

Microgames

HOW DO YOU TAKE A GAME FROM CONCEPT TO EXECUTION AND PRODUCE A SIMPLE, YET COMPLEX, STRATEGIC GAME DESIGN?

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WHO AM I?



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Elizabeth “Betsy” Joslyn is a wargaming analyst who specializes in game research and design on great power competition, distributed logistics, and risk literacy.

She received a Bachelor of Arts in Applied Chemistry at Bridgewater College and a Master of Science in Terrorism and Homeland Security Policy at American University’s School of Public Affairs following her Peace Corps service in Zambia.

In addition, to being a co-chair of Connections Next Generation, she serves as the Head of Programming for the Women’s Wargaming Network, a wargaming instructor for the Military Operations Research Society, and is a Research Associate for the wargaming blog PAXsims.

WHAT IS A MICROGAME?

- A game where the instructions and map are printed on one piece of paper (technically a 4X7 postcard)
- Another description: Any edition of a game with 20 components or less in a retail package of 20 cubic inches or less.



WHY MICROGAMES?

On ramp to game design 101

Digestible heuristic for teaching

Easy to access and share

MICROGAME PROS

- Space limitations
 - Forces you to think down, out, and then up
 - Buffers vulnerability in models
- Player inclusivity



<https://twitter.com/SebastianBae/status/1557868890570514434>

MICROGAME CONS



- **Space limitations**
- **Squishy external validity**
 - **Forced to simplify schema and mechanics without misrepresenting the way the world works**
- **Turning Tides Ex: Influence and Popular Opinion**

THOUGHT PROCESS OF DESIGN



Schema

So what?

Audience

**Research
Question**

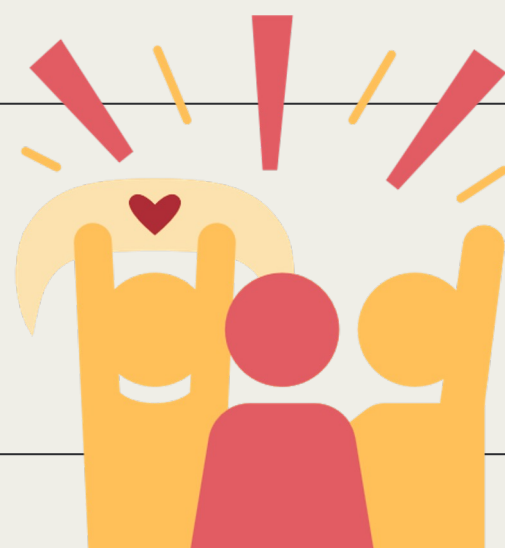
What?

For who?

Why?

Schema: Building a *simple* understanding of how the elements of your research interact with each other.

EXAMPLE: TURNING TIDES



Research Question

How do global powers interact with each other to mitigate the threat posed by climate change, while maintaining perceived power relative to each other?

Audience

This game is an educational game; best played by students or policy makers who are looking to increase literacy on the topic. This game is not targeting climate change SMEs as players.

So what?

Want players to understand the tradeoffs of Climate Change mitigation.

Climate change is not only an important topic, it's a topic that is under represented in game design.

High demand but low access = opportunity!

Schema

The Game Model: Abstract understanding of how relevant factors from real life interact with each other

THOUGHT PROCESS OF DESIGN

Identify:

- **NOUNS**
 - Who are the actors?
 - Places?
- **VERBS**
 - What can these nouns do?
- **CATALYSTS**
 - What drives play?
- **CHALLENGES**
 - What impacts player's actions?

Schema

Nouns: global green house gases, United States, Developing Countries, China, European Union, popular opinion, green technology, global summits, money, industry, global influence etc.

Verbs: negotiate (semi- cooperative?), GHG increasing/ decreasing (how- money?), voting, resource management (trading) -> gaining/ losing resources through play)

Catalysts: climate change disaster, turn of play leading to a timeline (2050?), gaining attention and 'credit' for reducing GHG

Challenges: running out of money (more money = more production of goods = increased GHG), popular opinion of governance runs low, difficult to reduce GHG (does \$ guarantee reduced GHGs?)

