

Cubic Siege

Muhammad Ali, Phuc Nguyen, Yoki Xue, Umair Shah

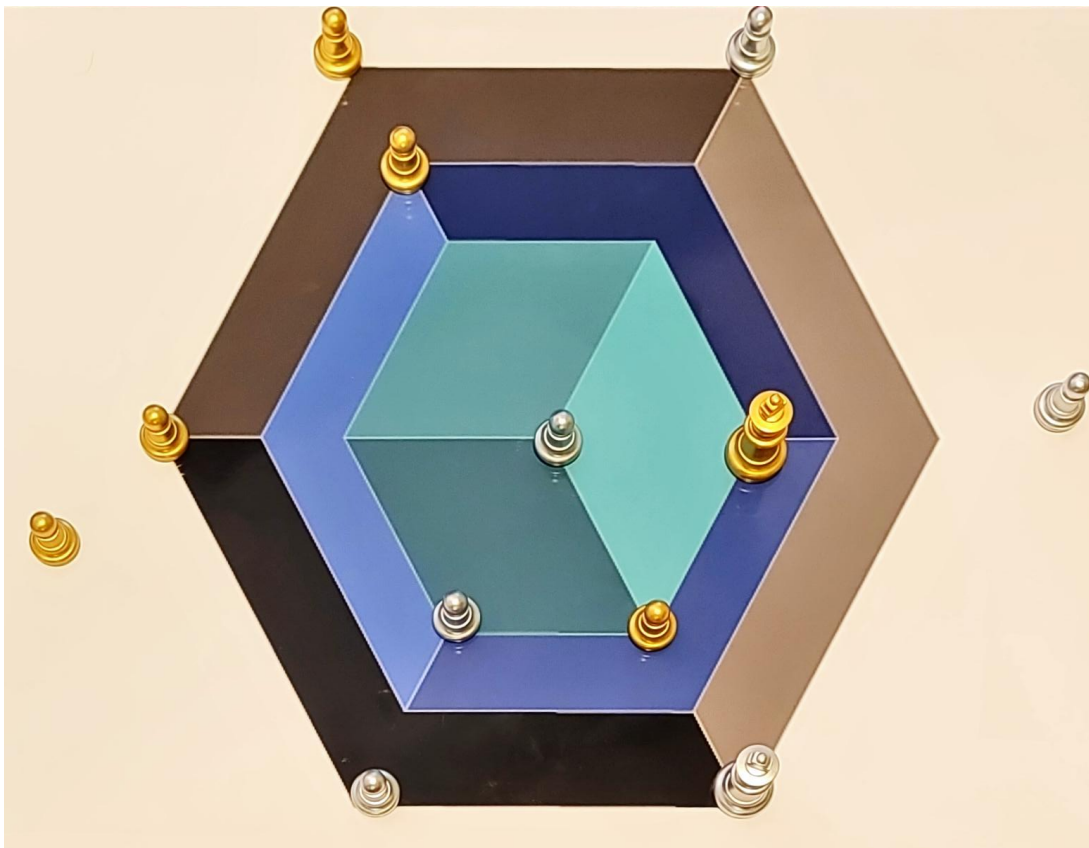
I. Game description:

A. Narrative:

Welcome to a world of conflict and war, where battles are fought within the walls of a cubical castle. In this strategic game, each player represents a faction or army, striving to gain control of the castle and its valuable resources. The objective is to eliminate the enemy army by destroying all of their pieces and claim the ultimate prize of victory - the castle itself.

As players take turns placing their six pieces on the board, they must strategize and maneuver their forces to gain the upper hand in the ongoing war. Once the attacking phase begins, players must use their pieces to eliminate their opponent's forces, utilizing special abilities to outmaneuver and outsmart the enemy.

Get ready to unleash your cunning and strategic prowess, as the battle is just around the corner. Sharpen your skills and hone your tactics, for victory awaits the one who is prepared. Assemble your troops and plan your moves carefully, as every decision you make could mean the difference between triumph and defeat. So, gear up and prepare to take on your opponents in a battle for glory and honor!



