Thinking…outside the box

IMAGINETIC
SIMULATION + DESIGN

From Post Its to Prototype

Producing Professional Serious Games

Who am I?

- Tom Fisher
  tfisher@imaginetic.net

  CEO Imaginetic, Montréal

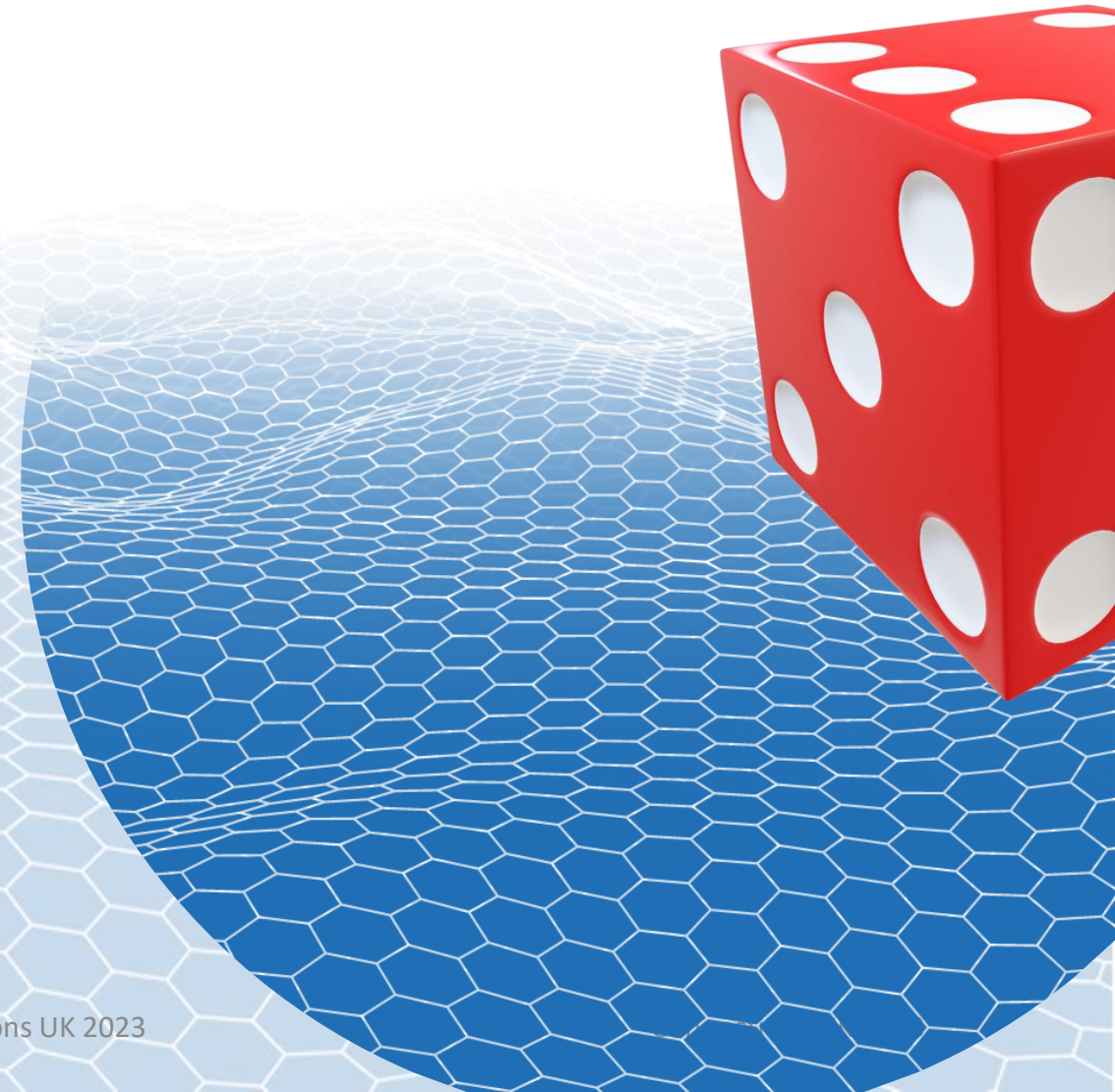
  Electrical Engineer, Special Education Teacher, Graphic Designer, Game Designer, Trainer, Facilitator, Coach

  Aftershock, MaGCK, PaxSims.org

  20 years serious games

  Lifelong gamer

  i.e. I'm a nerd



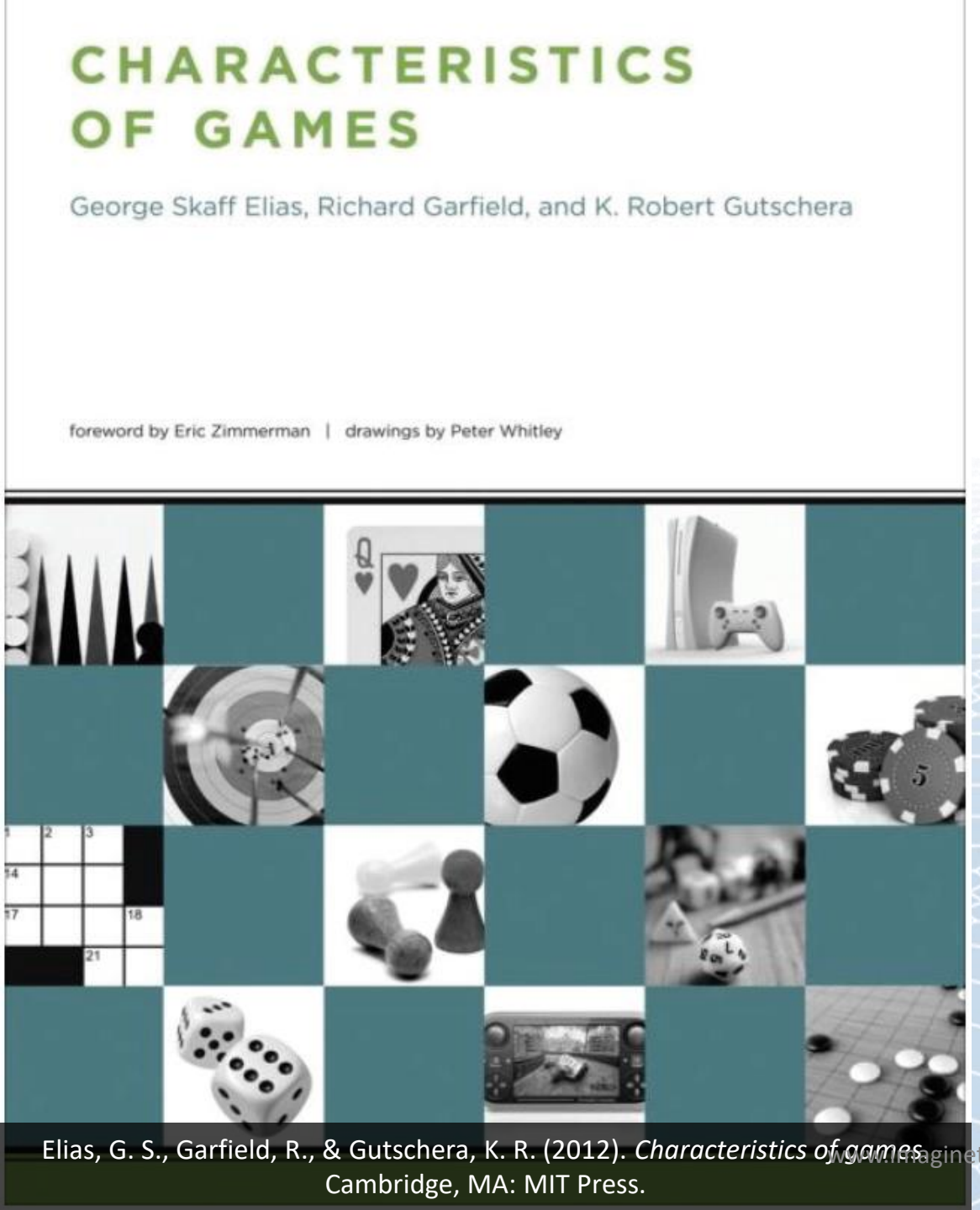
Discussion

Was that a GAME?

The game designer creates an *imaginary* **experience**

Jesse Schell
The Art of Game Design (2008)

- Game ≠ Experience
- Game ➢ Experience
- Players and game are real, the experience is *imaginary*



What is a Game?

- Can you define a “game”?

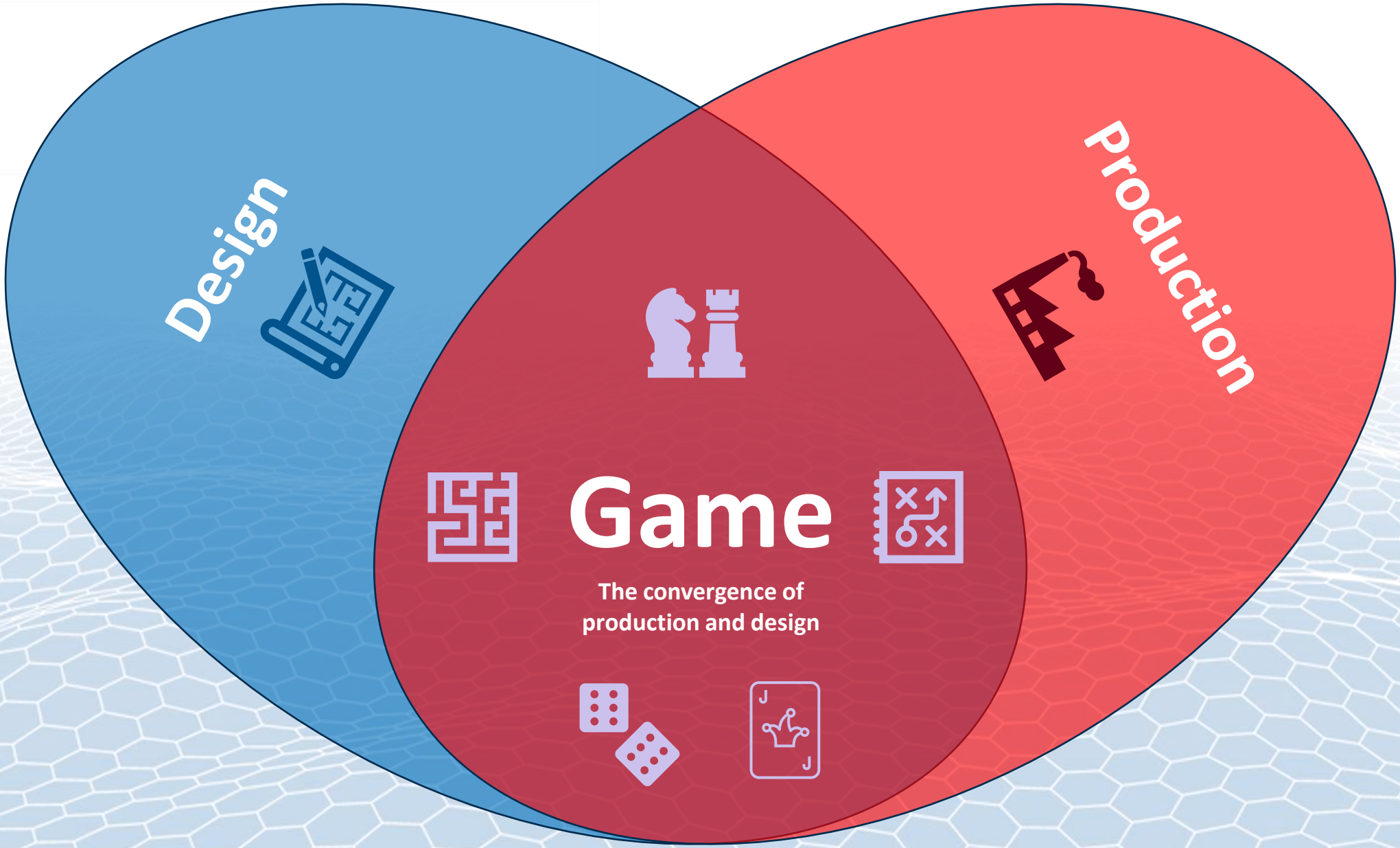
- Games represent a great many different things that share a family resemblance, rather than an exact definition.