Turning Tides Design



Game Concept:

The year is 2025 and the Intergovernmental Panel on Climate Change (IPCC) has just published a comprehensive Assessment Report on the imminent dangers of climate change should global greenhouse gases (GHGs) remain at their current net levels. The United Nations turns to 3 government bodies that are not only contributing to the problem, but also have the power to Turn the Tides by 2050.

There are different ways to reduce greenhouse gases:

- A. Reducing Carbon Dioxide (CO₂): Reduce burning of fossil fuels (oil, natural gas, coal, trees, and wood products)
- B. Reducing Methane (CH₄): Reduce production/ transport of oil, natural gas, and coal.
- C. Reducing Nitrous Oxide (NO₂): Reduce synthetic fertilizers in agricultural and industrial activities
- D. Reducing fluorinated gases (Energy): Reduce commercial and household energy use

Of course, reducing any of these GHGs would mean reducing energy and production use, which always has an impact on the economy. Tradeoffs will be necessary. Each government has chosen their own climate objectives that they must weigh against available funding, global influence for GHG reduction, and the importance of technological investment.

How to Win:

- Each government has been given different objectives that translate into victory points (VPs). After Turn 10, each government will tally VP. The government with the highest VP is announced as the winner. If tied, government with the most money wins. BUT if the game ends with at least 2 GHGs in the red zone, no one wins the game.

Action Order:

Each turn, every player will roll to assess who will go first (highest die roll wins), then play to the right. The active player will negotiate deals with other governments. Deals can only be made with the active player. After discussion, the active player may do 1 of the actions below:

Reduce one GHG:

- Declare which GHG you plan to reduce (only 1), and announce if you are attempting to reduce this GHG by yourself, or propose a negotiation with another player.
 - If reducing GHG alone, declare amount of committed funds and roll.
 - If proposing a negotiation, offer player(s) a deal.
- More funds = higher probability of a successful roll and the degree of GHG reduction. See success conditions on the next page.
- Funds are paid even if the roll is unsuccessful.
- If unsuccessful, any player involved in the deal can use available tech to reroll. See Tech on the next page.
- If successful, active player will reduce the GHG and gain global influence for reducing GHGs by receiving a Popular Opinion Point (POP).
 - Receive +1 POP for every 25% of GHG reduction (+2 POP for 50% of GHG reduction, +3 for 75% of GHG reduction).
 - Division of POPs can be negotiated among players, but must be agreed upon prior to rolling for success.

POPs:

- POPs represent global influence for each player.
- If you have +3 POPs prior to rolling to reduce GHG, you will receive +1 funding on a successful roll. However, if you have negative POPs, the probability of a successful roll decreases by POP count. Ex: -1 POP = -1 on probability of success, -2 POP = -2 on probability of success.

Roll for Event:

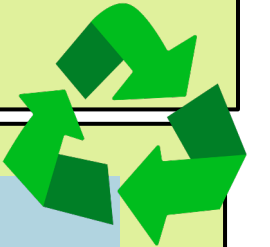
- 1-3 = Funds increase by die roll; 4-6 = one GHG increases by 25%.

Tech Investment:

- Pay 2 gov. funding for one Tech icon. 1 tech/turn. See Tech table on the next page.

Increase Production:

- Roll to increase Gov. Funding.
 - 1 or 6 is a fail.
 - If successful, increase any GHG by 25%, then increase funds by number rolled. (Ex: If you roll a 4, increase funding by 4)
 - If all GHG's are at 100%, active player MUST lose 1 POP.
 - If any GHG's are less than 100%, one GHG (active player's choice) MUST increase by 25%.
 - Active player loses 1 POP OR pays 1 gov funding for an information campaign blaming another country for the increase in GHG. Active player chooses another player and directs them to lose 1 POP.



