WSOA3003A - Game Design IIIA

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Short Form Analysis 1 – Data Design

Screenshot from a game of *Catan Universe* (Teuber, 2017)

Catan (formerly known as *The Settlers of Catan*) is a resource management boardgame originally created in 1995 by Klaus Teuber. The objective of the game is to be the first person to get 10 victory points by gaining resources and using them to build the best colony on the board. Using the digital version of the base game, *Catan Universe* (Teuber, 2017), this essay will employ the MDA framework developed by Hunicke, LeBlanc and Zubek (2004) to analyse the data design of the game, looking in particular at the effects that probability and randomisation have on player interaction and overall gameplay.

In a general game of Catan, the board layout is usually randomised. There are 19 hex tiles, 18 number tokens to be allocated to the resources tiles and 9 harbour trade tokens, all of which are randomly placed to set up a particular game. Just looking at the hex tiles alone; there are 19 tiles total, 18 of which are there to produce resources. Of these 18, the sheep, wood and grain resources have 4 tiles each, and the ore and brick resources have 3 each. Taking into account this repetition of tile types the number of unique layouts of just hex tiles can be calculated as 19!/4!^3 * 3!^2 which amounts to 244, 432, 188, 000 (Anon. 2016) and that is excluding the different possibility that the number tokens and harbour tokens introduce.

This allows for a wide range of unique board layouts which, in turn, impact strategic placement and gameplay during any one game. Players also have the option of following a particular

suggested set up, not including the randomised harbour tokens, or even placing the desert, resource-less tile in a specific spot. It can therefore be argued that the board set up at the beginning of a particular game acts as a game mechanic. It affects subsequent strategic dynamics, impacting where players choose to place their settlements, both at the beginning of the game and during core gameplay. Paired with the mechanic of rolling dice each turn, it also determines which resources players get to allow them to build and expand their colony while planning a winning strategy.

There are 54 possible corners to place your starting settlements on, 24 of which are adjacent to at least 3 hex tiles to possibly earn resources from (with the except of those adjacent to the desert tile). Each player's second placed settlement automatically earns resources from every adjacent resource tiles, while subsequent resources are earned when the result of a 2D6 combination, rolled on every player's turn, equals the number on a tile adjacent to your settlement or city. Rolling 2 dice instead of one changes the probability of getting any particular number, from equal to varied. Any number from 2 to 12 can be rolled, with the middle numbers having a higher probability of being rolled than the outlying ones. This makes the game more interesting and affects strategic placement as players now need to consider how likely it will be to roll one number over another. To help with this, each number token has a number of dots on it, communicating how probable it is to get that number with 2D6. Therefore, theoretically, the optimal settlement placement to get resources in general, as much as possible, is on the intersection with the greatest dot sum. Of course, there are also other factors to consider, such as which resources you're aiming for, which are more common on the board and which have the most probably numbers on their tiles, the last of which is directly affected by the unique board set up for a particular game.

While not the only mechanics in the game, board set up and dice rolling are two vital mechanics that result in strategy dynamics such as resource management and territorial acquisition. There are 5 different ways to score points in this game, all of them affected in some way by which resource cards come into your possession, which in turn is impacted by the game set up and dice rolling mechanics. One way of getting points is by placing settlements on the board, which each give 1 victory point. Aside from the first two, a number of resources are needed for each settlement built. The placement of these settlements can give a player future resources and so has to be carefully considered. Cities provide 2 victory points and replace settlements on the board for an additional cost of resources. Upgrading a settlement to a city does not increase your probability of getting resources from it, but rather increases the number of resources you get, with the same probability of actually getting them. This is still based on board set up,

original building placement and dice roll probability. Two other ways of scoring points are either through getting the biggest army or having victory point cards. Both of these come from buying and using development cards, which requires a number of resources per card. The fifth way of getting points in the game is by building the longest road, requiring a minimum of 5 connected road segments. As settlements and roads have to link to one another, this is impacted by the board set up, decisions on where to place buildings as well as resources cards earned to be able to place roads in the first place.

There are strategies to winning, using the data afforded to the player, but at the end of the day reliance is also placed on hoping that the randomness goes your way. Two core aesthetics that are born from the game dynamics are challenge and sensation. The wide range of possible unique set ups ensures constant replayability value, as strategies change from game to game. Players can play multiple times, as they try to master the game and get better at it, without it feeling repetitive. As a multiplayer game where the objective is to be the first one to reach a certain victory point goal, it can be quite competitive and this is an integral part to the game's enjoyment. Players are trying to get more points than their opponents and faster than them, even trying to block off opponent routes. All of this adds to the competitive enjoyment of the game. The challenge of figuring out what strategy to employ in a new game with a new set up, figuring out the most optimal way to get the resources you want based on the current set up and the data available to you, all adds to the enjoyment and appreciation of the game.

The game does a good job of successfully combining strategy and chance. This chance aspect from the rolling of dice and the initial randomised set up are what lead to the sensation aesthetic. There's always that moment of surprise, sometimes even a little shock, sometimes excitement too, as the board set up is slowly revealed. Players are always on edge, the tension building with every dice roll as nobody can know for sure what number will come up beforehand. This creates an immersive and enjoyable experience for players.

Catan is a board game that uses its data design to successfully ensure an immersive and challenging experience, with players interacting with the system and getting meaningful information from it in order to create strategic and enjoyable gameplay. The data provided gives players everything they need to plan winning goals, but with enough chance aspects thrown in to keep it somewhat unpredictable, allowing each game to be unique.

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