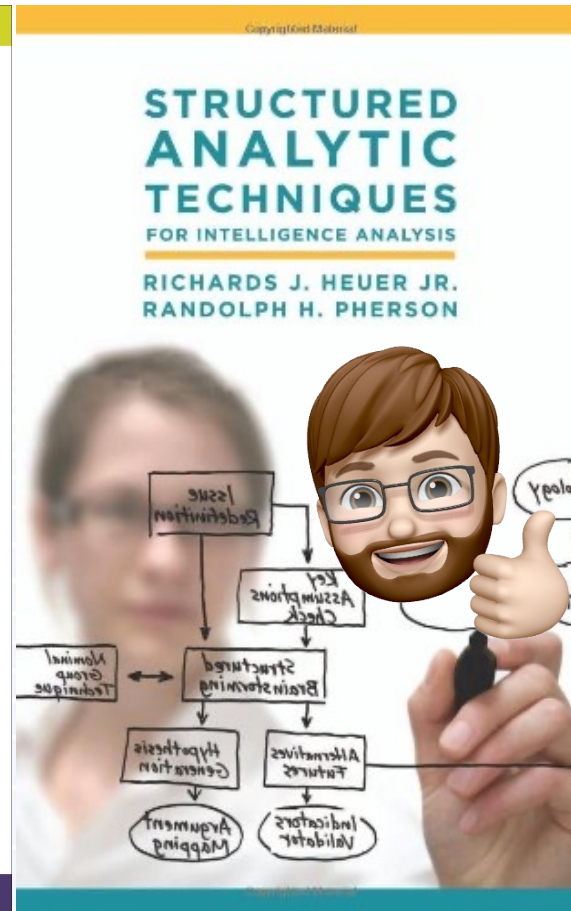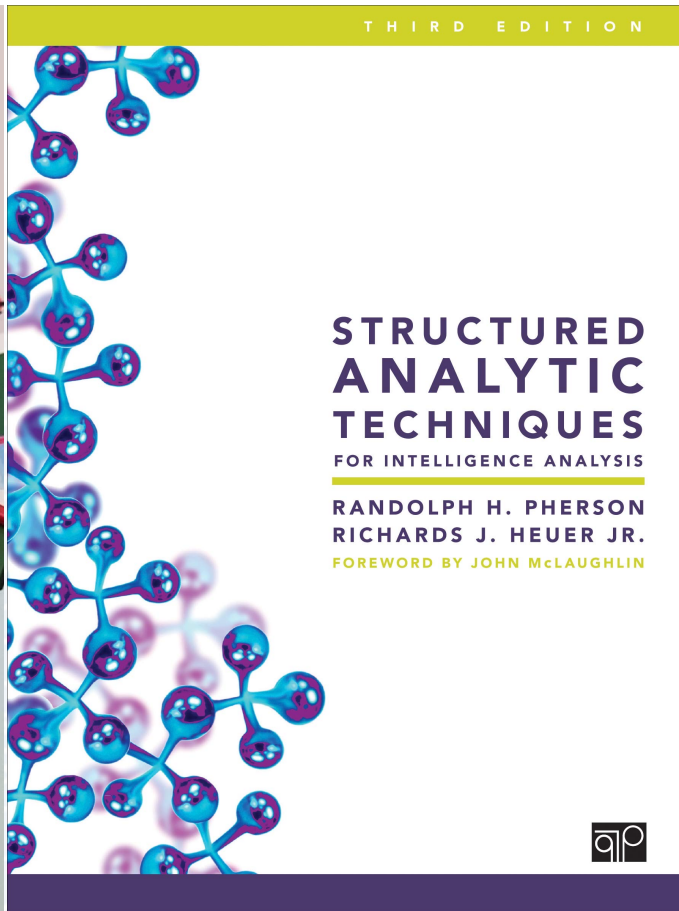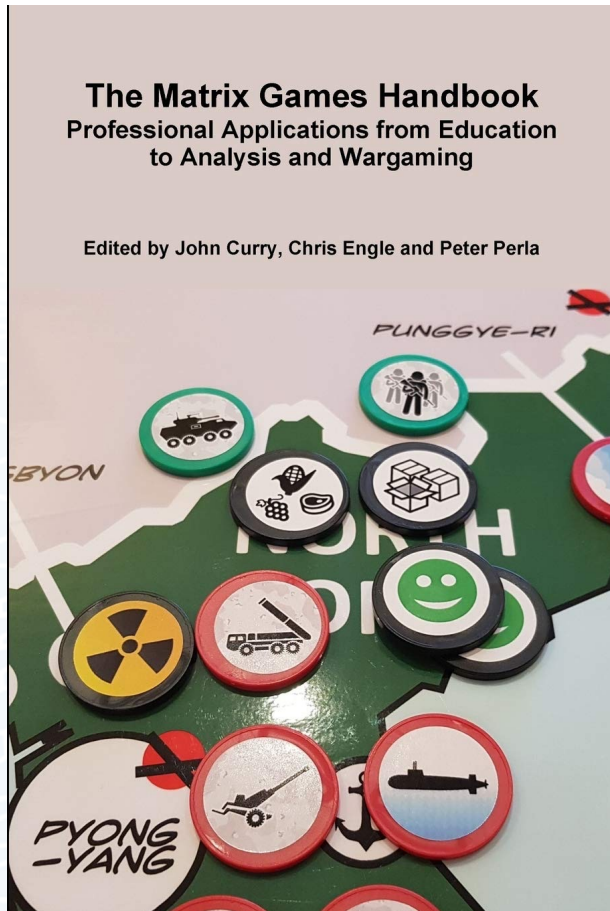
Playing by the rules

