

# Volcanic Treasure

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Explore, collect, and build to find the lost relic at the top!

## Volatile Team

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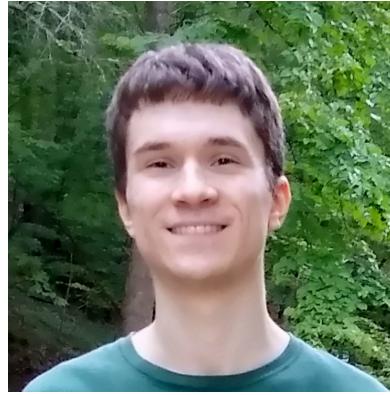
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### Luke Lepkowski

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# Game Design

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## Summary

A group of foolhardy explorers have accidentally blown up an ancient and artifact-filled temple whilst looting it. This mythical temple so happens to be placed above an active volcano! Now with both the seismic activity and the random explosions happening all around, the temple is shifting through the lava. You just have to take one more artifact before you leave... Use your wits and the tiles to outsmart and trap your opponents. Ready your rope, hold onto the ground beneath your feet and grab some artifacts.

## History, Antecedents and Related Games

*Volcanic Treasure*'s primary mechanic, where any tiles that the player steps off of disappear, is found in many games, including the board game *Isolation*. In addition, the ability to "collect" these tiles and place them in later turns resembles inventory and building systems in grid-based survival games, such as *Minecraft*.

For navigation, a hexagonal grid is used in the game because each adjacent tile is the same distance away, allowing for simpler movement. For this reason, hexagonal grids have found their place in numerous games involving navigation, including the *Heroscape* games. Also, *Volcanic Treasure*'s mechanic of vertically traversing up and down tiles is one of the core mechanics in the board game *Santorini*.

Lastly, lost South American civilizations and the movie culture created around them have served as crucial design references for the game. The exploration, treasures, and hidden perils of *Indiana Jones* and other homages to 30's adventure serials significantly influence *Volcanic Treasure*'s theme and setting.

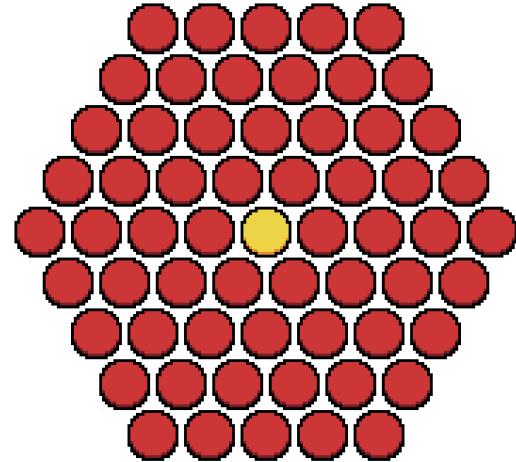
## Gameplay & Set-up

The goal of the game is to reach the treasure before any of the other players do. The treasure itself is located on the highest pillar that players must climb towards. In addition, powerups can be used to alter the board state by shifting how everyone interacts with the path to the treasure.

When setting up the board, a minimum of two tiles should be placed above the used guide markers on the board, unless specified against in the instructions for the mode of play chosen. The only other expectation to the two-tile placement on the board is that the treasure's pillar is in the direct center on the yellow marker. The treasure pillar should be a minimum of three tiles above the average tile height. The board previously had two modes of play: Compact and Open. Compact mode has tiles placed as far as the white tile markers on the board, and none on the final red hexagon ring.

This mode makes for a closer, faster, and more restrictive game. Compact mode runs at around 8 minutes of playtime with two people. Open mode uses all the board space with the exception of the corners of the outermost hexagon, which uses only one tile height compared to the rest of the open tiles using two. Open mode allows for more strategy and player interactions on the map as they go for tiles. An open mode game with three people can run for 30 minutes. Player tokens can be set on any of the outer hexagonal corners; they can be adjacent or equally spaced around the board. Due to balancing errors, compact mode is no longer in use or implementation as it allowed for some ability combinations to end the game almost immediately.