B. Detailed description:

The theme of the game is a fantasy world of conflict and war where players represent factions or armies battling to control a cubical castle and its valuable resources. Players must use strategy and special abilities to eliminate their opponent's forces and claim victory.

The game is a two-player abstract strategy game. In this type of game, there is no hidden information, chance or luck involved, and both players have complete knowledge of the game state at all times.

The game has 2 phases: the placing phase, then the attacking phase. The game begins with a placing phase, where each player takes turns placing their six pawns on the board. This can involve placing pawns in defensive positions or trying to control certain areas of the board. This initial phase sets the tone for the rest of the game, as players strategize and try to outmaneuver each other before the playing phase begins.

After all the pawns have been placed, the attacking phase begins. During the attacking phase, players take turns moving their pawns and trying to capture their opponent's pieces. The complete rules of how to move and kill are described below. The goal is to eliminate all of the opponent's pieces before they can do the same to you.

The game board of this strategic game consists of three different hexagons, each connected to the next FF through three cross-level edges that are placed 2 hexagon edges away from each other. The design of the cross-level edges is intended to facilitate movement between the players, while at the same time avoiding unfair advantages that could arise from easy or monopoly access to certain areas of the board.

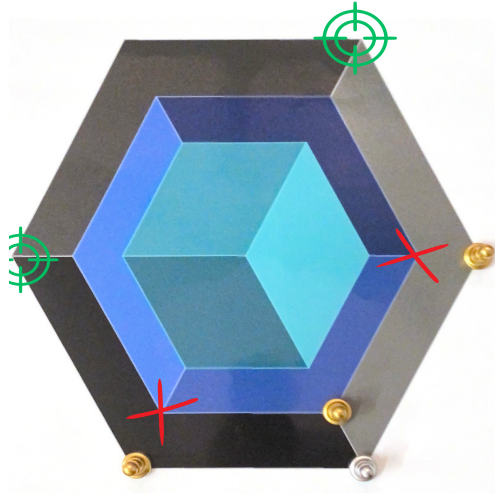
The main theme of the game is strategic war, where each player needs to create and utilize complex strategies in order to obliterate and outsmart their opponent at the end.

C. Rules:

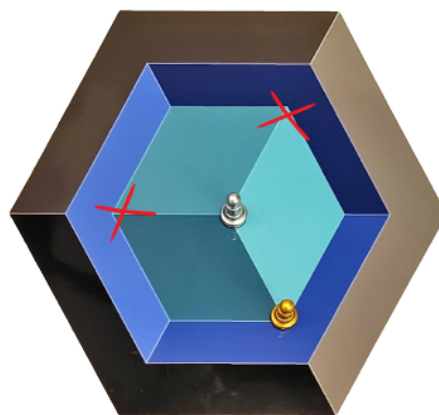
Our rule set for the gameplay:

- The game is played by 2 players.
- The game consists of two phases: the placing phase and the attacking phase. We will start with the placing phase first, then move to the attacking phase when all the players are done placing.
- The player who places first in the placing phase has the first turn in the attacking phase
- The goal of the game is to capture another player's six pieces.
- + During the placing phase:
 - o Each player has six pieces to start with.
 - o Players take turns placing their pieces on the board. The player who placed first makes the first movement in the attacking phase.
- + During the attacking phase:
 - o A player can either move one of their pieces to an adjacent node or jump over the other player's piece to kill it.
 - o A player can move their piece to an adjacent corner if there is an edge connected between them that runs in a straight line.

- A player can only jump over another player's piece within the same hexagon layer. Jumping across layers is not allowed as shown in the figure below.



- Each player has a special piece that can jump over the player's other pieces in order to facilitate flexible movements. The special piece can only jump over other pieces within the same hexagon. It can jump over 1 pawn of its own at a time if the landing position is unoccupied. Sequence jumping is allowed if possible.
- Each killing needs to happen within 20 moves. If not, it is a draw, regardless of which player owns more live pieces. The moves are counted by a counter.
- Multiple jumps are allowed in a single turn, and a player can stop whenever they want and do not have to finish the sequence. However, they must only take the last opponent piece out in sequence killing.
- Players cannot move back in the direction they have just moved from on their last turn.
- The middle node is a safe zone. The piece in the safe zone can not be jumped over and killed as shown in the graph below.