The playing rules and conditions a player must meet in order to reach the goal (successfully or not)

What defines the core of the game
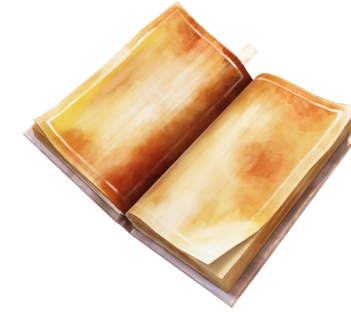
The reason for the game

Highly Suggested Reading

Serious Game Designer's Library

an incomplete list

Annetta, L. A., & Bronack, S. C. (2011). Serious educational game assessment: Practical methods and models for educational games, simulations and virtual worlds. Rotterdam: Sense Publishers.

Brynen, Rex [ed]. PAXsims: Simulations / Conflict, Peacebuilding and Development / Training and Education. https://paxsims.org

Curry, John. (2018). The Matrix Game Handbook: Professional Applications from Education to Analysis and Wargaming.

Drachen, A., In Mirza-Babaei, P., & In Nacke, L. E. (2018). Games user research.

Elias, G. S., Garfield, R., & Gutschera, K. R. (2012). Characteristics of games. Cambridge, MA: MIT Press.

Engelstein, G., & Shalev, I. (2020). Building blocks of tabletop game design: An encyclopedia of mechanisms.

Engelstein, G. (2019). Gametek. New York: Harper Audio.

Flanagan, M. (2013). Critical play: Radical game design.

Fox, J. (2014). The game changer: How to use the science of motivation with the power of game design to shift behaviour, shape culture, and make clever happen. Milton, Qld: Wiley.

Hodent, C. (2018). The gamer's brain: How neuroscience and UX can impact video game design.

Holt, D., Segrave, S., & Cybulski, J. L. (2012). Professional education using e-simulations: Benefits of blended learning design. Hershey PA: Business Science Reference.

Gill, N. (2015). Inside the Box: Using Integrative Simulations to Teach Conflict, Negotiation and Mediation. Zurich: Center for Security Studies, Swiss Federal Institute of Technology.

Kalmpourtzis, G. (2019). Educational game design fundamentals: A journey to creating intrinsically motivating learning experiences.

Kahneman, D. (2015). Thinking, fast and slow.

Knizia, R. (2019). New Tactical Games with Dice and Cards.

Knizia, R. (2010). Dice games properly explained. Place of publication not identified: Blue Terrier Press.

Montola, Markus. (2017). PERVASIVE GAMES: Theory and design. Place of publication not identified: CRC Press.