Each turn the player can take two actions: an action can be used on moving, placing a tile on the board, or using a power-up. When a character moves, the tile previously beneath their feet is claimed and removed from the board to be utilized by a later action. There is also a limit to height that can be vertically scaled when moving to an adjacent tile, which is that the player can move only one tile up when traversing. So, if the desired adjacent tile is two tiles above where



the player is currently, they cannot move there from their current tile. Tiles can be placed anywhere besides on a tile occupied by a player or the treasure. The “taking” power-up allows for the player to take a tile from almost anywhere on the board. A tile cannot be taken from under the treasure, or from a tile only one above the lava guide layer. There are also compound actions that take both actions: the “jump” action and interacting with the Big Rock. Jumping allows the player to move across a one-tile chasm in the same direction regardless if there is a direct connection between the two. (This action choice would obviously use all actions for movement.) A “jump” can only happen if the path is uninterrupted by tiles (or objects) higher than it, or if the destination is below the starting tile’s height (the destination tile being below the jumping tile’s height is perfectly fine). Though this action is technically a double movement, you are only to take a tile from the position of the starting tile (not the one you jumped over). The Big Rock is a movable obstacle with versatility for thwarting another player’s plan. Moving the “Big Rock” takes two actions: one to move directly onto the tile the rock occupies, and the other to kick the rock to any unoccupied space on the board. Both actions are needed, a player cannot only move to the tile the Big Rock occupies on one turn and kick it on another turn. The Big Rock is incredibly tall, so it is able to block a jump regardless of how far below the rock is from the jump’s starting height. If the Big Rock is sent into lava, players can no longer move that rock. For more details on any of the actions, see the rule book in the appendix.



## Game Flow

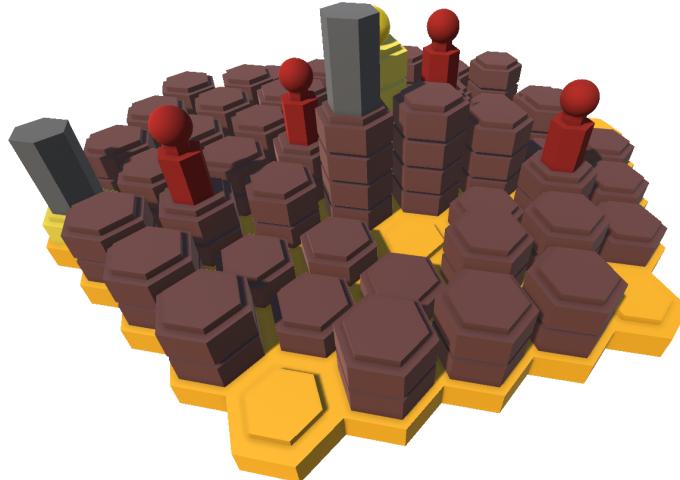
1. The first step to playing the game is setup, which takes about five minutes. Players will stack one or two tiles on each space of the board and will stack several more tiles in the middle, where the treasure is placed (as specified by the rules). Then, the player pawns are placed, and the game can begin.
2. Players are free to navigate wherever they would like on the board within the rules, but players often initially circle around the map to build up their inventory of tiles. After this early stage, players will begin to navigate back toward the treasure in the middle.
3. After gathering a sufficient number of tiles, players frantically try to build up to the middle, while other players foil their attempts. Often, players will “charge” up to the treasure, placing one or two tiles per turn and using movement or power-up actions to get to the treasure as fast as possible. Other players will then be forced to use their placement or power-up actions to “block” the charging player from winning using whatever is at their disposal. This becomes a cycle that lasts for the rest of the game.