II. Process and Implementation:

Our initial premise was to develop a strategic conflict between players in a circular board that relies not only on the moves made during the attacking phase but also on the setup of the game during the placing phase. We decided to incorporate a checker-like style in our game, where jumping over pieces would remove them from the game.

A. Map Design

For prototyping the game, particularly the layout of the map, we decided to use A4 sheets and pencils so that we could quickly experiment with different maps and change rules to fit such maps as well. Figure X shows the layout of the initial map, and figure Y and Z shows two versions of the same map that were experimented with by changing X with a pencil/eraser. However, we then decided to test out a more complicated map layout shown by figures A and B. Here, we did not draw the maps by hand, but rather we printed out these maps as it was an easier and quicker alternative.

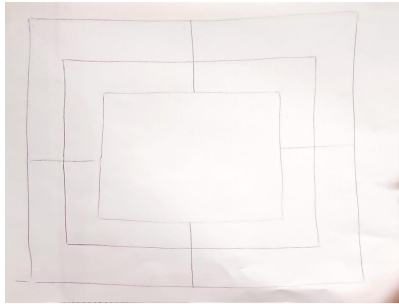


figure X

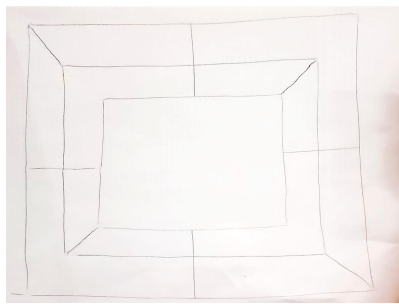


figure Y

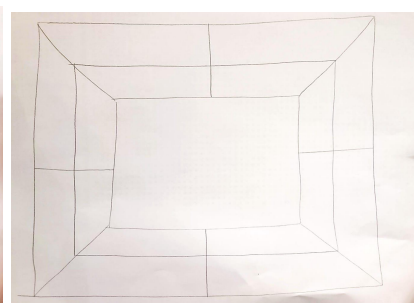


figure Z



Figure A

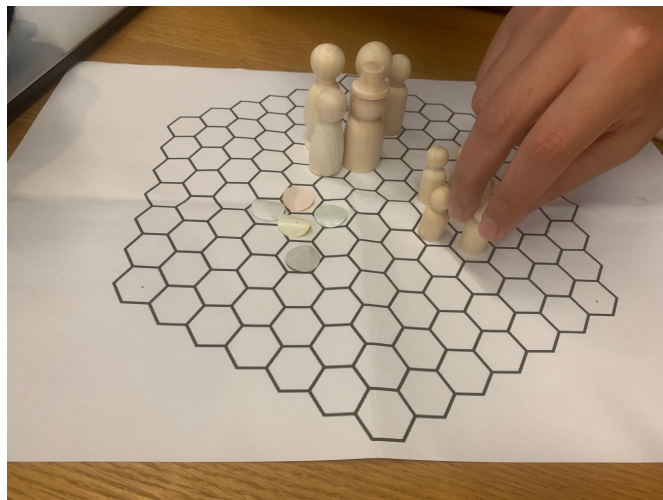


Figure B

To further aid in development and prototyping, we printed multiple copies of experimental maps so we could play two games in parallel at a time when experimenting with the rules. Using multiple copies allowed us to experiment with a more diverse set of rules, and then discuss which rules were more enjoyable.

The final game space was decided based on two key factors: complexity and appeal. The cubic design of the map allowed for a multi-dimensional and otherworldly feel of the space, and dividing the map into layers dictated a strategic battle across the different layers of the space.