Priestley, R., & Lambshead, J. (2018). Tabletop wargames: A designers' & writers' handbook. Yorkshire, England: Pen & Sword Military.
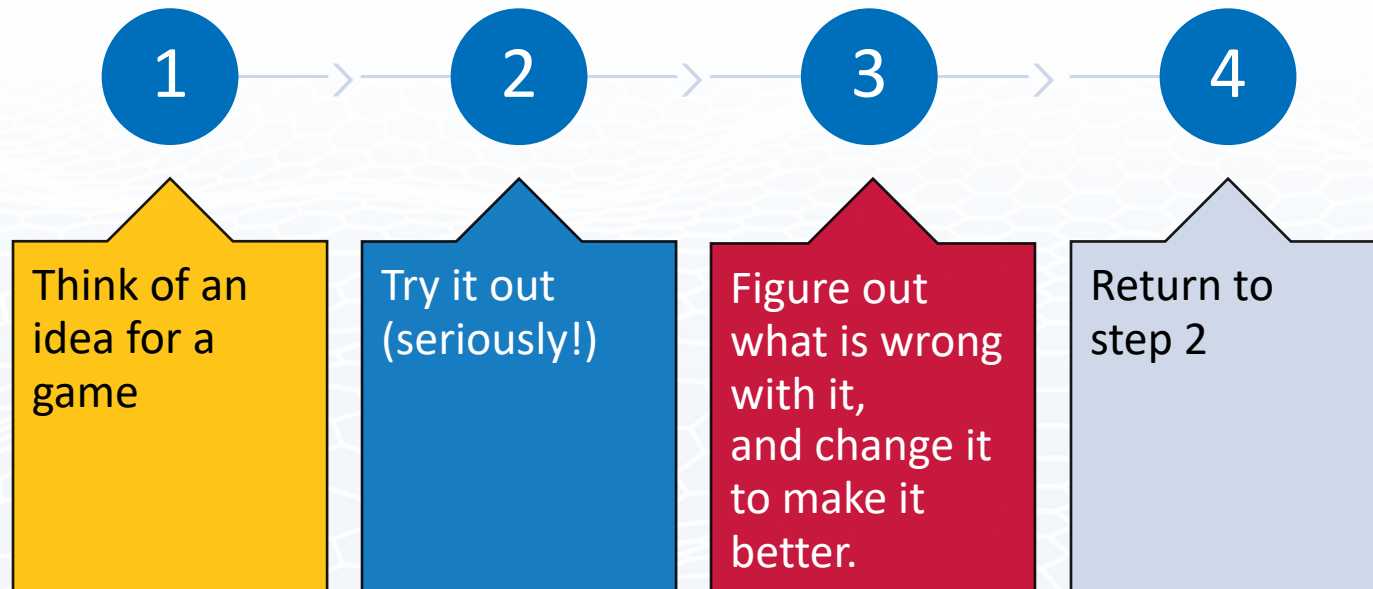
Sabin, P. (2012). Simulating war: Studying conflict through simulation games. A&C Black.

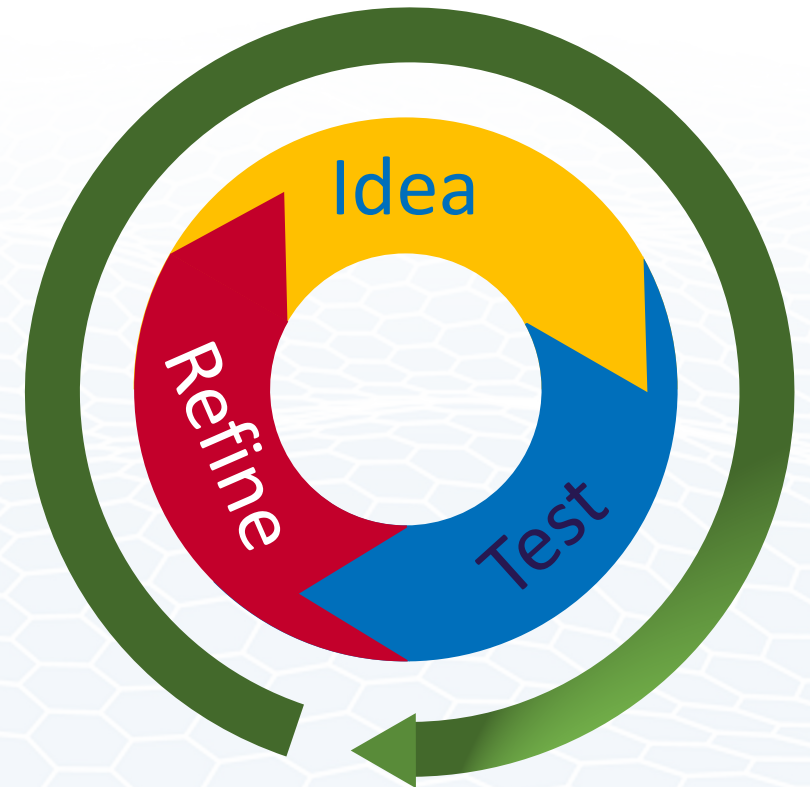**Schell, J. (2020). The art of game design: A book of lenses.**

Sheldon, L. (2020). The Multiplayer Classroom. Milton: CRC Press LLC.