Gov. Funding	Success conditions	GHG reduction impact
\$1	roll 1	reduce GHG by 25%, +1POP (16.6%)
\$2	roll 1 or 2	reduce GHG by 25%, +1 POP (33.3%)
\$3	roll 1-3	reduce GHG by 25%, +1POP (50%)
\$4	roll 1 or 2	reduce GHG by 25%, +1 POP (33.3%)
	roll 3 or 4	reduce GHG by 50%, +2POP (33.3%)
\$5	roll 1 or 2	reduce GHG by 25%, +1 POP (33.3%)
	roll 3-5	reduce GHG by 50%, +2 POP (50%)
\$6	roll 1-4	reduce GHG by 25%, +1 POP (66.6%)
	roll 5 or 6	reduce GHG by 75%, +3 POP (33.3%)





Tech Investments Table


Turns 1-4:	Pay 1 Tech Investment to reroll up to 2 times
Turns 5-8:	Pay 1 Tech to reroll up to 2 times OR Pay 2 Tech to buffer GHG increase by 25%
Turn 9-10:	<u>As an Action:</u> Pay 3 Tech Investments to guarantee any GHG reduction by 75% (receive 3 POPs)

Turning Tides


Game Designer: Betsy Joslyn

- Set Up:
- Select an objective card and take any pieces matching the color of your objective card.
 - Each player's \$ indicator starts on 10; Each GHG indicator starts on 100%; POP starts on 1.
 - 1d6 dice
 - pencil


	A. CO2 Net Growth Carbon Dioxide 	B. CH4 Net Growth Methane 	C. NO2 Net Growth Nitrous Oxide 	D. Energy Net Growth Fluorinated Gases 
Red Zone	100% (Start)	100% (Start)	100% (Start)	100% (Start)
	75%	75%	75%	75%
	50%	50%	50%	50%
Green Zone	25%	25%	25%	25%
	0%	0%	0%	0%

Gov. Funding for Reducing Climate Change 										
0	1	2	3	4	5	6	7	8	9	10
Popular Opinion Points (POPs)										
-2	-1	0	1	2	3	4	5	6	7	8

+\$1 when negotiating with other governments

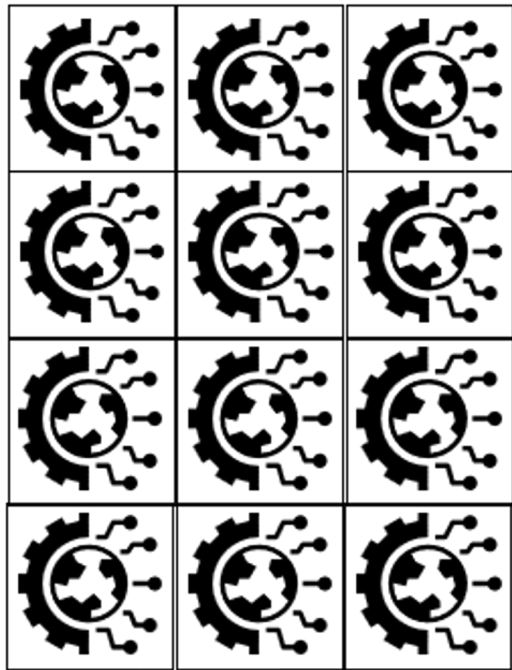
Gov. Funding for Reducing Climate Change 										
0	1	2	3	4	5	6	7	8	9	10
Popular Opinion Points (POPs)										
-2	-1	0	1	2	3	4	5	6	7	8

Levy taxes to gain +/- 1 on die roll

Gov. Funding for Reducing Climate Change 										
0	1	2	3	4	5	6	7	8	9	10
Popular Opinion Points (POPs)										
-2	-1	0	1	2	3	4	5	6	7	8

+ 1 POP when negotiating with other governments

Turn 1: 2025	Turn 2: 2026	Turn 3: 2029	Turn 4: 2032	Turn 5: 2035 If all 4 GHGs are in the red zone, all players lose 2 POP	Turn 6: 2038	Turn 7: 2041	Turn 8: 2044	Turn 9: 2047	Turn 10: 2050 If 2 GHGs in the red zone, no one wins
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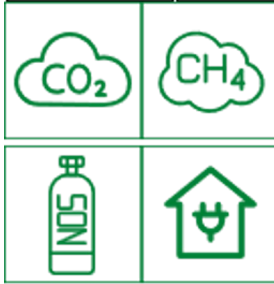


Tech Investment Icons.