- The game generally ends once a player successfully outsmarts the other players to get to the top and collect the treasure. Various strategies have been used to get past blocks by other players, which are detailed in the *Mechanics* section.

## Mechanics

*Volcanic Treasure* has a basic economy based on resource management, and the most crucial driver of the game's resource management (and one of the most crucial to balance) is how players collect and use tiles as the game progresses. Initially, players could move twice but could only place once per turn; this quickly proved to be an infeasible design because players would constantly be accumulating tiles as the game progressed. Currently, this issue is resolved by allowing players to move twice or place two tiles per turn so that players neither accumulate nor run out of tiles as a net result.

This current game design allows for several intriguing strategies. At the start of the game, players tend to focus on resource collection by circling the outside of the map. Later, the focus gradually shifts to more offensive strategies, including using all of the collected tiles to build up to the center or even to block players who are getting too close to the treasure. This introduces an element of risk and reward because players must choose when to switch strategies and use which actions (and must predict the actions of other players to choose the most opportune times). Additionally, there are various creative ways to utilize power-ups or even other players to win the game. In particular, players have been observed strategically forcing others to block a potential winner in such a way that they are set up to win later on. Strategy, foresight, and skill, rather than chance, are most prominent when playing the game.



*This concept art demonstrates what kind of board may be produced over time by the game mechanics, as players build staircases toward the treasure.*

## Narrative & Theming

You're a world-renowned treasure hunter with many accomplished feats under your belt. You recently caught wind of an ancient artifact held in a small temple in South America. Worse yet, you hear of those ruffian philanthropists sending their own men to try and retrieve it. As a veteran treasure hunter and preservationist, you feel it's only natural for you to secure this treasure. Sadly when you get to the small mountain village, you see the disarray and abandonment this village has faced during the treasure hunt. Explosion holes, unattended crates of dynamite, gadgets strewn around the perimeter, half-eaten fruits and worse, a sad pile of discarded leather hats. You have to put a stop to this urgently!

As you brave the village's stone temple you feel the earth shift beneath you. Suddenly everything is rising and falling with no obvious reason. The room is getting hotter and you can see your competition is inching in from behind. Braving further into the temple, the glistening beauty of the treasure fills up the room. Then the glow of the floor reveals that this whole village was in fact on top of a volcano the entire time, and the room is falling and rising out of the lava constantly. Now, you've just gotta grab that treasure before you get out of this death trap. Ready your rope, hold onto the ground beneath your feet, and grab some artifacts.

With so many adventures moving around in a heated room, it's no wonder there is so much chaos and shifting of the stone pillars. What's worse is that people are grabbing on for dear life to any and all ground around them. Some rave tacticians are taking chunks of the columns to use as stairs to the treasures, while others seem to be praying to a higher power for aid. Yet, through it all the treasure remains perched above all unaffected. The treasure and its monolithic tower are just beneath the ceiling, looming over all, taunting. If only your planned route stayed in formation but as if by the act of a cruel god, your plans are foiled time and time again. There's no stopping now, you must get that treasure, ready an explosive to foil your adversaries route and hope that your path will hold. Be wary pride comes before the fall so plan carefully to get what's yours!

The explorers are able to take the sinking land and move it anywhere they want because of an ancient technology found in the temple, known as the landballer. It allows them to store the sinking land in a compact ball in their bags and throw it somewhere else, creating a landmass that they can use later. Getting in their way is the "Big Rock," a guardian of the treasure that blocks all those who try to get past it. There are only two left, and surprisingly the "Big Rock" can be picked up with some effort and thrown across a large distance. This is probably why there are only two of them left. They are not good at their job.

## Playtest Results

From the earliest playtests, an issue with the game's tile economy was found, which was that a player could never spend more tiles than they gained. This led to the board becoming very barren, as players were holding onto all the tiles and could not release them. The fix was to increase the allowed actions and to let players choose more of what they could do on their turn. The next few playtests focused on writing concise but expressive rules for the player to understand what each action did. These rules were then given pictorial representations for players to quickly reference if needed.