Wills, S. (2011). The Power of Role-based e-Learning: Designing and Moderating Online Role Play. Routledge.

How to design a GAME

1 Think of an idea for a game

2 Try it out (seriously!)

3 Figure out what is wrong with it, and change it to make it better.

4 Return to step 2

Feedback
Feedback
Feedback

Idea

Test

Refine

If only it were just that simple…
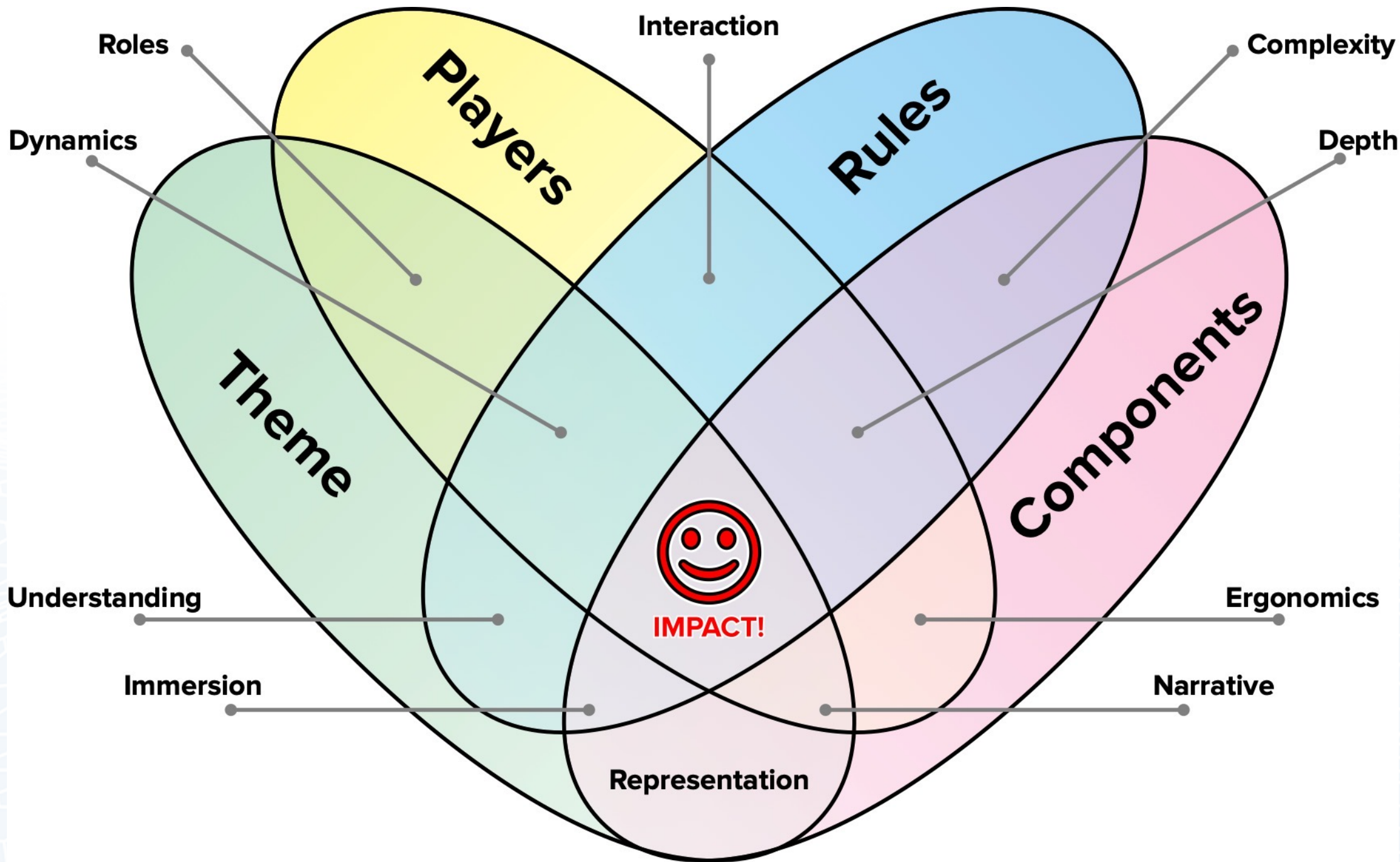
The Design Triad

Cognition

Interface

Engagement

The Game Designer's Secret

Steal!