Print and Cut



Timeline marker. Start on Turn 1.



Greenhouse Gas (GHG) indicators: Cut out shapes and place on corresponding Greenhouse tables. All indicators start at 100%.



Government funding (\$): Cut out shapes and give to each player. All countries start with \$10.
Popular Opinion Points (POPs) marker. Everyone starts with 1.

Frequently Asked Questions:

1. Can I use my player bonus as a bargaining tool?

Yes, but you can ONLY use your bonus when you are the Active Player. It is a bonus move, so you can use your bonus in addition to your action.

2. If reducing only 1 GHG with another player, can we split the global influence for that reduction?

No. You can only receive 1 POP for every 25% reduction. If reducing a GHG by 50% (+2 POPs), you can split the POPs. Active player receives POP by default.

3. Can I bargain with future promises?

Yes, but you are not held to that promise. If you renege on that promise, it could impact future negotiation opportunities.

4. Should we reveal our objectives?

Players can choose to reveal objectives, or hide them until the end.

5. Why does Tech change over time?

Tech in this game is meant to represent general green tech that, if implemented early, can have a deeper impact in future years or showcases the evolution of more impactful tech over the years. At the beginning of the game, tech can act indirectly to help reduce GHG or buffer increased net levels of GHG despite increased production use. At the end of the game, tech can act in a more direct way to reduce GHG.

6. Why is the developing world not present here?

I picked 3 governments that were not only some of the larger contributors to the problem, but governments that also have the ability to turn the tides. As mentioned below, this game could be customized for different players as desired.

7. How did you pick these objectives? Are you saying that US not care about reducing C?

The objectives chosen for this game are not meant to represent real life objectives for each of the government bodies represented in this game. I chose these objectives on purpose to emulate the limited cooperation in climate change action. As the game is meant to highlight competing interests, I balanced the objectives for each player to surface existing tensions.

Team US Objective:



- By 2050, reduce A, B and D GHGs to the green zone (1 VP for A, B, or D GHG in the green zone, BUT receive 4 VP for all A, B, and D in the green zone).
- Receive +1 VP if A is at 0%.
- Have higher POP than anyone else = 4 VP).

Active Player Bonus: +\$1 to use when negotiating with another government to reduce a GHG (3 times only).

Team European Union Objective:



- By 2050, reduce C and D GHGs to the green zone (1 VP for C or D GHG in the green zone, BUT receive 3 VP for C and D in the green zone).
- Receive + 1 VP if C or D GHG is at 0%.
- Have equal or greater POP than US = 4 VP.

Active Player Bonus: Levy taxes to gain +/- 1 die roll (3 times only).

Team China Objective:



- By 2050, reduce any 3 GHGs to the green zone (3 VP).
- At the end of the game, can exchange tech icons for VP (2 tech = 1 VP).*
- US does not have the highest POP = 5 VP.

*Ex: If China ends the game with 3 tech, China gets +1 VP.

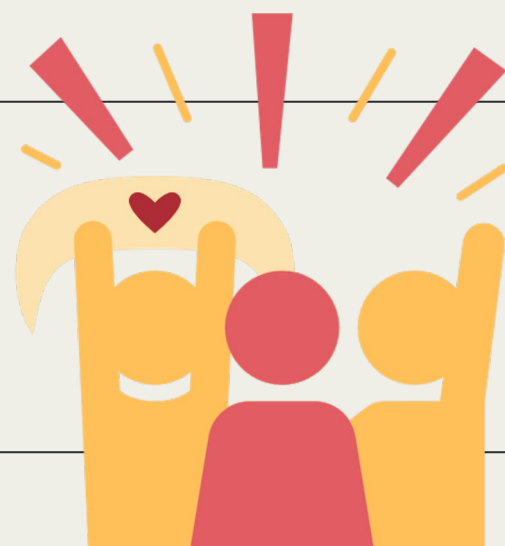
Active Player Bonus: Receive +1 POP when negotiating with another government to reduce a GHG (3 times only).