The next large alteration was balancing the powerup supply in the game. Initially players only ever got one power up at the start of the game, but this made the item too scarce to ever be used during play unless at the end. To fix this, a turn timer was created so players would periodically receive more power ups. Next, the power up economy had to be fine tuned for both small and larger group sizes. This fine tuning was done over the course of these playtests until the current power up turn rule was created: a new power up is allotted to each player after a number of rounds equal to the player group count plus one. This ensures that smaller groups have a faster play time that allows for mistakes and not much waiting around. The larger groups still have the ability to make game-altering moves, but not frequently enough to discourage immediate strategy.

During the asynchronous playtests with the other class, an issue arose that players were able to beat the game far too quickly, without allowing any strategies to fully take hold. This issue was traced back to players giving priority to the less tested, but quicker compact version of play. The group's solution was to eliminate the compact mode to allow for more focus on the main mode of play and also to stop trying to balance resources for multiple player groups on multiple game sizes.

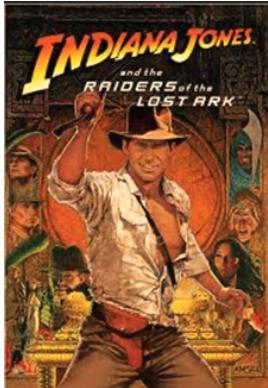
Over the most recent playtests, the astounding result has been that the game needs more complexity. The lack of actions begins to wear on players if they play for too long or play too many games in a row. The need for complexity led to the creation of the two compound action moves: the Jump and the Big Rock. These compound actions allow for the player to create diverging strategies now. The Jump allows for players to approach the treasure from farther away, and the Big Rock can act as a barrier or a stalling tactic against the other players.

## Visual Design



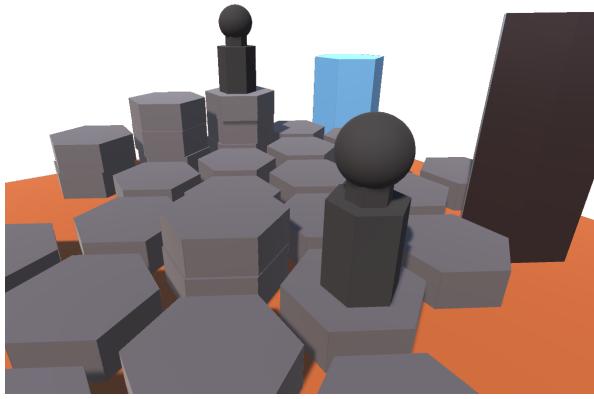
Color palette for the game, including gold, yellow, gray, dark red, and red. Exact colors can be viewed [here](#).