For our purpose:

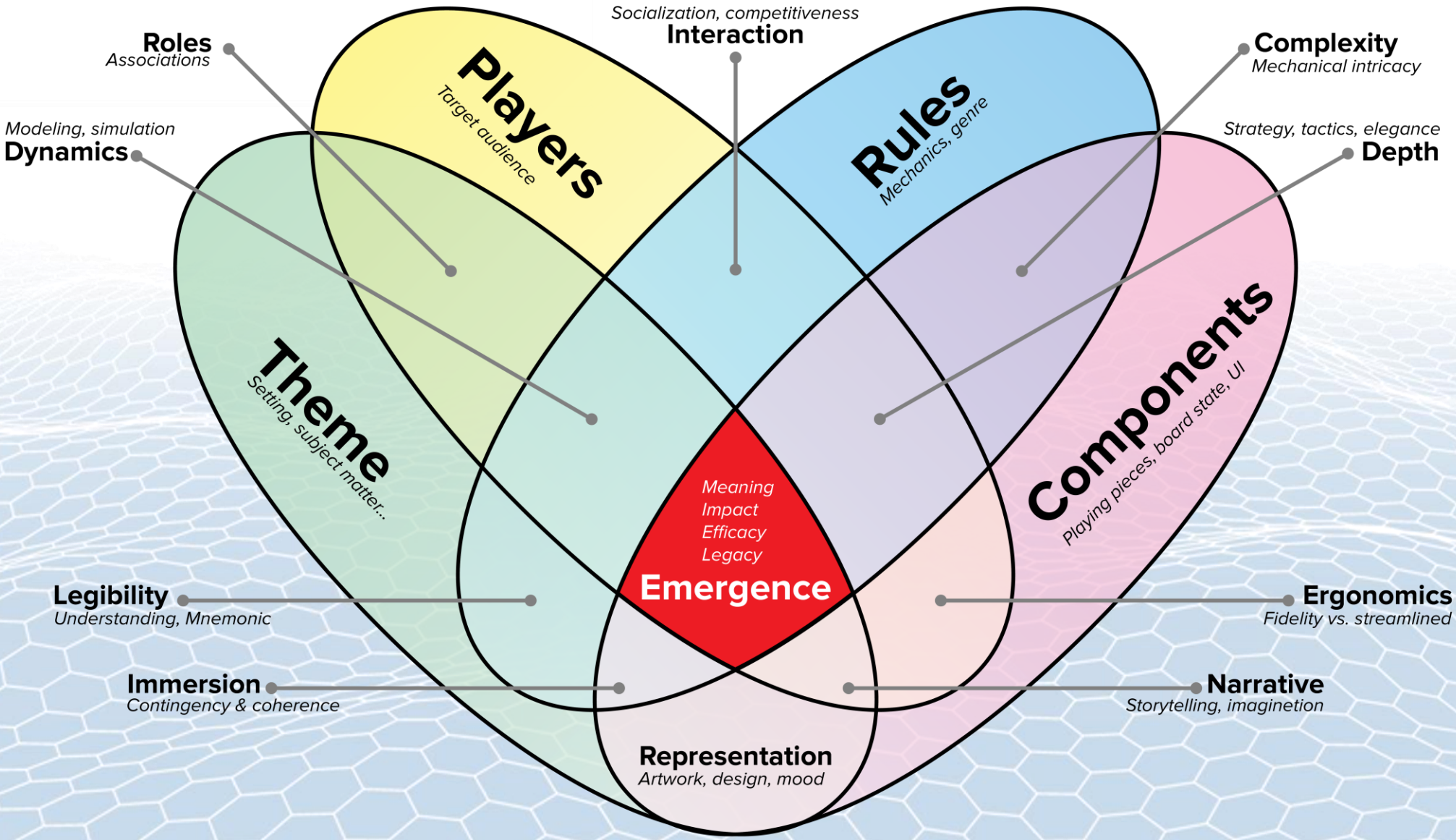
- **A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.**