B. Rules Design

Experimentation with rules was also a significant focus of our experimentation. At one point, we were heavily concerned about how many pieces can be killed in one turn. If in one turn, a piece jumped over 4 pieces, we had 3 possibilities on how the pieces were killed:

- a) All opponent pieces that were jumped over were killed (except the player's own pieces),
- b) The first opponent piece that was jumped over was killed, or
- c) The last opponent piece that was jumped over was killed.

The reason why this was a perplexing issue was that because the number of pieces is little and the map is compact, if we chose option (a), then the game would be over too quickly. However, options (b) and (c) would not punish mistakes made by the opponent very heavily as well. This was a conundrum, but we had reasoned that because losing even one piece sets a player at an extreme disadvantage, we ruled out option (a). Option (c) was finally chosen because when the last opponent piece jumped over is removed, there is more movement for the player. Hence, within each turn, a maximum of one opponent piece could be killed at a time.

Another issue that we had to deal with was whether the player could jump over their own pieces. The problem with this rule is that if a player is allowed to jump over their own pieces, they could essentially “control” a layer/hexagon because jumping over their own pieces means that the pieces had greater reach and could kill more pawns on the same layer. If a player had placed 3 pieces on the same layer, they essentially could control that layer because any opposing pieces on that layer would be killed. However, the ability to jump over pieces definitely opened up possibilities and the creativity of the player, and we did not wish to forgo that rule. By limiting this ability to a single piece, the game maintains a level of balance and fairness, as players must use this special piece strategically and carefully to gain an advantage on the battlefield. This adds an extra layer of excitement and surprise to the game, as players must constantly adapt to their opponent's strategies and utilize their special abilities to gain the upper hand. In the narrative, this special piece could represent a powerful hero within the player's army, who possesses the skills and abilities necessary to help their forces on the way to triumphant victory. The hero's ability to jump over other pieces on their own team could represent their exceptional battlefield awareness and strategic thinking, allowing them to move quickly and decisively to outmaneuver their enemy.

Next, we deal with the rule of not moving back that was put in place to prevent stalemates. During playtesting, we found out that when forced into a losing position, players may move back and forth between 2 corners so that they do not have to play a bad move. This concept is called “Zugzwang” (German) in chess, where all of the possible moves that a player can make are bad

moves that could result in a loss of a piece or the game. Zugzwang is also a common phenomenon in this game, but the ability to move between two safe positions meant that Zugzwang could not happen consistently. Whilst this was uncommon, it was a risk-averse playstyle that staled the flow of the game. Hence, we introduced a rule to open up the flow of the game: if the piece moved in the previous turn of the player, it cannot move back to its previous position.

In general, when considering the decisions we made on the rules, we prioritized three qualities: creativity, balance, and consistent game flow. Allowing a special piece to jump over pieces on the same team introduced creativity; allowing only one opponent piece to be killed at a time making sure that the game does not skew incredibly in favor of the winning team, maintaining some balance; preventing pieces from moving back if they moved on the previous turn allowed the game to flow and pace well.

III. Playtest Documentation:

During our trial sessions, we experimented with different maps to find the one that would provide an appropriate game pace and level of complexity. Initially, we used map X to test the hopping-over mechanism for capturing the opponent's pawns. While we liked this mechanism and decided to make it the focus of our game, we realized that map X was too fast-paced, with each of the three layers having eight edges and rectangular shapes, which detracted from the game's aesthetics. Next, we tried using map A to test the hopping-over rule in a game where pawns could move freely in holes, similar to Chinese checkers. However, we discovered that this mechanism did not work well. Despite this setback, we wanted to keep the hexagon shape and increase the number of pieces, which led us to map B. Ultimately, we returned to our last map to simplify the game by moving over edges instead of holes, while still retaining the hexagon map. We settled on our final game map, which strikes the right balance between complexity and pace.