Player objectives card: Cut out cards and give to each player. Note: Feel free to customize different cards to represent a variety of different countries/governments.

MEDIC! Design

Draft form

EXAMPLE: MEDIC!



Research Question

What ethical challenges do medical corpsmen deal with limited supplies and time to conduct triage and treat casualties in a contested environment?

Audience

This game is an educational game; best played by students or policy makers who are looking to increase literacy on the topic. This game might be played by entry level medical corpsman?

So what?

Tradeoffs of triage

Looking ahead, we may no longer be operating in an environment where 'the golden hour' can be met; does that change the ethics of triage?

Ethics is hard to game, but incredibly relevant especially with the uptick in AI/ML products

Schema

The Game Model: Abstract understanding of how relevant factors from real life interact with each other

THOUGHT PROCESS OF DESIGN

Identify:

- NOUNS
 - Who are the actors?
 - Places?
- VERBS
 - What can these nouns do?
- CATALYSTS
 - What drives play?
- CHALLENGES
 - What impacts player's actions?

Schema

Nouns: Medic, casualties, soldiers, locals (hostile?), explosion, 'the golden hour', MEDEVAC, CASEVAC, adversary, fires, treatment, health

Verbs: triage (green/ yellow/ ~~red~~), treatment (IFAK, CMC, CMLS), movement to casualties (moving casualties?), assessment of locals, finding additional resources

Catalysts: create connections between player and casualties (name them - family, friends, pets?), MEDEVAC on the way

Challenges: running low on resources - can't treat everyone; limited time to conduct triage and treat- who to treat first? Last? How do you choose to allocate?



MEDIC

1d6
Piece of paper
Writing utensil

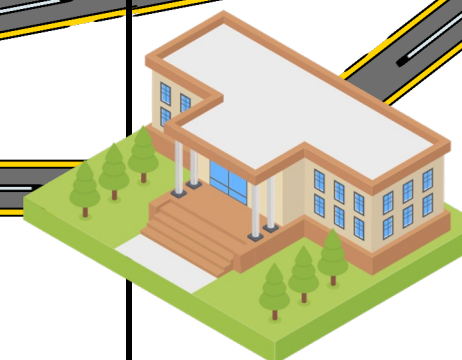


While deployed on a mission, a large explosion has just done off in the town occupied by both American soldiers, and town locals. A MEDEVAC unit has been contacted and is on the way but are at least 2 hours away. As the team medic, use available medical supplies to reach casualties (soldiers and locals), conduct triage, and stabilize wounds. Careful, some of the local might be hostile. Do what you can with what you have.

Table 2: Triage

Casualty Location	Roll 1d6	Result
Red Zone	1	-1 Health Hit
	2-5	-4 Health Hit
	6	-6 Health Hit
Yellow Zone	1	-1 Health Hit
	2-5	-3 Health Hit
	6	-6 Health Hit
Green Zone	1	0 Health Hit
	2-6	-2 Health Hit

Medic Bag



Zone 1

Zone 2

Zone 3

All casualties take -1 health hit at 1645.