-Salen and Zimmerman, 2003

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

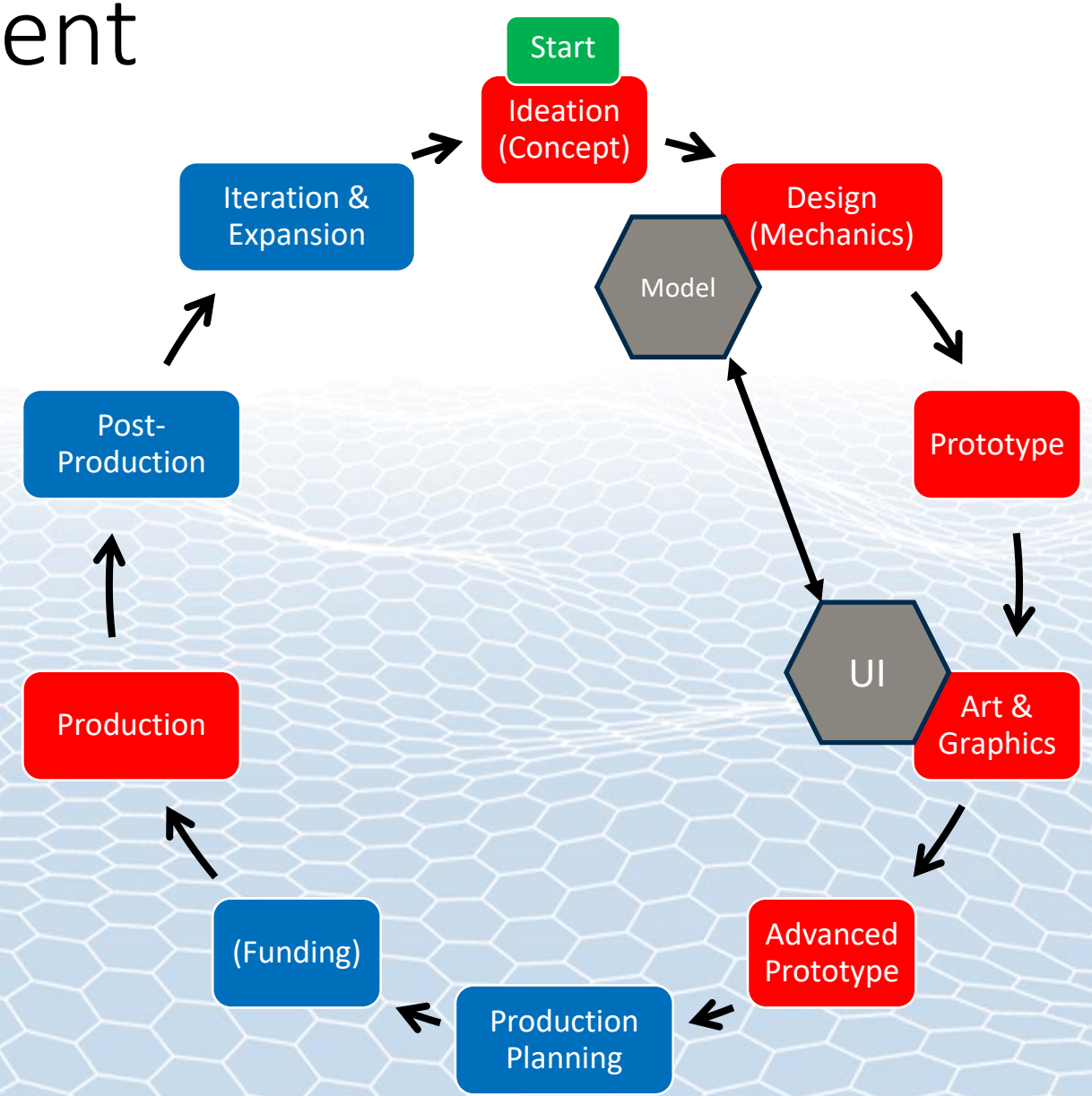

Design
Production
Game
The convergence of
production and design

The Science of Games



The Game Development Life Cycle

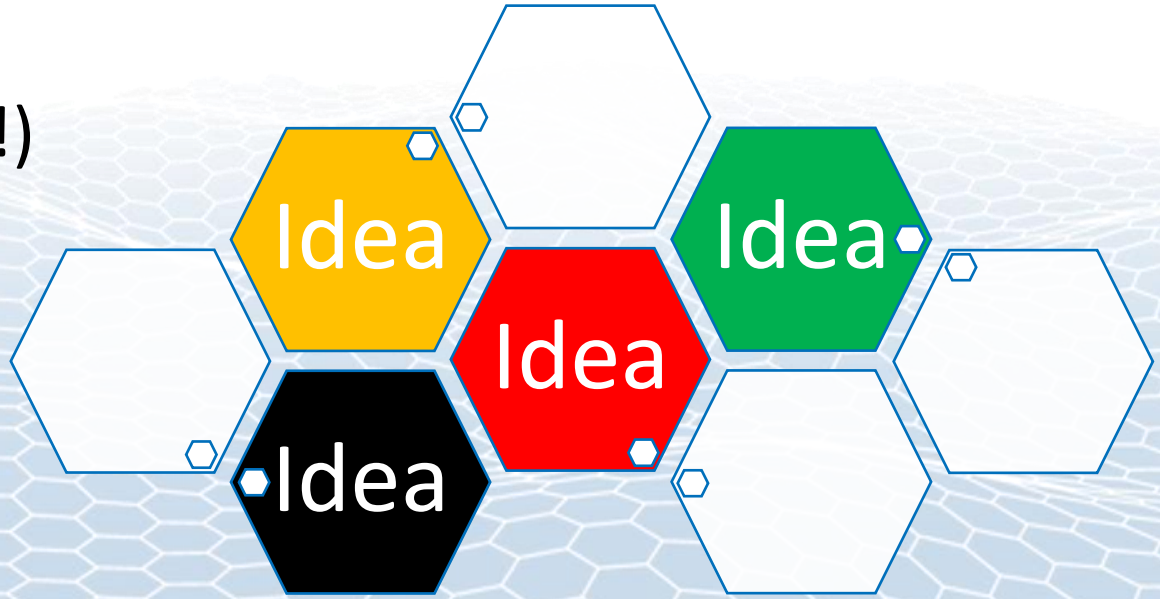
1. **Conceptualization**
2. **Game Design**
3. **Prototyping**
4. **Art and Graphic Design**
5. **Advanced Prototyping**
6. **Production Planning**
7. **Funding (if needed)**
8. **Production**
9. **Post-Production**
10. **Iteration and Expansion**



Conceptualization

Game Design 101

- **Idea Generation:** This is where you brainstorm potential game themes, mechanics, and overall feel. (Post Its!)
- **Research:** Look into the market, potential competitors, and historical or factual accuracy (if relevant).
- **Objective Definition:** Clearly define what you want players to experience and learn from your game.



The 9 Questions

Who? When? How Much?

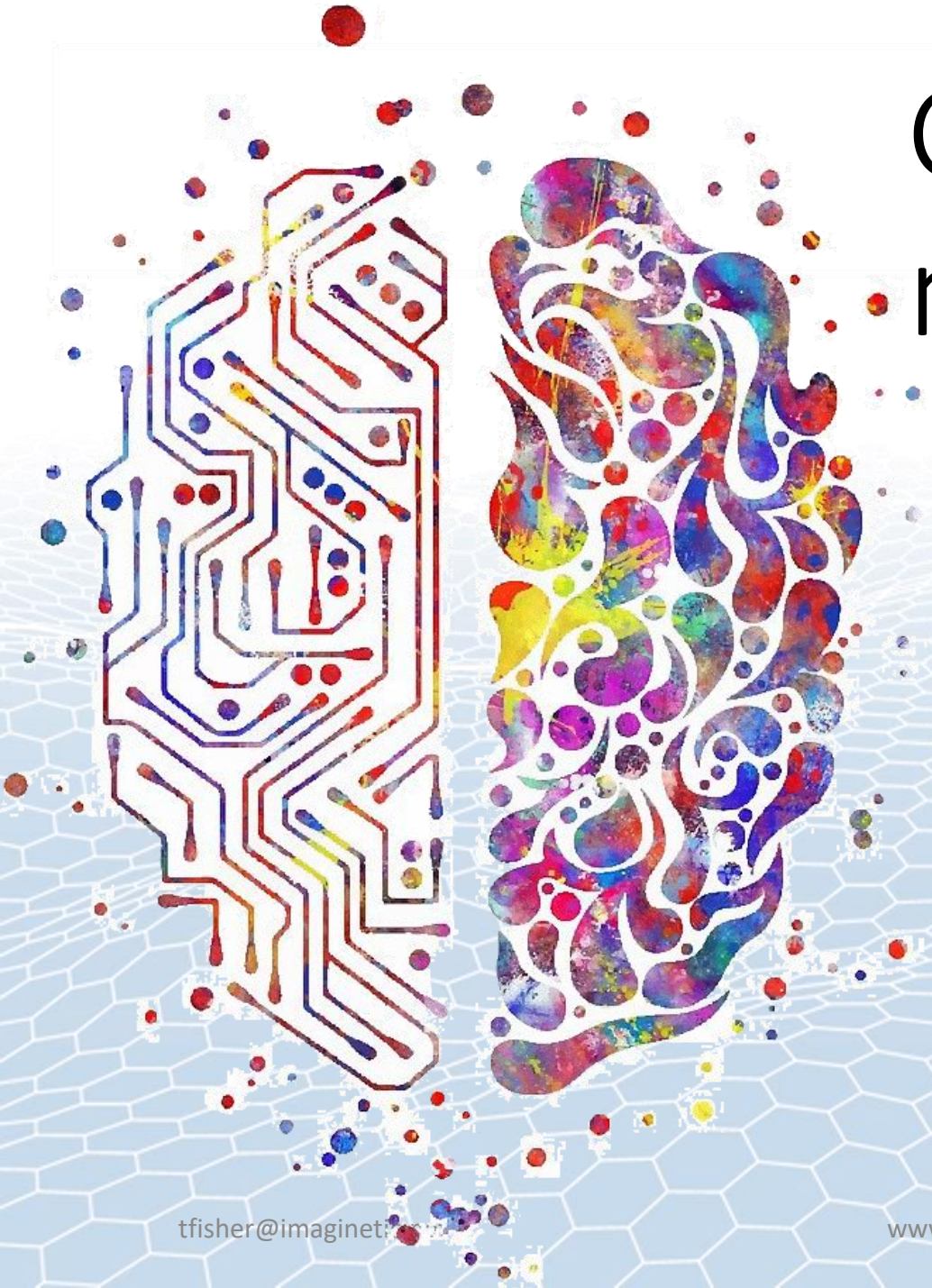
What? Why? How Many?

Where? How? How Often?

REMEMBER

Who?: You are NOT the audience

- You do not design for yourself
- Design for the player first
- Design for the stakeholder
- Guide the stakeholder to what they actually want (and is possible)

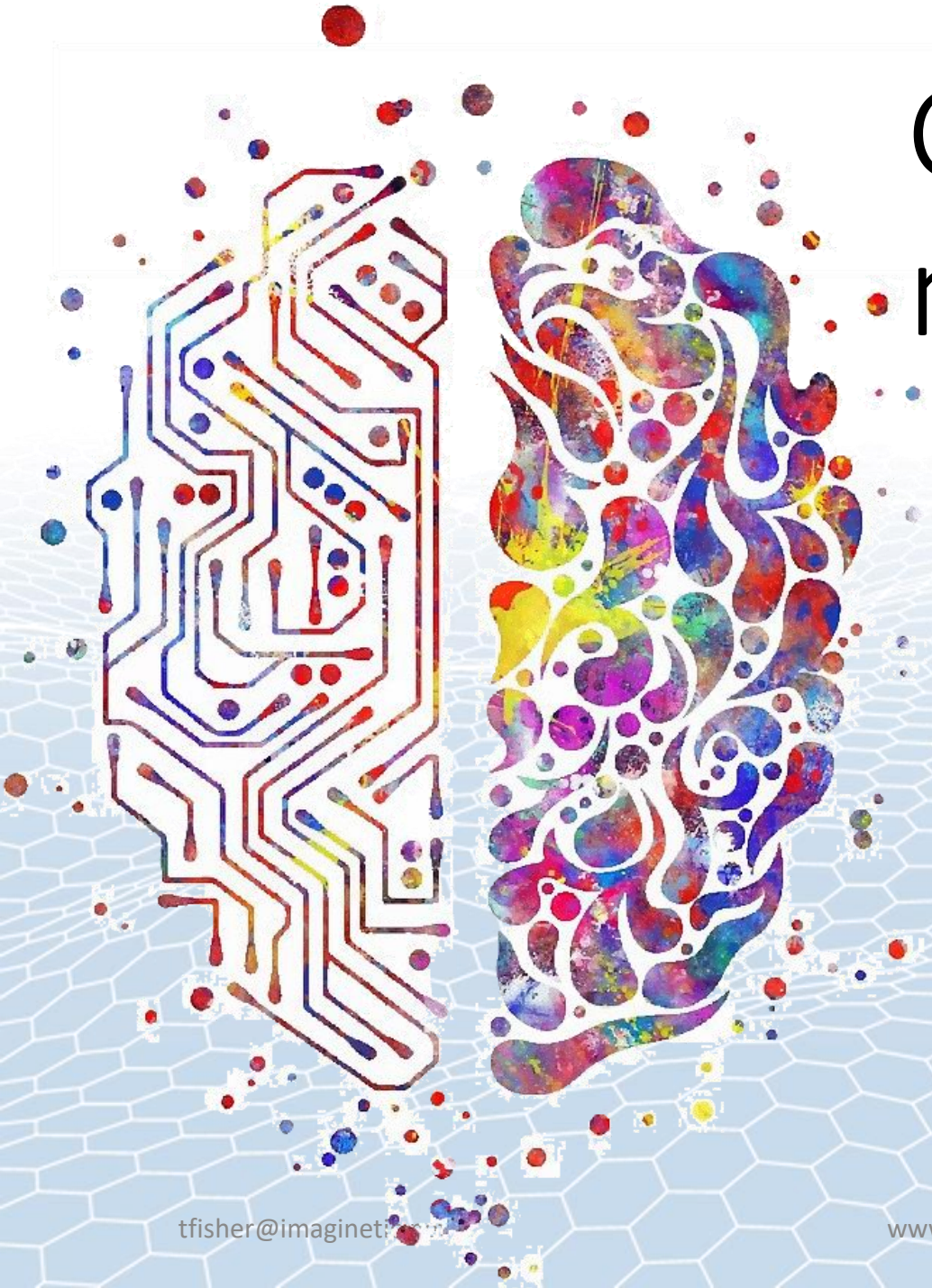


Good game design is as much art as it is science

Crunch and Fluff

Crunch

- those mechanical components that define the way the game is played.
- the “black box” mechanics that define how players affect the game world
- Invisibility is desirable
  - Prevent math-hammer*
- UI/UX
- Algorithms