## Mood Board and Concept Art

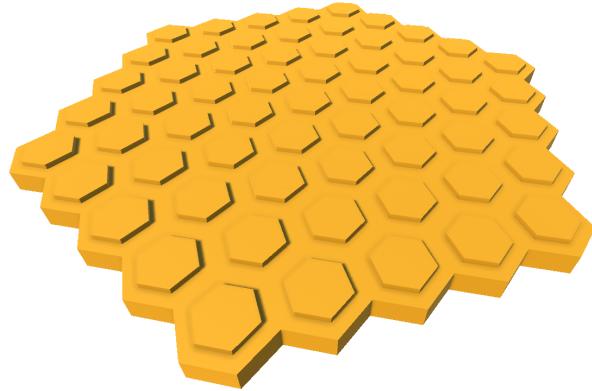


*Volcanic  
Treasure*

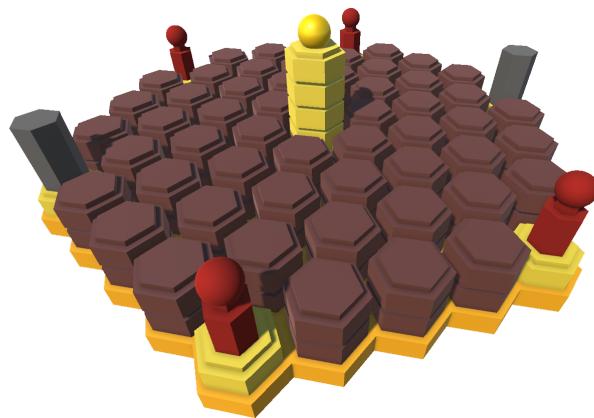




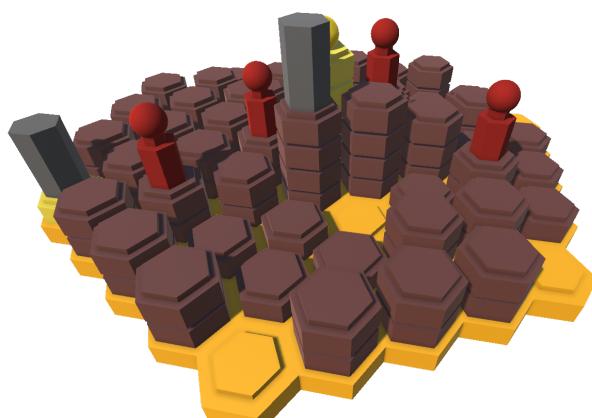
*Initial concept for the game's board*



*Recent concept for the empty board, allowing tiles to easily be stacked and aligned*



*Fully set-up game board*



*One of nearly infinite possible board states during the game*

## Expected Development Cost

*Volcanic Treasure* is a unique game in the amount of the pieces required to play, but it still should be feasible to produce in bulk. For example, the final game may use pieces similar to our prototype's *Connect 4* pieces. Given that each *Connect 4* game contains 42 plastic pieces and costs about \$12, it seems reasonable to put the manufacturing costs of 42 pieces at somewhere around \$1-\$2 (especially considering a high profit margin and that the game pieces are only a portion of the *Connect 4* parts). Therefore, the expected cost of manufacturing *Volcanic Treasure*'s ~200 tile pieces would probably be around \$8. It is worth noting, however, that extra factory equipment may be required to manufacture these game pieces because of their unique shape, so a publisher may need to be involved to figure out the logistics of production, storage, shipping, etc.

The tile pieces' costs should make up a large portion of *Volcanic Treasure*'s production costs, but there are still some other costs to consider, such as the game board, player pieces, and power-up pieces. A 10-by-10 inch board from The Game Crafter costs \$10, so it is probably safe to assume that no more than \$3 would be used in manufacturing the board. Other pieces, like players, power-ups, treasure, etc. can all be produced cheaply in bulk, most likely adding no more than \$2 overall to the unit cost of the game. A large enough box costs \$21.50 from The Game Crafter, so a box production cost of about \$5 is probably reasonable. Lastly, a rule print-out would probably cost \$1 or less.

Adding up all of the manufacturing prices, the game's cost estimate would be around \$19, taking into account economies of scale. However, a realistic selling price for the game may be around \$40, leaving plenty of extra revenue that can be used on marketing, storage, shipping, etc. Considering that *Santorini*, another game with complex plastic parts, costs \$38.99, \$40 seems to be a reasonable price for *Volcanic Treasure*'s size and complexity.