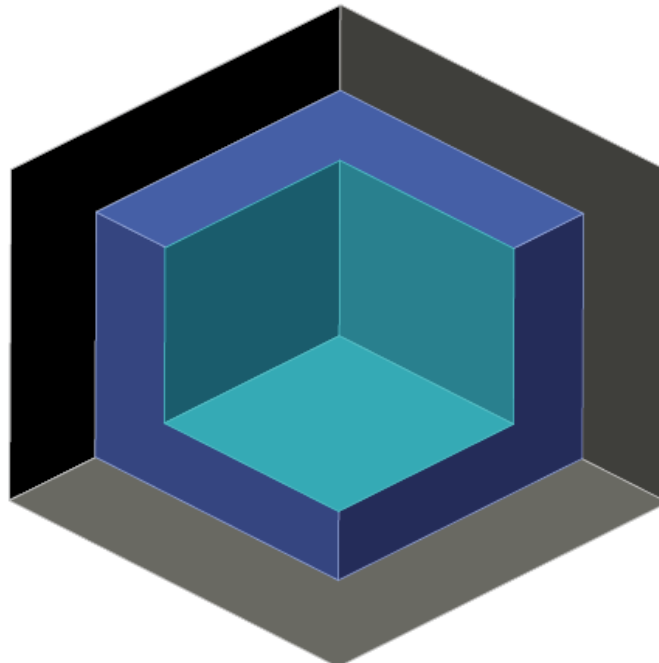


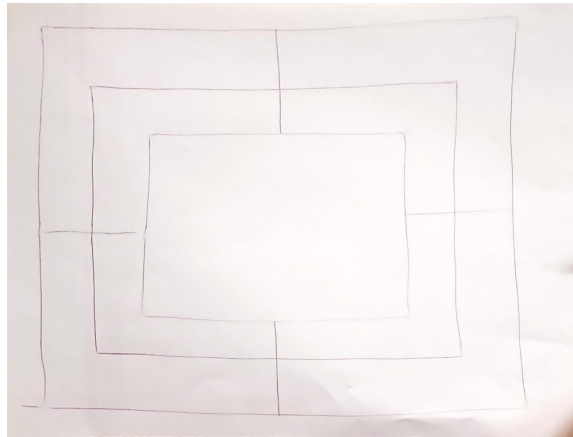
Figure: our final map

The number of appropriate pawns for each player was tested several times to decide what is the right balance: not too much to make the board too crowded or the game too complicated, but not too little that makes the game too quick or the map too desolate.

The issue of the central node not serving any special function in the game was initially overlooked during trials. However, it was later discovered that if it remained as such, the central point would become redundant as players would only utilize the final hexagon layer without ever stepping into the central point. Additionally, the player's pawn in the central node was exposed to being attacked and captured in three directions by opponent pawns, without being able to attack opponent pawns in the outer layer, making the central node even more undesirable to step in. To address this issue, a new rule was added to designate the central node as a safe shelter, where pawns in that position cannot be captured by opponent pawns in the outer layer. This adds a new strategic element to the game, as players can now use the central node as a safe haven to protect their pawns and mount counter-attacks

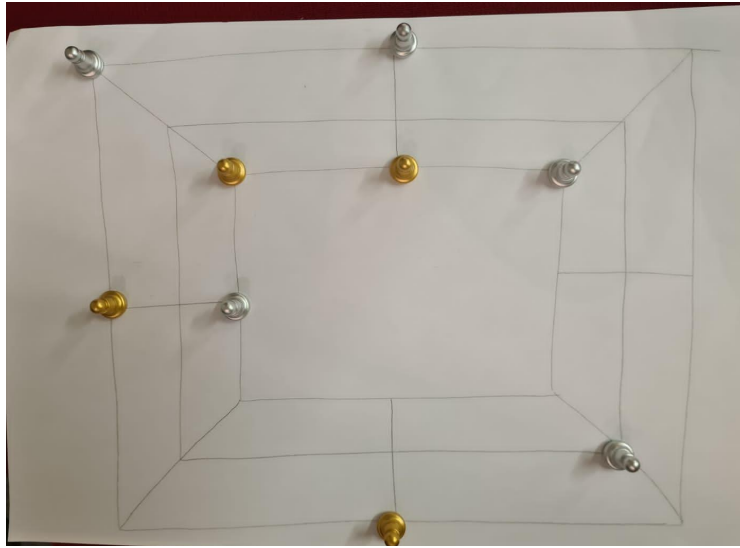
Detailed documentation:

- ***Playtest 1:***



- Keep the normal killing rule: hopping over.
- Cannot go back to the path you've just traveled.
- + Feedback:
 - The board seems too simple.
 - The pace is fast.