Steal!

Steal!

*ethically

The Design Toolbox

Start all designs with a sketch

Save time and effort

Toolbox

Who, What, Where, When, Why, How?

Who: Facilitator, Referee, SME

Players

What: Conflicts

Politics

Budgets

Almost any subject

Where: Anywhere with a table and chairs

When: Can be ready in a matter of hours (or quicker)

Why: Low Cost

Fast

Accessible

How: That's what we're here to learn

Colour Conventions

Colour Conventions
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BLUE
Main Friendly

RED
Opposition

GREEN
Neutral or
Green Ally

ORANGE
Red Ally

WHITE
Control

YELLOW
IGOs or NGOs
(friendly)

BLACK
Non state actor
(adversary)

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Note: A convention, not an absolute

ex: Softwood lumber trade dispute

Non-kinetic, peaceful dispute, but wargame ID conventions can still make sense

- **Blue:** the protagonist — Canada
  - **Green:** Ally — Canadian Producers
  - US buyers

- **Red:** Primary Antagonist — USA
  - **Orange:** Ally — US Softwood lumber producers

- **Yellow:** IGO, NGO — WTO
- **Black:** Non State Actor — Greenpeace

Estimative Probability

Dice Based Probabilities

Result	Probability	or lower	or higher
1	16.67%	16.67%	100%
2	16.67%	33.33%	83.33%
3	16.67%	50.00%	66.67%
4	16.67%	66.67%	50.00%
5	16.67%	83.33%	33.33%
6	16.67%	100%	16.67%

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Result	Probability	or lower	or higher
2	2.78%	2.78%	100%
3	5.56%	8.33%	97.22%
4	8.33%	16.67%	91.67%
5	11.11%	27.78%	83.33%
6	13.89%	41.67%	72.22%
7*	16.67%	58.33%	58.53%
8	13.89%	72.22%	41.67%
9	11.11%	83.33%	27.78%
10	8.33%	91.67%	16.67%
11	5.56%	97.22%	8.33%
12	2.78%	100%	2.78%

*2 colour dice high/low for true 50/50

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Chance of Success

Result	Probability	or lower	or higher
3	0.46%	0.46%	100%
4	1.39%	1.85%	99.54%
5	2.78%	4.63%	98.15%
6	4.63%	9.26%	95.37%
7	6.94%	16.20%	90.74%
8	9.72%	25.93%	83.80%
9	11.57%	37.50%	74.07%
10	12.50%	50.00%	62.50%
11	12.50%	62.50%	50.00%
12	11.57%	74.07%	37.50%
13	9.72%	83.80%	25.93%
14	6.94%	90.74%	16.20%
15	4.63%	95.37%	9.26%
16	2.78%	98.15%	4.63%
17	1.39%	99.54%	1.85%
18	0.46%	100%	0.46%