Good game design is as much art as it is science

Fluff

- those thematic components that define the way a game feels
- The theme, feel, richness and relatability of the game environment
- Immersion depends on being as visible as possible
  - Skeumorphics: make things familiar
- Art, design, UI/UX

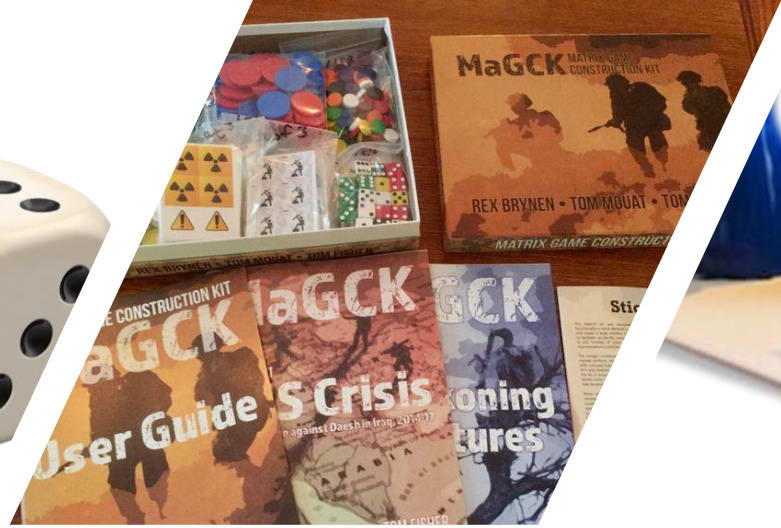
Prototyping

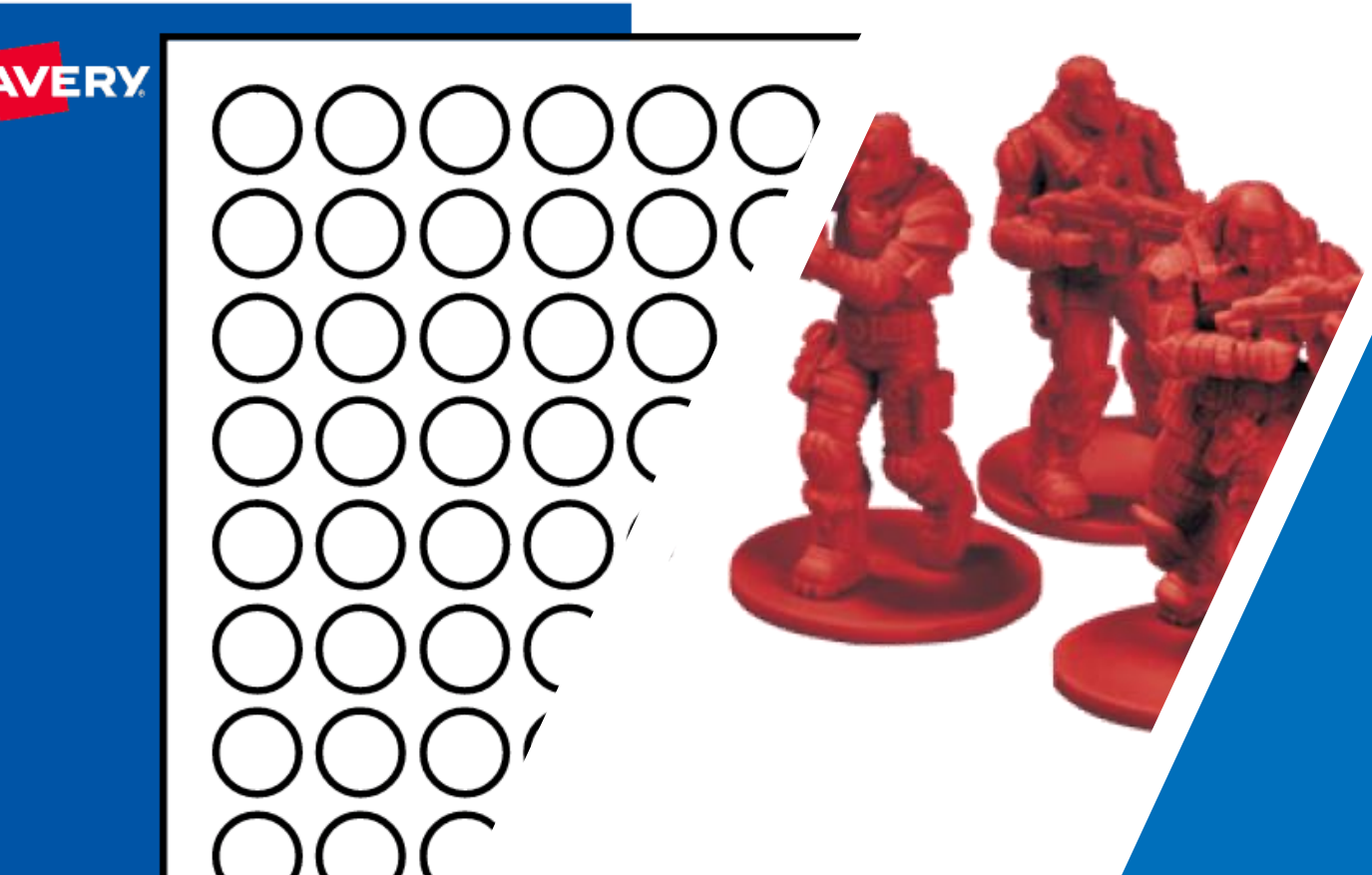
DO NOT SPEND MONEY ON COMPONENTS YET

Use what you already have

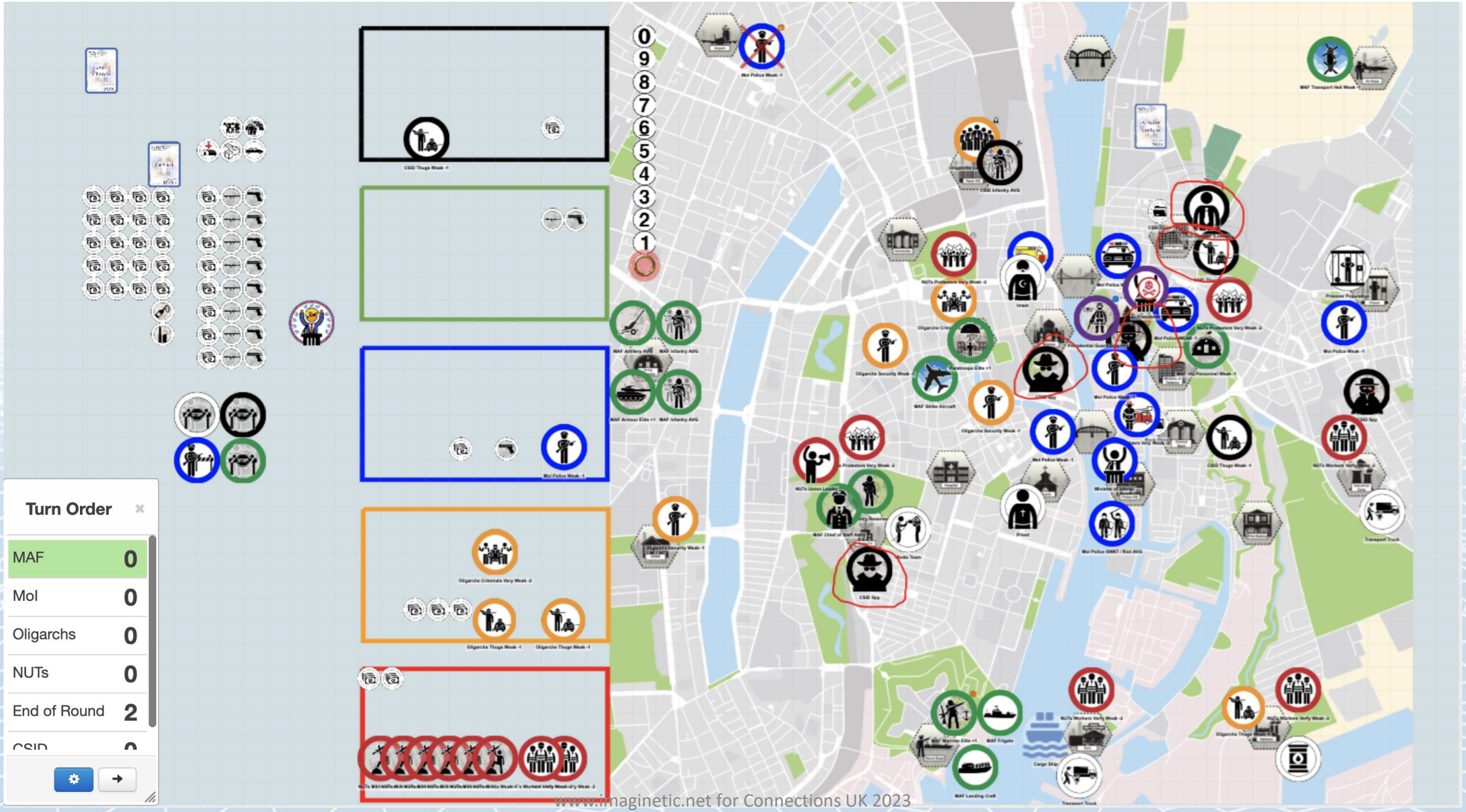
Prototype (FAIL FAST!)