- ***Playtest 2:***



- Adding diagonal lines to the map.
- Adding killing rule: if form a line of 3 on a row → take out any piece of your opponent on the board.
- Keep the normal killing rule: hopping over.
- Cannot go back to the path you've just traveled.
- + Feedback:
- To easy to take out opponent pieces (because of 2 killing rules + new diagonal line)

● **Playtest 3:**

- Keep the normal board
- Only keep the new killing rule: if form a line of 3 on a row → take out any piece of your opponent on the board.
- Cannot go back to the path you've just traveled.
- + Feedback:
- Need to change the board
- Adding the rule of cannot use 2 same pieces

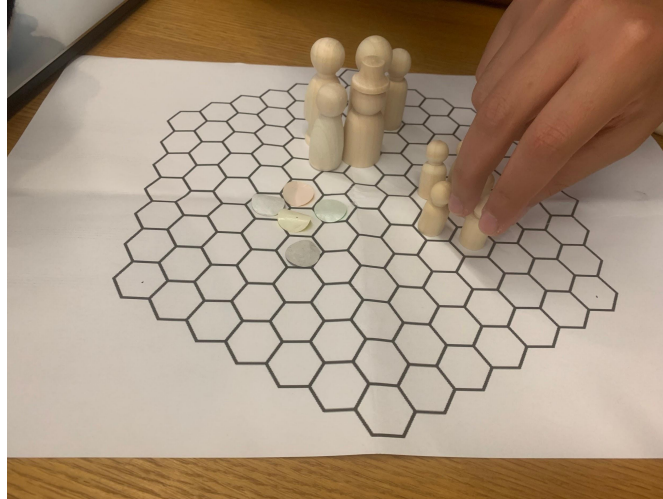
● **Playtest 4:**



- Move to Yoki's board instead

- Each side gonna start in the opposite direction, with a line of 7 boards each.
- The goal is (1) to reach the home spot of your opponent or (2) to kill all of the opponent's pieces.
- Jumping over your piece to travel + jumping over your opponent's piece to kill
- + Feedback:
- How to force people to go out?
- Kill one piece of your opponent at a time.
- You can hop over your opponent's piece multiple times if possible, but you can only kill the first one you hop over.
- Keep the star-shaped board, 9 pieces each. The last one will be the home spot.

● **Playtest 5:**

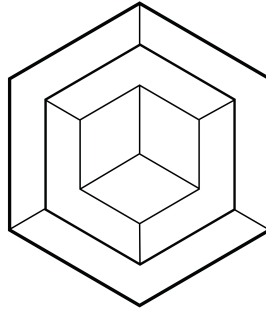


- Use the new board
- Have three players, each one starting with 7 players.
- You can jump multiple times, but you will only eat the first one.
- You can only jump or move at once each turn, but cannot do both. Jumping multiple times in one turn (even at killing your opponent) is allowed.
- You can only stay in your opponent's home for one turn, then you are forced to move out.
- + Feedback:
- The game is too long.
- Kills the last one in the jump sequence instead of killing the first one.

● **Playtest 6:**

- Same board. Each person starts with only 5 players.
- Can only jump or move per turn. But you can jump over one time.
- Kills the last one in the jump sequence instead of killing the first one.
- + Feedback:
- There may be occasions when one player is so close to their home that no one can run back in time to stop them.
- Maybe drawing another map (it's too common anyway).

- **Playtest 7:**



- Can kill in sequence, but only take the last one.
- Cannot jump over your pieces.
- Each player has 6 pieces.
- + *Feedback:*
- Don't have that much flexibility to move around → very easy to get killed at the beginning.
- The center's function is still unclear.
- Determine the winning condition: because one player can just run around at the end and it will be a draw.
- It's too fast even with 5 pieces.