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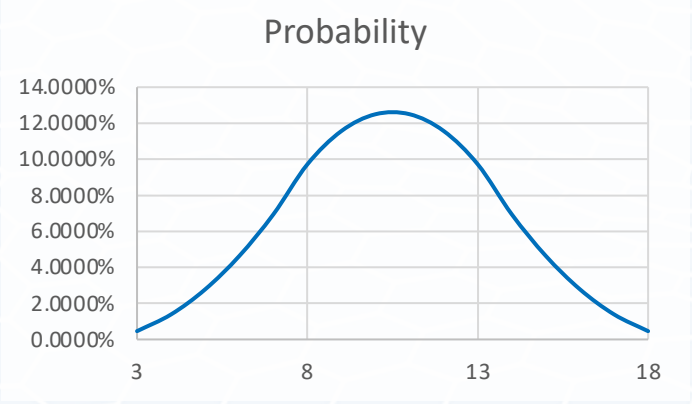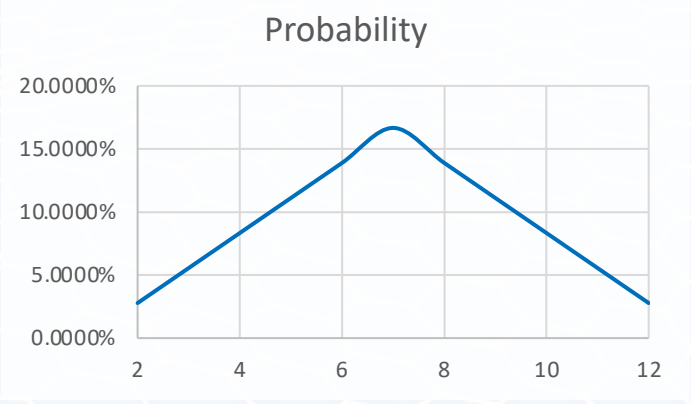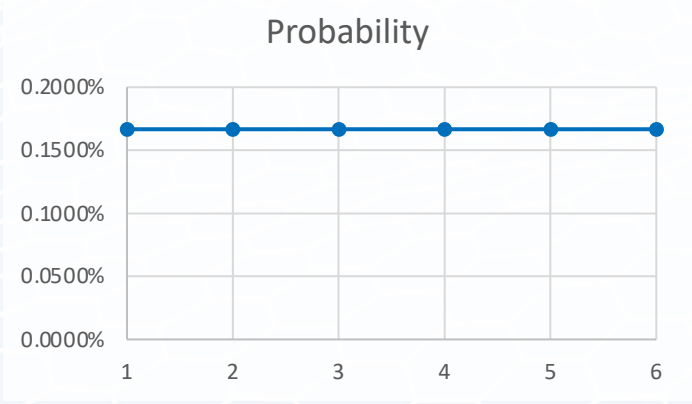
Simple Combat Resolution Using Dice

If we need a conflict model, we will default to a SCRUD model with quality modifiers

SCRUD
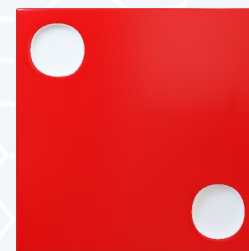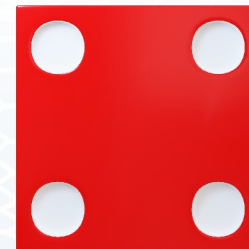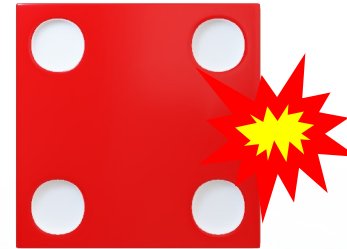### Simple Combat Resolution Using Dice

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Methodology / Explanation
1. Throw one die for every unit present in the action.
2. Line up one sides dice in order of highest first,
3. Line up the other sides beside them in order of highest first.
4. Compare each pair of dice. Highest v. highest, then next highest pair so on

The highest die in each pair is the **WINNER**

Same score on both dice: **DEFENDER WINS or STALEMATE** (per adjudicator)

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SCRUD
Simple Combat Resolution Using Dice
A = Attacker , D = Defender, S= Stalemate

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D\A	1	2	3	4	5	6
1	S/D	A	A	A	A	A
2	D	S/D	A	A	A	A
3	D	D	S/D	A	A	A
4	D	D	D	S/D	A	A
5	D	D	D	D	S/D	A
6	D	D	D	D	D	S/D

The Experience

Stop thinking about the game

Start thinking about the player

- What experience do I want the player to have?

- What is essential to the experience, and goal?