1. **Visualization: Bring abstract concepts to life**
2. **Feedback Collection: Feedback, feedback feedback**
3. **Risk Reduction: Early issue and change rectification**
4. **Improved User Experience: User testing**
5. **Cost Efficiency: Identify and address issues**
6. **Enhances Creativity and Exploration: 2nd level ideation**
7. **Stakeholder Communication: Feedback checkpoint**
8. **Streamlines Development: Guidelines for art/graphics/components**
9. **Validates Market Fit: Test the greater audience (commercial)**





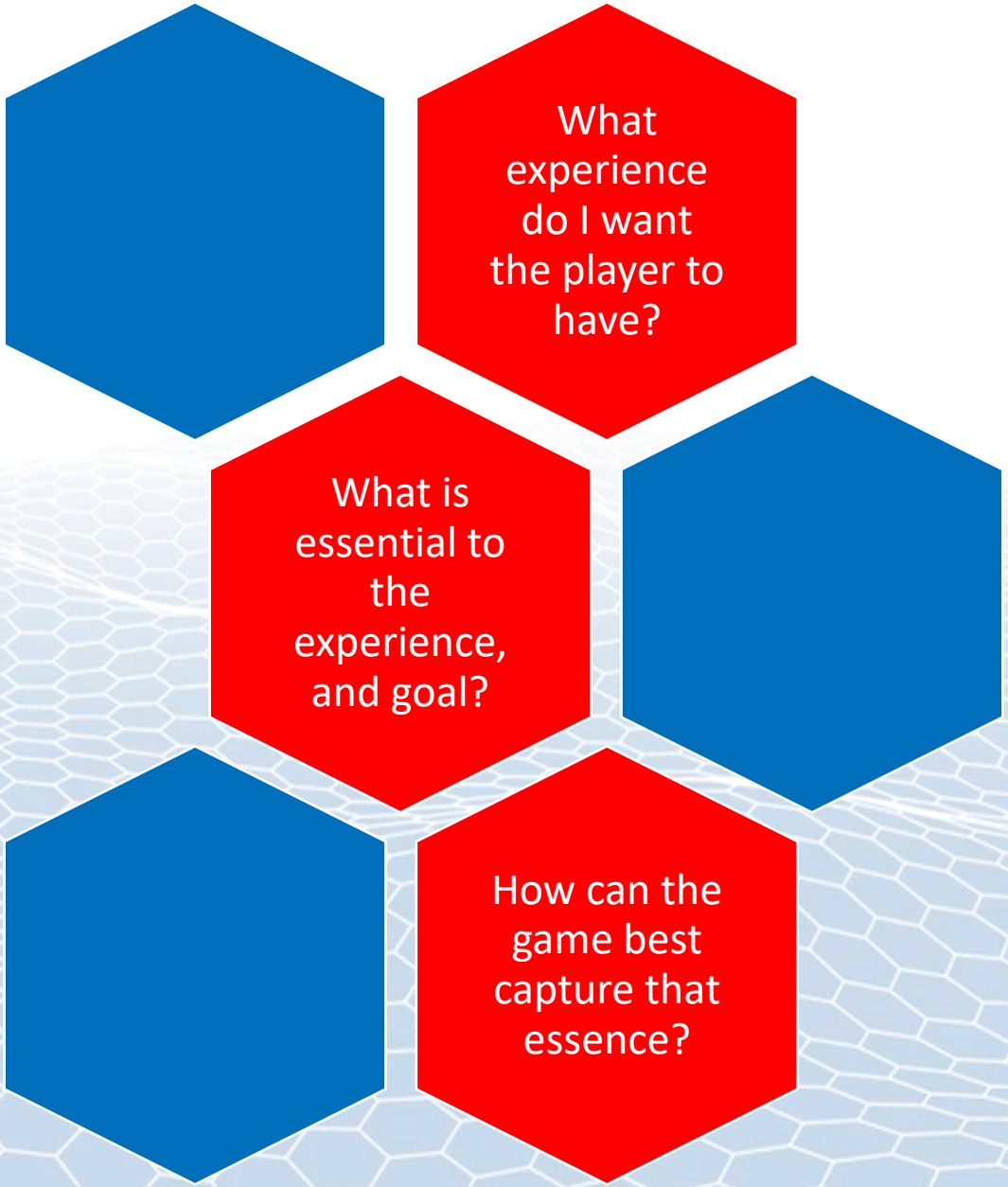
Prototyping tools



Art Design: The Experience

Stop thinking about the game

Start thinking about the player



Three basic Principles to apply to physical game design

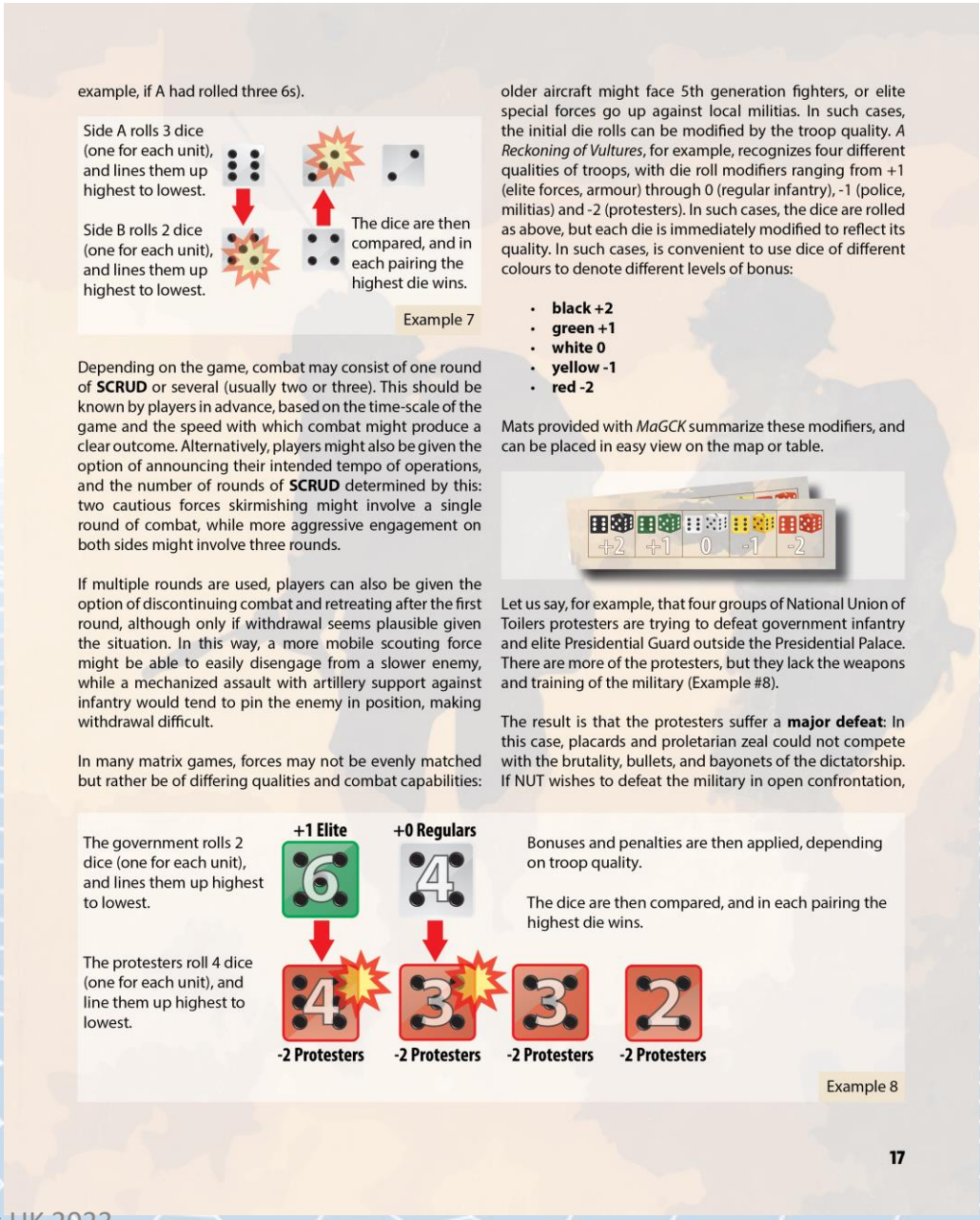
Art direction & production

Occam’s razor

- The simplest solution is almost always the best
- A design isn’t finished when there is nothing more to add, but when there is **nothing left to take away**.
  - If an element is to be included it should have a specific purpose.
    - Theme
    - Mood
    - Reinforcement

Dual-coding

- The brain process visual information 60 000 X faster than text
- Text reinforces imagery, helping the brain absorb and remember information
- It is easier to process information accompanied by visual cues



example, if A had rolled three 6s).

Side A rolls 3 dice (one for each unit), and lines them up highest to lowest.

Side B rolls 2 dice (one for each unit), and lines them up highest to lowest.

The dice are then compared, and in each pairing the highest die wins.

Example 7

Depending on the game, combat may consist of one round of **SCRUD** or several (usually two or three). This should be known by players in advance, based on the time-scale of the game and the speed with which combat might produce a clear outcome. Alternatively, players might also be given the option of announcing their intended tempo of operations, and the number of rounds of **SCRUD** determined by this: two cautious forces skirmishing might involve a single round of combat, while more aggressive engagement on both sides might involve three rounds.

If multiple rounds are used, players can also be given the option of discontinuing combat and retreating after the first round, although only if withdrawal seems plausible given the situation. In this way, a more mobile scouting force might be able to easily disengage from a slower enemy, while a mechanized assault with artillery support against infantry would tend to pin the enemy in position, making withdrawal difficult.

In many matrix games, forces may not be evenly matched but rather be of differing qualities and combat capabilities: older aircraft might face 5th generation fighters, or elite special forces go up against local militias. In such cases, the initial die rolls can be modified by the troop quality. *A Reckoning of Vultures*, for example, recognizes four different qualities of troops, with die roll modifiers ranging from +1 (elite forces, armour) through 0 (regular infantry), -1 (police, militias) and -2 (protesters). In such cases, the dice are rolled as above, but each die is immediately modified to reflect its quality. In such cases, is convenient to use dice of different colours to denote different levels of bonus:

- **black +2**
- **green +1**
- **white 0**
- **yellow -1**
- **red -2**

Mats provided with *MaGCK* summarize these modifiers, and can be placed in easy view on the map or table.

Let us say, for example, that four groups of National Union of Toilers protesters are trying to defeat government infantry and elite Presidential Guard outside the Presidential Palace. There are more of the protesters, but they lack the weapons and training of the military (Example #8).

The result is that the protesters suffer a **major defeat**: In this case, placards and proletarian zeal could not compete with the brutality, bullets, and bayonets of the dictatorship. If NUT wishes to defeat the military in open confrontation,

The government rolls 2 dice (one for each unit), and lines them up highest to lowest.

The protesters roll 4 dice (one for each unit), and line them up highest to lowest.

+1 Elite

+0 Regulars

Bonuses and penalties are then applied, depending on troop quality.

The dice are then compared, and in each pairing the highest die wins.