- **Playtest 8:**

- We use the current rule set.
- + *Feedback:*
- The pace is appropriate.
- The complexity of the game is appropriate.
- Should reduce the number of moves.
- Should we add the super-piece?

IV. Evaluation:

Reflecting on the entire game design process, we are extremely satisfied with the final product we have created. The game's abstract nature makes it unique and challenging, and the strategic gameplay and potential for comebacks keep players engaged and excited throughout each round. We believe that the importance of the board design and all the restricting rules cannot be understated. The board design is especially critical in our game, as each movement on the board can have a significant impact on the outcome of the game. The restriction rules, including the 20-movement, cross-layer jumping, self-jumping, etc, add an extra layer of strategy to the game, encouraging players to think ahead and consider a variety of options.

Despite the many strengths of our game design, we are aware of some drawbacks that come with an abstract game like this. The lack of social interaction could potentially limit the appeal of the game for some players who enjoy the social aspect of gaming. Additionally, the game requires practice to master, which can be frustrating for beginners who may struggle to keep up with more experienced players. This could also deter some players from playing the game, as they may find it too challenging or difficult to understand.

Overall, we believe that the game design is successful in achieving our goal of creating a challenging and exciting game that requires strategic thinking and planning. While there is always room for improvement, we are confident that with continued efforts to refine and innovate the game, it will only become even more engaging and enjoyable for players.

V. The meaningful play:

Our game is primarily meant to be meaningful as an intellectual duel between two players. Both players must seek to outplay the other to win, countering opponents' moves and developing their own play to take control of the board.

However, there is another key aspect of the game that lingers with the player - the decision to play to win, or to play to draw. When in a winning or neutral position, players intend to win and play as such. However, in a losing position, priorities suddenly change and players start playing for a draw instead. This is because any player that loses one piece is at a sudden disadvantage for the rest of the game, which forces re-prioritizing. In our initial playtests, whenever players lost a single piece, they would forfeit immediately as they believe that they will lose with a disadvantage in the number of pieces. However, we responded by giving players a possibility of a draw without taking over the board. Now, the games are longer and more involved because even when players have fewer pieces than their opponents, they still want to draw rather than lose.

The meaning of this exercise is that even if players can not win, victory can also be achieved by forcing a draw. Usually, winners are more joyful about their experience, but the possibility of both players drawing introduces an unusual element; the player who forced a draw acts as if they have won. We observed in playtesting that if the player in a losing position manages to force a draw, they celebrate a victory as though they won, when in reality both players have neither won nor lost. This reversal of expectations creates meaning in what is considered a victory in the game, and how the intellectual duel is interpreted. Even though the player with more pieces was able to initially outwit the opponent by taking one of their pieces, if the game drew then, then the player would feel a sense of loss despite winning the initial battle and ending in a draw.

In the game, each player represents a faction or army vying for control of the castle and the valuable resources within. This aspect of the game represents the importance of resource management. Players must strategically maneuver their forces and use their resources wisely to gain the upper hand in the ongoing war. They must also prioritize which pieces to protect and which pieces to sacrifice in order to achieve their ultimate goal of victory. Furthermore, the game emphasizes the importance of team collaboration as the player needs to have the pawns work together to achieve victory. Each player's pawns must coordinate with one another to create a cohesive army, with the special piece serving as a critical component in facilitating flexible movements and creating opportunities for strategic play. Without effective collaboration and resource management, players will struggle to achieve their objectives and claim victory.

The concept of resource management and team collaboration in the game can also be applied to real-life situations. In business or in personal relationships, effective resource management and collaboration are crucial to achieving success. Just like in the game, individuals must prioritize and allocate resources effectively, whether it be time, money, or personnel, in order to

achieve their goals. Additionally, teamwork and collaboration are key to accomplishing tasks efficiently and effectively. The game serves as a metaphor for the importance of these skills in everyday life, reminding players of the benefits of working together and managing resources wisely.