Instructions

- On a separate piece of paper, name each casualty (1-4) using names of your family members, friends, and pets.
- Cut out the casualty places below and place all 6 casualties in any of the zones on the player board. You can spread them out, or stack in the same zones.
- Roll a 1d6 to assess where the explosion is coming from using Table 1. Once determined, write Red, Yellow, or Green under the corresponding Zones.
- The Medic can take one of the following actions each turn (note there is no 'starting location' for the MEDIC).
 - Move to casualty and roll 1d6 to conduct triage** (if needed) using Table 2. This action takes 15 min to conduct.
 - If casualty is a local, triage takes 30 min. If triage roll is even= local is not hostile. If triage roll is odd= local is hostile and the medic is unable to treat.
 - Keep track of all casualty health on the separate piece of paper
 - Restock:** Travel to the vehicle located on the player map to restock +3 medical bags. This action can only be done once. This action takes 15 min to conduct.
 - Move/ Treat patients by expending 1 medical bag.** Each medical bag = +1 health. Cross out each medical bag that is used.
 - If treatment follows triage directly, this action takes no additional time.
 - If the Medic is moving back to a casualty they have already conducted triage on, this action takes 15 min (for both soldiers and cleared locals)
- When the MEDEVAC unit arrives, your job is done. Roll 1d6 for all casualties you were unable to assess and record. See Table 3 and Table 4 to tally points and assess how well you did.
- Debrief with other players on gameplay asking the following questions:
 - Who did you choose to assess first and why?
 - What was your biggest challenge in the game?
 - Does dehumanizing the locals play into your decision making?
 - Participants are encouraged to add additional questions.

Table 1: Explosion	
Roll 1d6	Result
1-2	Zone 1: Red Zone
	Zone 2: Yellow Zone
	Zone 3: Green Zone
3-4	Zone 1: Green Zone
	Zone 2: Red Zone
	Zone 3: Yellow Zone
5-6	Zone 1: Green Zone
	Zone 2: Yellow Zone
	Zone 3: Red Zone

Table 2: Triage		
Casualty Location	Roll 1d6	Result
Red Zone	1	-1 Health Hit
	2-5	-4 Health Hit
	6	-6 Health Hit
Yellow Zone	1	-1 Health Hit
	2-5	-3 Health Hit
	6	-6 Health Hit
Green Zone	1	0 Health Hit
	2-6	-2 Health Hit




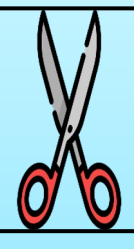

Casualties		Local A
		Local B
		
		

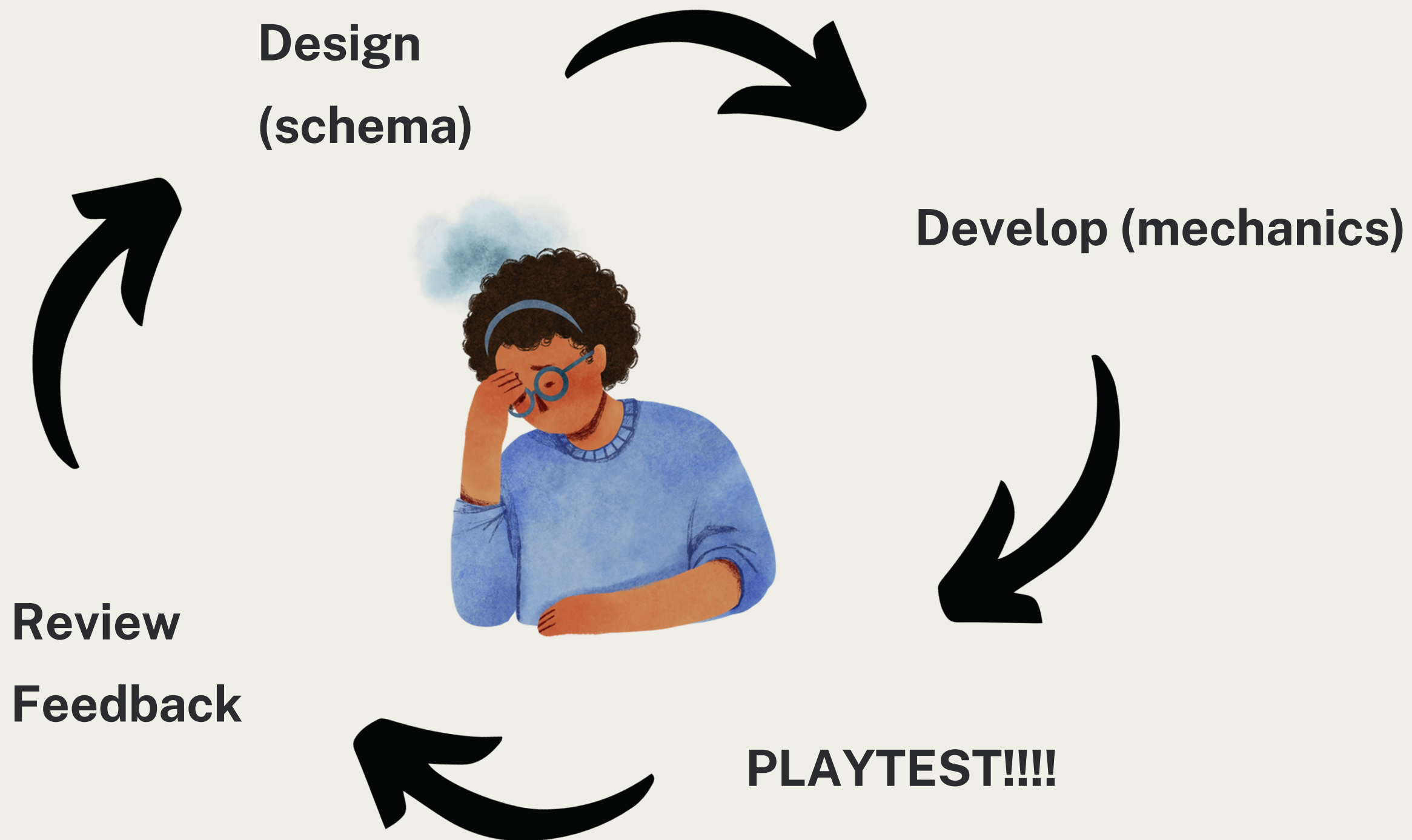
Table 3: End of Game Points	
End of Game Casualty Health Status	Points
0,-1, or -2	+2 Points (for each casualty)
-3, or -4	+1 (for each casualty)
-5, or -6	0 (for each casualty)
-7	-1 (Dead)