-2 Protesters

-2 Protesters

-2 Protesters

-2 Protesters

Example 8

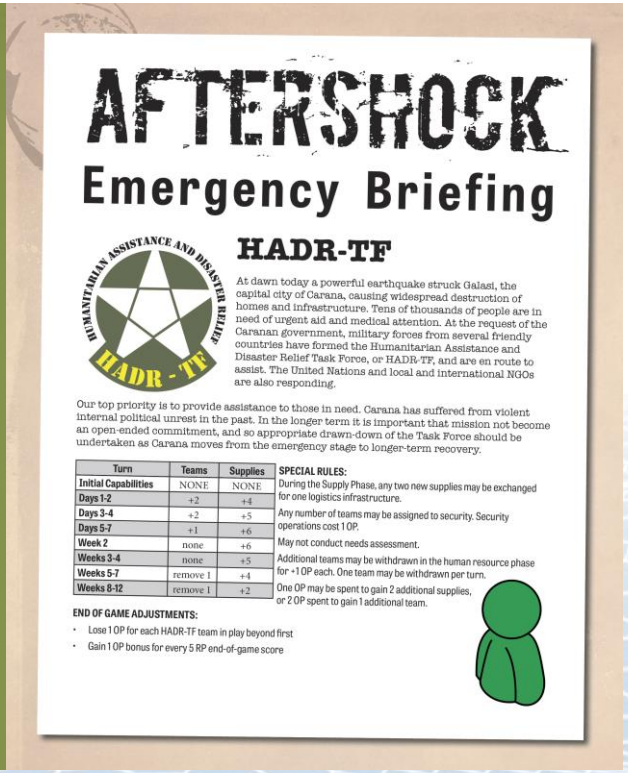
17

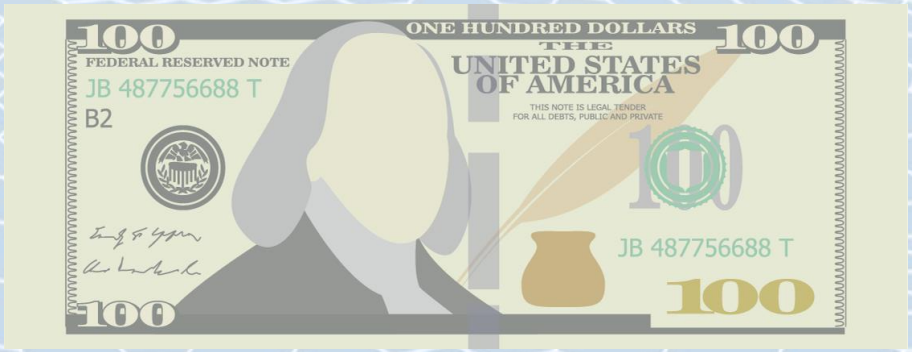
Fantastic Rulebook Example

Dungeon Petz

Mental models

- Easier for a user to understand something if they can model it off something they already understand





It’s all in your players’ minds

- The game experience is an entirely imaginary construct, separate, but deriving, from the game.
- Visceral response is automatic and subconscious
- Behavioral response is affected by ease and pleasure of use
- Very difficult to attain a positive reflective response if visceral and behavioral are negative

3 Non-graphic designer takeaway tools

- Occam’s Razor
  - KISS principle
  - All elements should have a purpose
- Dual-Coding
  - Reinforce text with images
- Mental models
  - Make it familiar

Perception impacts the experience

Toy? Childlike?

Looks like real-world equivalent

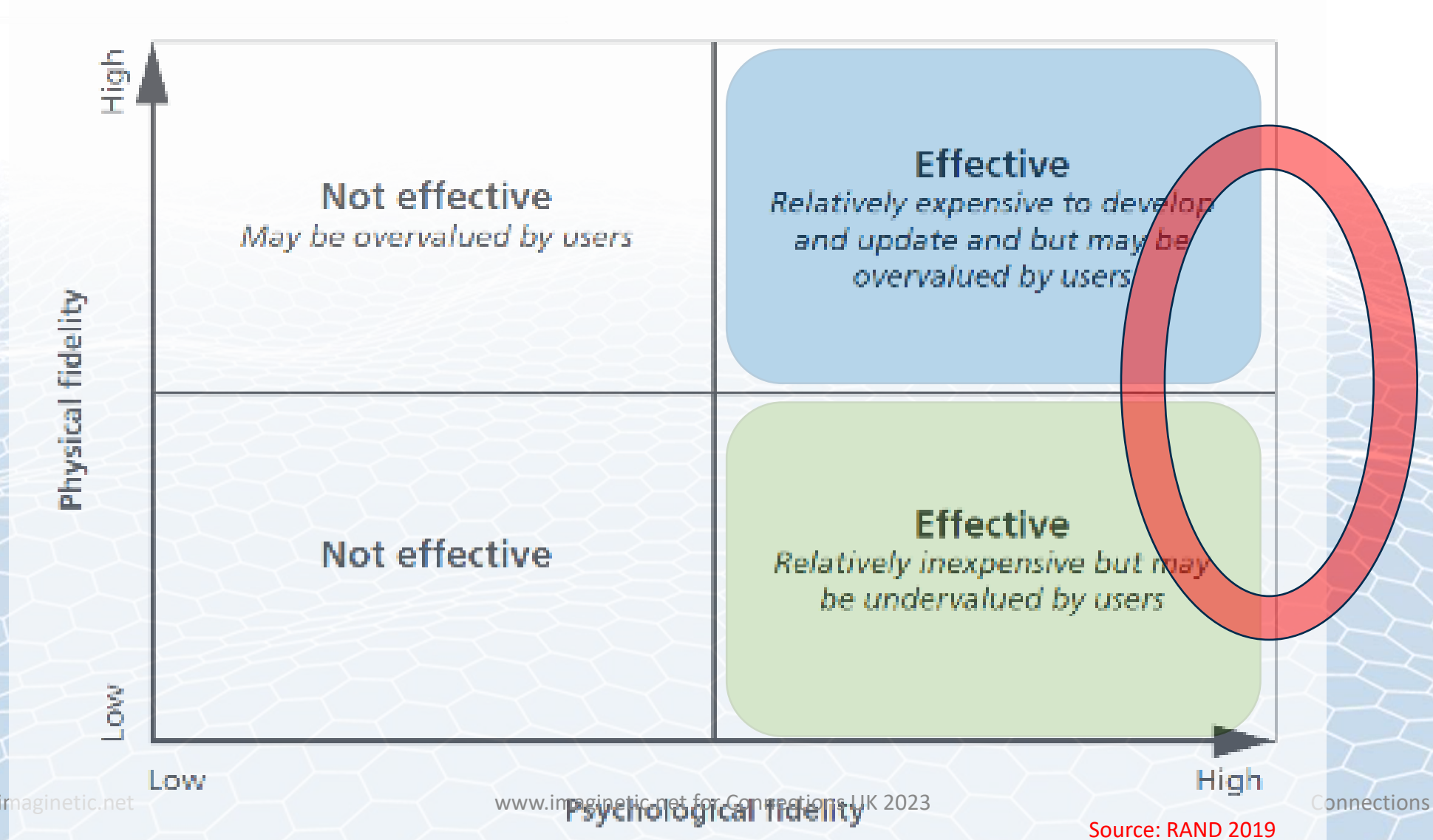
Elements that shape physical games' experience

- Rules
  - Keep the rules out of the way
- Methods
  - Application of rules
    - Role of chance
- Facilitation
- Materials
  - Components
  - Supporting Materials
  - Multimedia

Visuals: a picture is worth more than words

- Tracks
- Tokens
- Maps
- Visuals
  - Video
  - Still graphics

What is Reality, Anyway??



Source: RAND 2019

Designing the experience

Art & Graphics

Good art design enhances the game

Great art design is INVISIBLE

Like it always should have been this way

Make CRAP designs

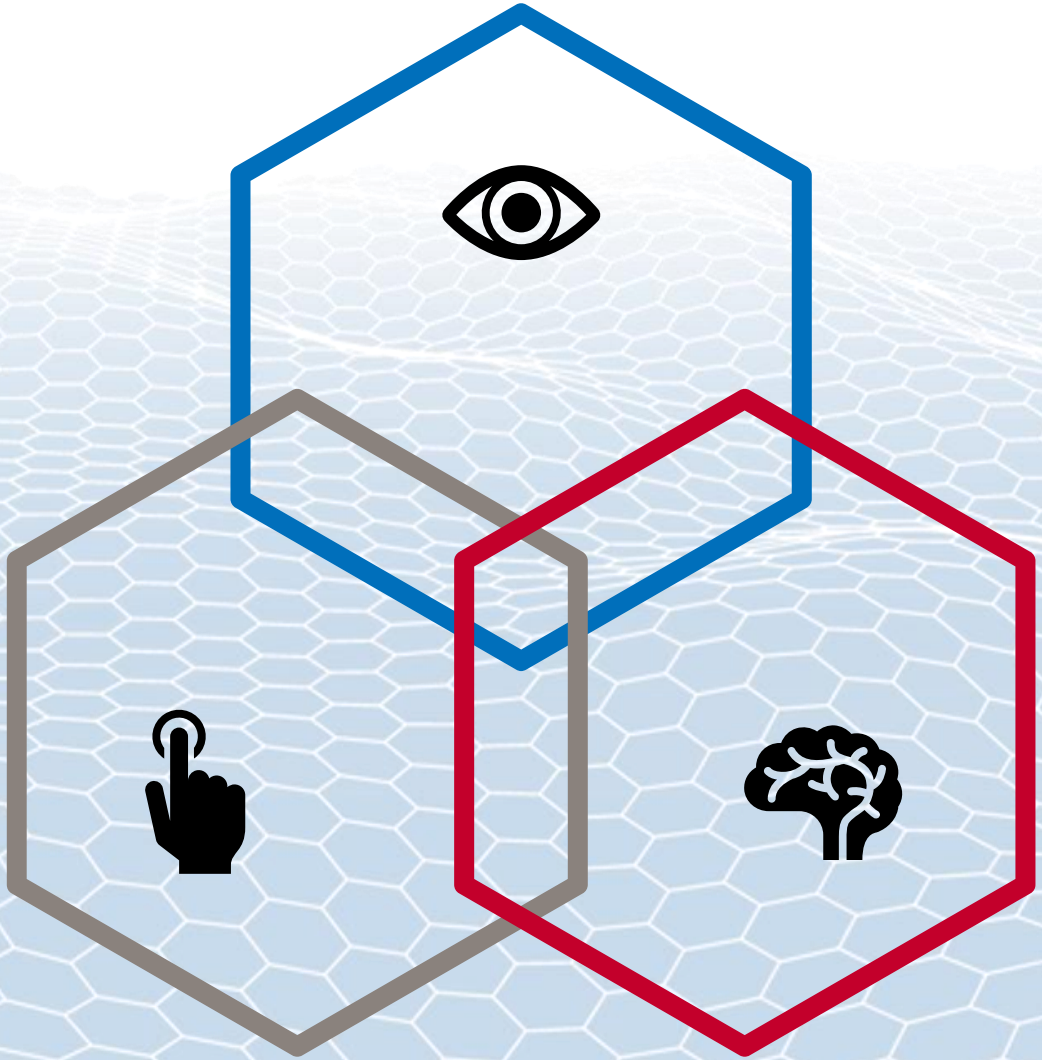
Contrast
Repetition
Alignment
Proximity

The Game Designer's Secret

Shaping the visual experience

The art and science of graphic design

- **Norman's 3 Levels of Design (Experience)**
  - **Visceral**
  - **Behavioral**
  - **Reflective**