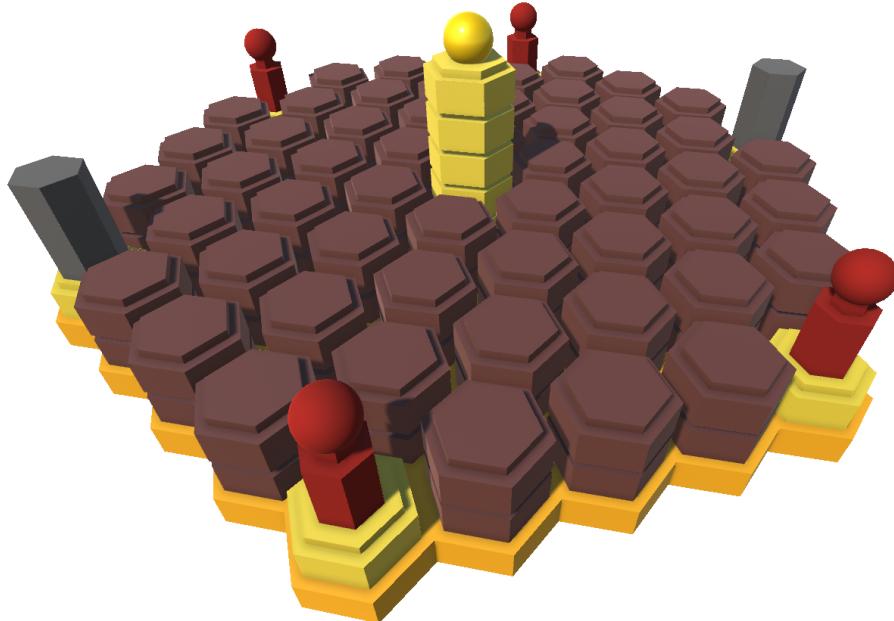
## Competitive Analysis

The major genre this game falls into is an abstract strategy, where the actions and environment are simplified to allow for a perfect information game. The two major influences for the game were *Isolation* and *Santorini*. *Isolation* is a game that originated in the 1970's. The retail for this game is somewhat outdated, due to it being out of print, but it normally goes for twenty dollars USD with a listed amount of 500 owners on BoardGameGeek. *Santorini* is a more recent example, debuting in 2016 and retailing for around forty dollars USD. Compared to *Isolation*, the game has much higher recorded sales. On BoardGameGeek alone, the game has a listed fifty five thousand owners, and around seven and a half thousand people have wishlistied the game. *Santorini* is currently displayed on one major retailer's stock list and on multiple digital vendor sites. The last item to analyze to determine the ceiling on sales in the genre is the currently top selling abstract strategy game, *Azul*. *Azul* is a 2017 game with an objective of placing tiles in desired areas to bolster one's score while competing against players with the same objective. The game retails for forty dollars USD with over one hundred thousand owners on BoardGameGeek. Multiple retailers are still selling the game in both physical and digital stores. With the estimated costs of nineteen dollars for the game and a cost similar to its contemporaries of forty dollars, *Volcanic Treasure* could sell at most one hundred thousand units. This large quantity of units is seemingly far out of reach currently, and the game still requires much more design and detail before it would be ready for sale.

## Future Work

If we were to continue this, we would need to figure out a way to assemble the board faster than we can now. It takes a while to build the board, and it will take longer for someone who doesn't know much about the game to build it. So, we would spend more time to figure that out. We would also make unique board pieces that are easier to pick up and easier to stack to help facilitate gameplay, and these would help the player have more fun with an intriguing design.

More prototyping on the rules for the more recently added compound actions would allow for the abilities to have a settled niche in the game and feel less overbearing. The rules itself could go through countless more iterations in attempts to correctly convey our desires of how the mechanics work in a concise manner. Many of the pieces are still in a very abstract state, where there is only a vague allusion to what each piece represents. Custom mold research or additive production for pieces, such as resin or filament printing, would be a decent alternative for creating decently high fidelity models. Making an actual guide board for the tiles to be placed on instead of glued tiles to a board would also be one of the next steps if game production designs are the next step for the team.



*This concept art illustrates what a final board for the game may look like, with tile pieces that can easily be stacked together.*

## **Appendix**

The appendix is a separate document attached as the file VolatileTeam\_DD3\_appendix.pdf

Includes:

- rules document
- 5 playtest session documents
- the playtest survey data charts