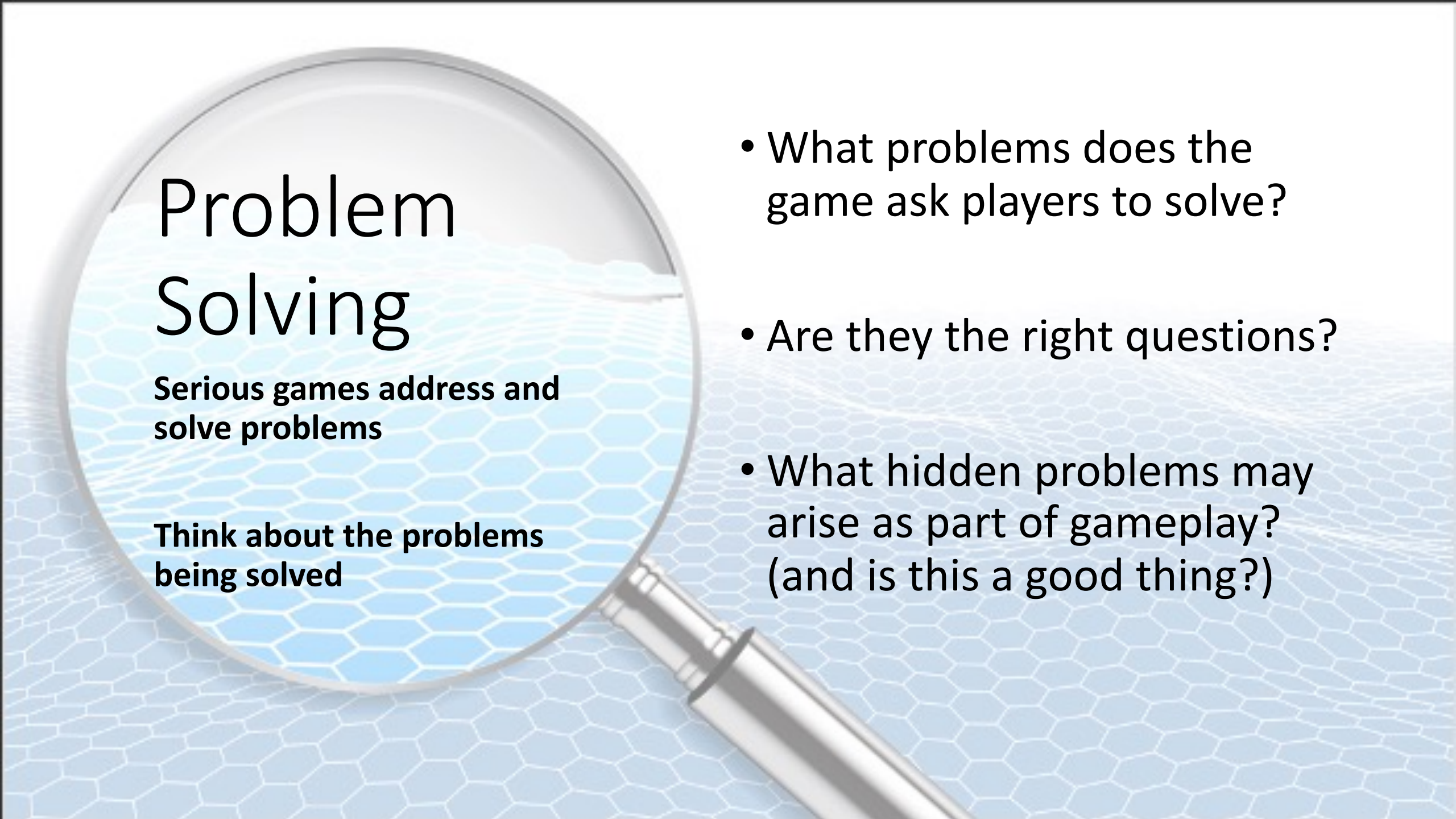- How can the game best capture that essence?

Endogenous Value

Think about players' feeling about the game, rules, goals, objects, and items.

- What will players value in the game?

- How can I make relevant issues more valuable to them?

- Identify the specific relationship between value in the game and player motivations.

Do no harm!

Problem Solving

Serious games address and solve problems

Think about the problems being solved

- What problems does the game ask players to solve?

- Are they the right questions?