Visceral design

- Appearance driven
  - Shape
  - Colour
  - Style
- Attitudes
- Beliefs
- Feelings
- Entirely Imaginary Construct

Art Design

- Never discount the affect game visuals and components have on engagement
- Make the game look appropriate
- Appropriate use of components
  - **If you give someone a tank, they will want to use that tank!**
- Make the game look familiar (familiarity = less cognitive load)

Art Design (Components)

Components, while not required can greatly enhance the experience and **engagement**

EVERY game element is INFORMATION

Maps
Briefings
Playing pieces
Models
Tokens
Visual Aids
News Items
Events
Tracks
Scoreboards
Status Displays
Playable cards

To A.I or not to A.I. that is the question

The Good

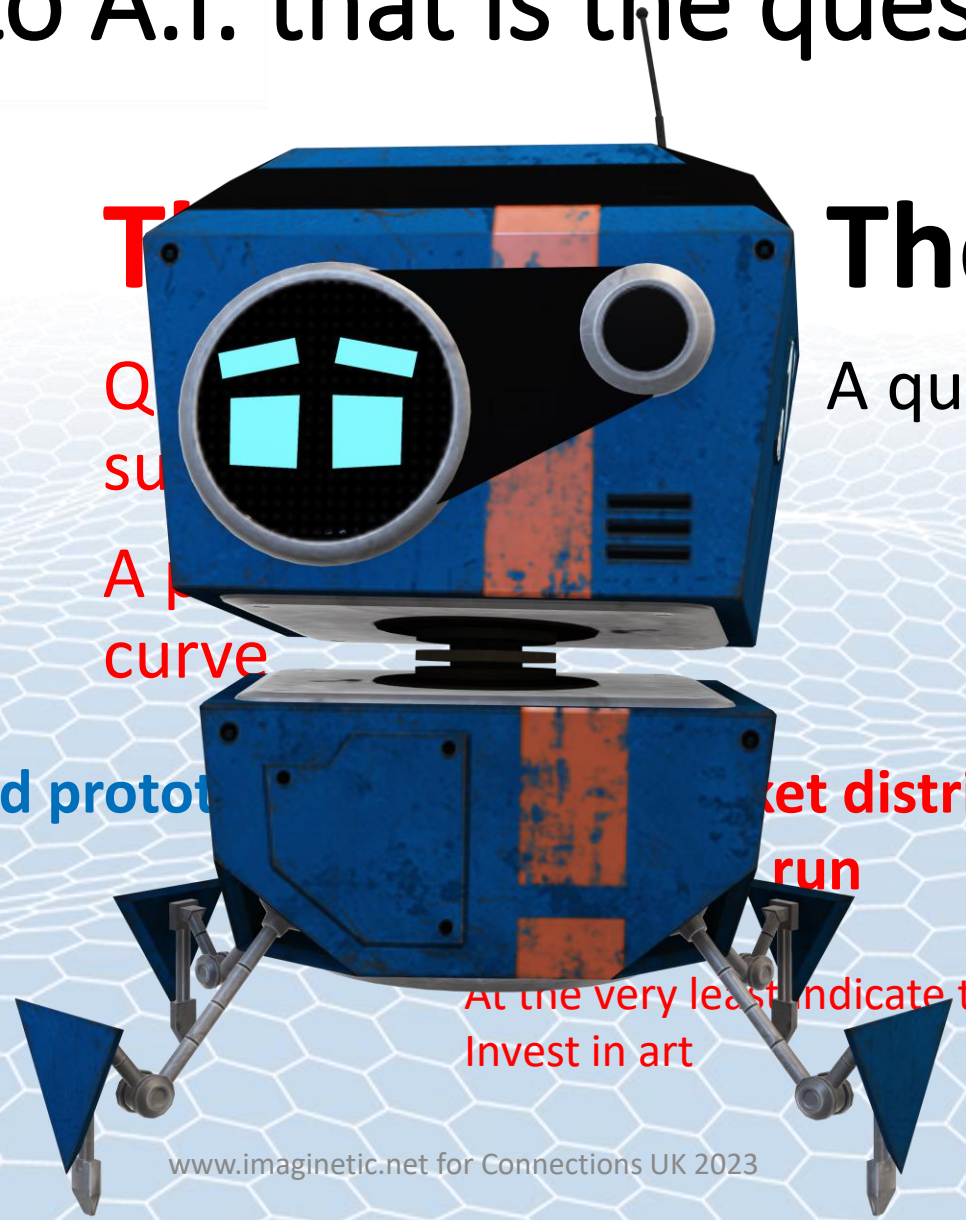
Speed can't be beat!

Cost is negligible

T

Q
su

A
curve



The UGLY

A question of ethics…

In-house private run and protot

Why not?
Huge time and budget savings

ket distribution – large
run

At the very least indicate the presence of AI art
Invest in art

Sources of Art

Hire a game art & design firm

Stock Art

stock.adobe.com

graphicriver.net

A.I.

Midjourney

Dall-E

Advanced Prototyping

Refine, refine, refine

✓ Alpha playtest
✓ Feedback

Take it out to the public (if possible)

Sample from your desired audience

Production (Small Run & Prototype)

Self-publish

- High up front hardware costs
- Printers, 3D printers, stock

Local Printers

- Production quality varies
- Most Accessible

The Game Crafter
www.thegamecrafter.com

- Great production value
- Horrible shipping costs

Boardgamesmaker.com *Chinese production

- Very good production value
- Chinese production facilities (despite what the website and advertising insinuates)

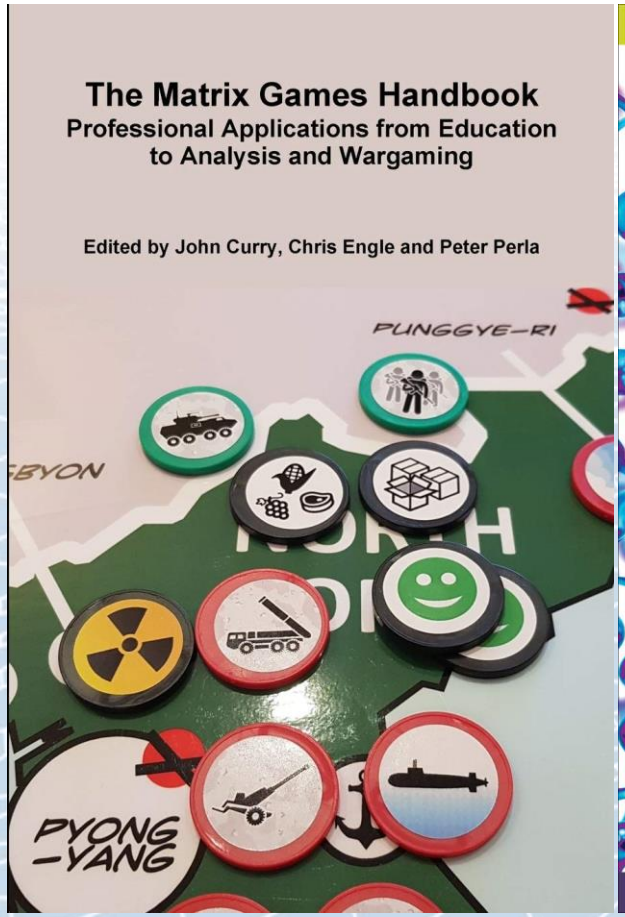
Whatz Games

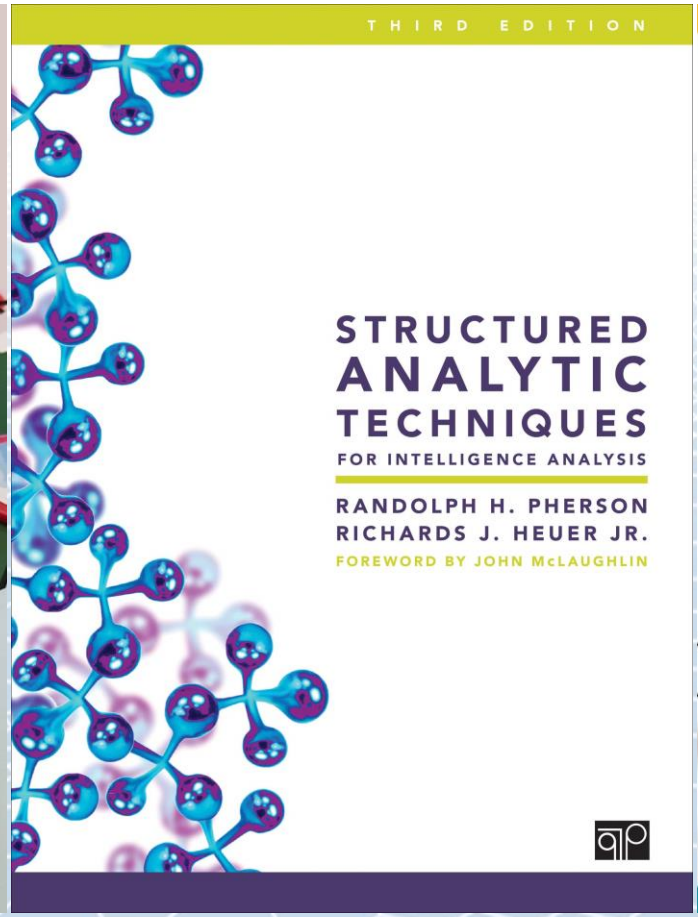
- Pro-level commercial production & customization
- Chinese production facilities