Table 4: Tally End of Game Points	
Point	Result
13-14	Medica Genius (or just lucky)
10-12	Promising Career
7-9	Novice
4-5	Subpar
0-3	Medical Disgrace

Components to Add to your Game

- **Put your name on your game! Take ownership.**
- **Title of your game. Convey what this game is about and grab the attention of your audience.**
- **Add a little 'Road to War' section to your game to help set the scene and provide context.**
- **Map: Provide game scene**
- **Instructions: How to play (focus on brevity and clarity)**
- **Explain adjudication of game (needs to be rigid)**
- **Game pieces (cut out or use household items)**
- **If there is room, add some facilitator debrief considerations/ questions**

DEVELOPMENT (can feel like an endless cycle)



It will feel repetitive...only the designer can choose when to step out of the loop

LESSONS LEARNED

- **Be able to summarize what the purpose of your game is in 1-2 sentences**
 - **Turning Tides: The purpose of this game is to demonstrate competing interest between powers to reduce global greenhouse gases at a geopolitical level**
- **Strict parameters IS challenging, but it's a great place to start**
- **Manage your playtesting sessions, not your play testers**
- **PLAGIARIZE ☑ if you can play it, you can design it!**
 - **Example: MEDIC! Scoring mechanism is borrowed from Cracker Barrel Peg Game**
- **Practice**
 - **The more you exercise this muscle, the better it will work**
- **Get to Playtest as fast as you can, that's where the magic happens**

WHAT NOW?

Join a Gaming Network

Connections Next Generation

Women's Wargaming Network

Georgetown University
Wargaming Society (GUWS)

International Kriegsspiel
Society

Design a game

These slides are available
to you. Use them to start
designing your own
microgame!

Play more games!!!

Build your game mechanic
library

Best lifestyle choice....not
always the cheapest
lifestyle choice

Thank you!

ANY QUESTIONS?



N E X T
CONNECTIONS
NEXT GENERATION

GOT MORE QUESTIONS?

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