- What hidden problems may arise as part of gameplay? (and is this a good thing?)
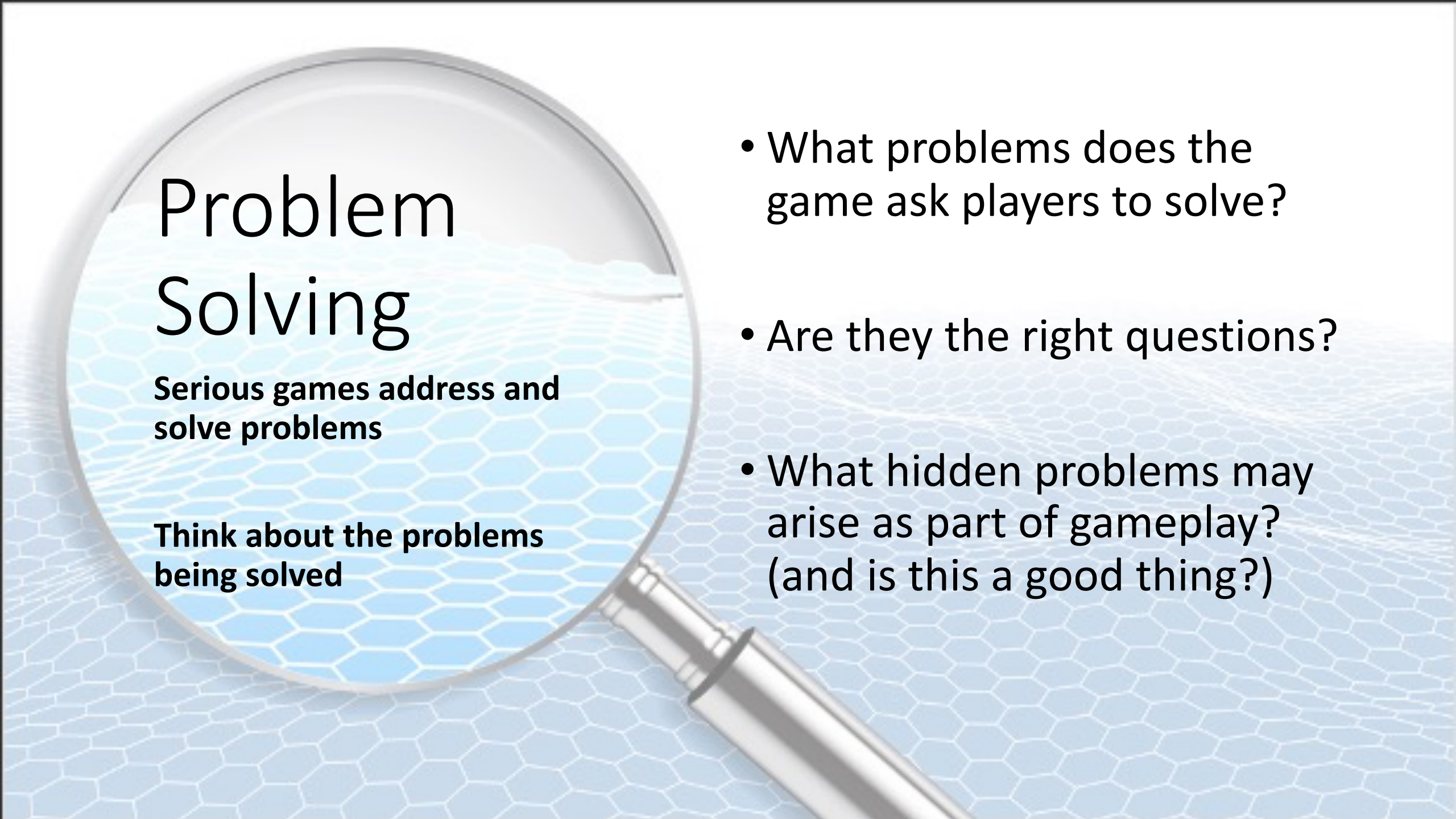
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Game Design: The Brief*

A good brief is the best predictor of success

The Basics
- Who
- What
- Where
- When
- Why
- How
- How much
- How many
- How often

Define
- Project Objectives
  - Specific goal
- Desired Results & Vision
  - The output
- Target participant
  - Players
  - SME pool

- Modality
  - Physical
  - Digital
  - Hybrid
- Project Voice
  - Thematic feel
- Success Criteria
  - How will success be judged

Game Design: Scenario

The Scenario sets the scene

The Basics
- Who
- What
- Where
- When

- Why
- How
- How much
- How many
- How often

Define
- Pertinent roles
  - Necessary
  - Ancillary
  - Protagonists
  - Antagonists
  - Define what they do well (and don't)
- NPCs?

- Setting
  - Geographic?
  - Culture
    - Organizational culture is often more pertinent

- Scenario Specific Effects
- Define Relationships
- Time Frame
- Flesh it out

Game Design: The Model

The Model defines the world

The Basics
- Who
- What
- Where
- When

- Why
- How
- How much
- How many
- How often

Define
- The Interaction
  - Player-Game
  - Player-Player
  - Facilitator-Game
  - Clear judging algorithm
- What actions can a player take
- How does the player know what to do?
- How are actions adjudicated?*

- What choices will a player make?
- What choices can a player make?
- Is there a model?
  - Research
- Can you define a reasonable model?
  - Mathematical algorithm?
  - Action-Reaction?
- Time Frame

Game Design: Research

- Familiarity with the topic is essential*

- The brief: Defined parameters with principals
  - Then determine what they actually want[†]

- Research
  - Setting
  - Roles
    - Doctrine
  - Real World Mechanics

Game design vs research paper work cycle

An adaptation of Rex Brynen's work