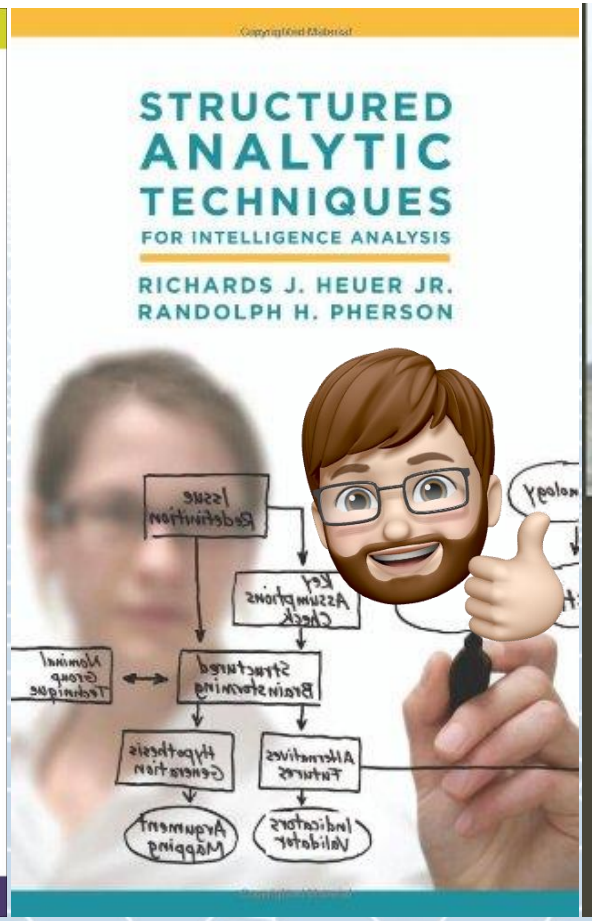
Extras

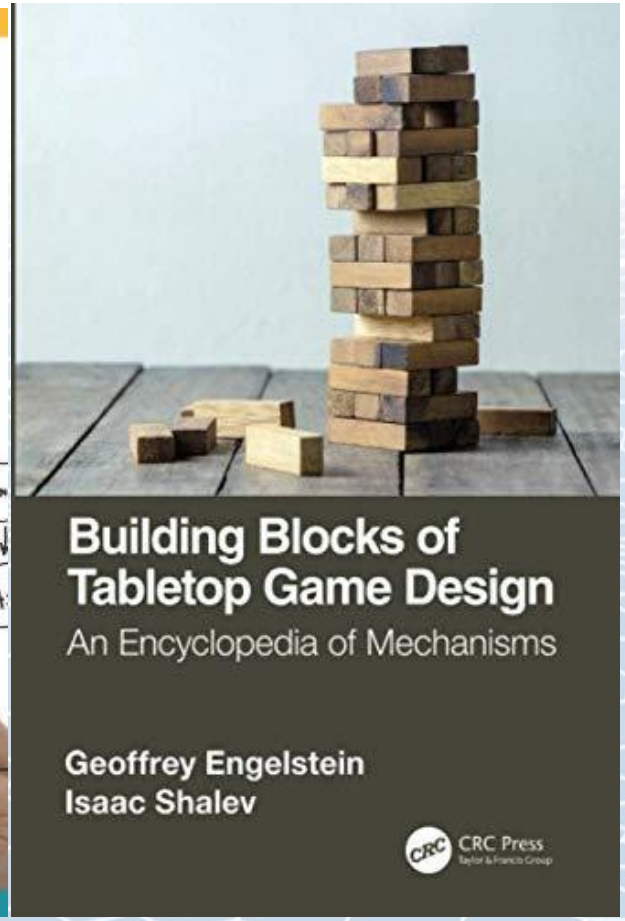
- Design sources and references follow for print

Highly Suggested Reading



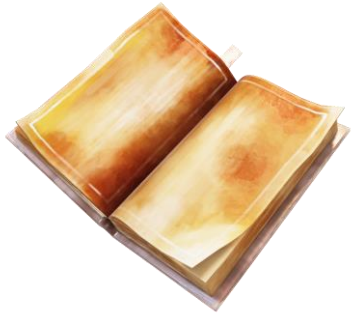






Serious Game Designer's Library

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.

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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.

Colour Conventions

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

www.imaginetic.net

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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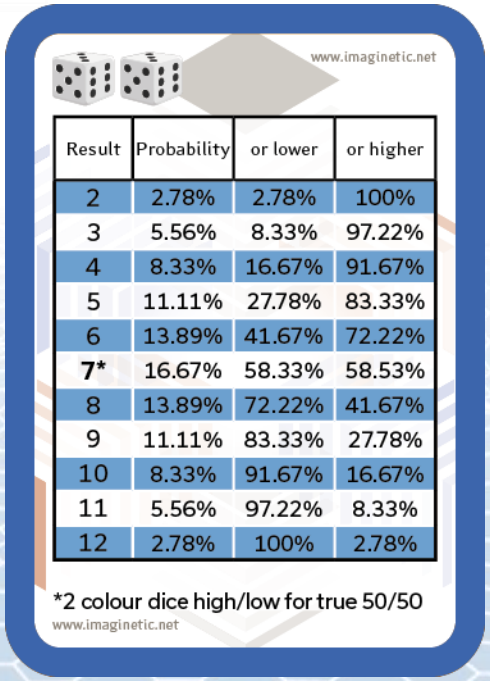

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Result	Probability	or lower	or higher
2	2.78%	2.78%	100%
3	5.56%	8.33%	97.22%
4	8.33%	16.67%	91.67%
5	11.11%	27.78%	83.33%
6	13.89%	41.67%	72.22%
7*	16.67%	58.33%	58.53%
8	13.89%	72.22%	41.67%
9	11.11%	83.33%	27.78%
10	8.33%	91.67%	16.67%
11	5.56%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

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

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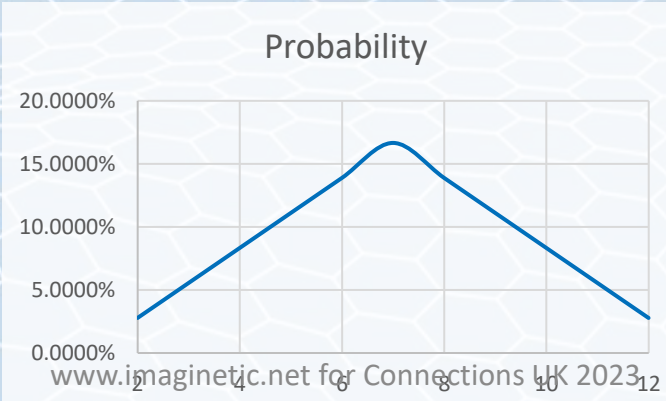

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Chance of Success

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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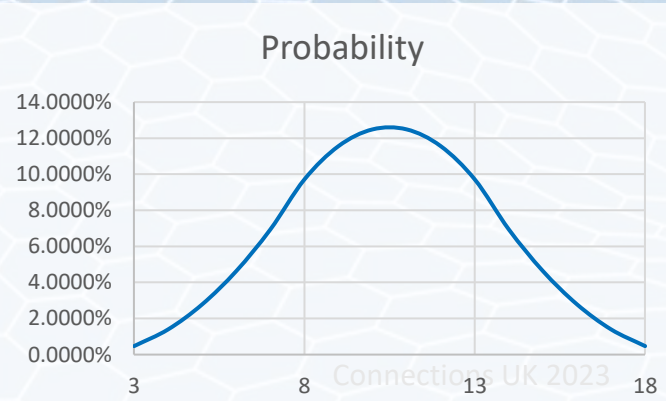

Simple Combat Resolution Using Dice

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

www.imaginetic.net

SCRUD

Simple Combat Resolution Using Dice

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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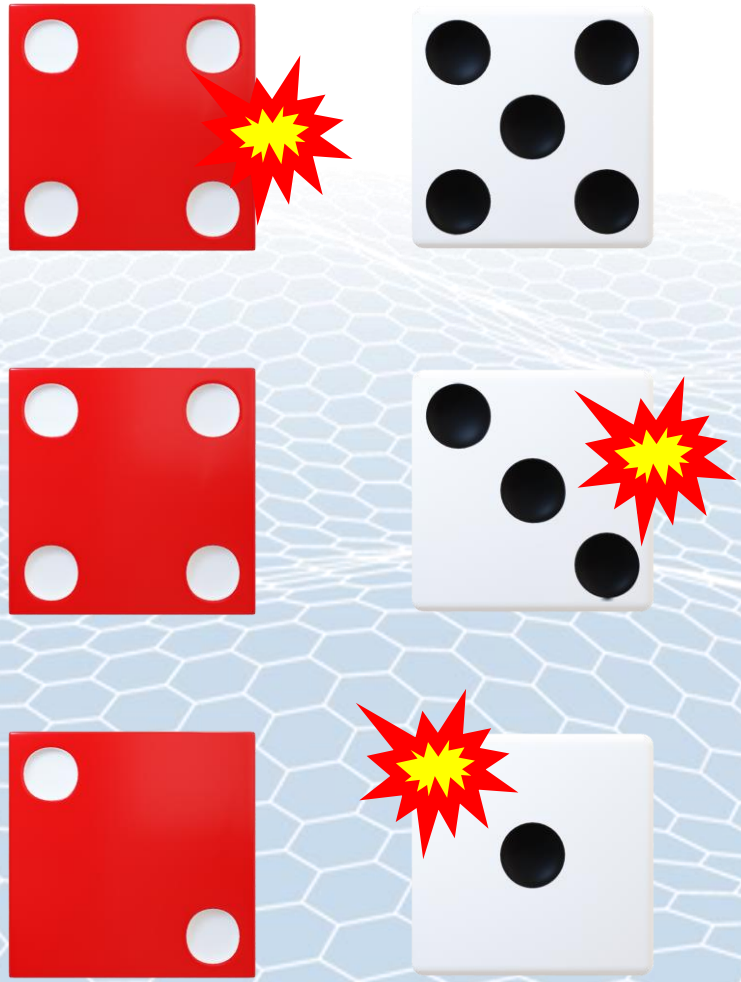
SCRUD

Simple Combat Resolution Using Dice

A = Attacker , D = Defender, S= Stalemate

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!

Design: Motion

- Or what I like to call FLOW
- Game flow is an abstract concept of the feeling of action of a game
- Flow should be constant where possible
- Dictated by mechanics and method (smooth flow)
- Shaped by facilitator (keep the game moving)
- A good flow will support and encourage good game play
- Very similar to narrative storytelling
- Here is where you'll really use your Post-Its™