Abstract

Text-based games have been making a surprising comeback. For example, a text-based game called *A Dark Room* reached the top of the iOS App Store by providing a simple menu-based interface and combinations of resource management, combat, exploration, and intriguing narration. This success has shown that there is a demand for this kind of game. My vision is to create a strategy game about building your own world in a universe where a network of nanorobots gives humans godlike powers. Gameplay will combine elements from modern board games (a finite set of "cards" representing locations, events, etc. combined randomly to create infinite possibilities) and "idle" web games (an emphasis on collecting large quantities of resources over time to unlock new content). As in *A Dark Room*, the user interface will be reduced to a set of screens each providing short text descriptions and several buttons to choose from representing the actions the player can take. Also as in *A Dark Room*, the text will be sparse so that the imagination is free to take over. I plan to develop this game for iOS, starting this semester. Over the summer, I plan to focus on adding content and improving balance through analysis of user data.
Biographical Sketch

A central theme in my life so far has been the union of engineering and arts, which ultimately brings me to game design. My hometown is Oak Ridge, Tennessee, best known for Oak Ridge National Laboratory, and my high school offered excellent opportunities for me to participate in introductory computer science research projects there. This path led me to study computer science at Cornell and work on increasingly complicated data visualization projects at ORNL every summer. Meanwhile, my father is a history teacher, and my mother is a librarian, formerly an English teacher, so I was raised with significant exposure to history and literature. Though I chose to emphasize technical disciplines in my official studies, my upbringing has left me with a lasting love for the humanities and a desire to understand the entire network of life. This blend of disciplines will allow me not only to program but also to write a text-based game.

I've been interested in game design ever since I was a small child, when I would mix pieces from different board games in my family's collection. My interest grew as I made my own simple board games out of paper, and then in high school I wrote interactive mystery stories for the game Myst Online: Uru Live. I was delighted to discover Cornell's Game Design Initiative, and in fall 2014 I took Analytics-Driven Game Design, working with a team to officially release the game Nameless Tactics online. Now I'm ready to work on my own official projects, and my dream is to become an independent game developer after graduation. I believe there has never been a better time to be a game designer; board games are experiencing a renaissance as more people discover how rewarding games with modern mechanics can be, and independent video game development has greatly expanded thanks to online and mobile markets. Most importantly, games are emerging as an art form rather than a mindless waste of time. I look forward to participating in this new artistic movement because I believe that a well-designed game can be the perfect combination of logic and art.

In my spare time at Cornell, I'm president of the Games Club; I'm involved with Chesterton House, a center for Christian studies; and I'm designing a board game about revolution against a totalitarian state.
Statement of Purpose

The success of the text-based game A Dark Room in mobile app stores has revolutionary implications for the future of game design. The mobile version of the game was developed by only one person and consists of a white screen with text and a few buttons, yet this simple game reached the top of the iOS App Store, beating all graphically fancy games developed by large studios, and is still highly ranked. Such an unlikely success proves that whether a game is fun is more important in determining its popularity than how expensive the production is. Why is A Dark Room so fun? It is a unique experience, defying tradition in text-based games. Instead of lengthy narratives and complicated verb-based commands, A Dark Room offers a simple menu-based user interface and a combination of resource management, exploration, and combat, with a only a few suspenseful lines of story to motivate the player. Players gradually build a town and explore a hostile world, building a stronger and stronger economy in order to figure out what happens next. A Dark Room is only the beginning though. The innovative combination of narrative and strategy it demonstrates can be used to express an infinite space of imagination.

I hope to create my own game, Nano Empire, similar in appearance and design philosophy to A Dark Room. I will sacrifice graphics in order to focus my limited time and resources on making a fun game. Nano Empire will be about building your own world in a universe where a network of nanorobots gives humans nearly infinite creative power. Players will construct and upgrade locations in their world, collect resources, fight enemies, complete missions, and discover dark secrets of their society. The user interface and text will be a minimal frame whose only purpose is to guide the player’s imagination.

The story is built around a simple question: what would you do if you had godlike power? I’m interested in nanotechnology as a not entirely impossible way for humans to achieve the power to rule their own personal worlds: imagine a network of nanomachines spanning the galaxy, allowing transport of energy and resources for spontaneous construction. Each person would have a “sphere of influence” of controlled nanorobots, held in balance by other people’s spheres so that no one person could disproportionately harm the universe. Players will be tasked with collecting energy to increase their spheres of influence. I hope Nano Empire will be an exploration of human nature: even given immortality and complete abundance, are humans still likely to compete in an unending quest for more? Or will you manage to find a better way?
A central design goal is to keep gameplay open-ended: players should be free to choose their own destiny. Expansive options are a challenge in text-based games because all possibilities must be written ahead of time. I hope to meet this challenge by creating a limited number of "cards" representing locations and events, and letting these "cards" be combined randomly to create unpredictable gameplay. Players will collect Energy, Attack, Defense, and Followers over time, and the game will present many options for using these resources. Another key aspect of my design is adapted from "idle" web games, including the web version of *A Dark Room*: players receive a delayed stream of resources and are compelled to collect more resources to access bigger and better things. Repetitive resource gathering will be a prominent feature of my game, but as in *A Dark Room*, I hope to provide pieces of story to keep the players engaged. With these design decisions, I can maximize depth and length of gameplay given development constraints.

How will *Nano Empire* play? You start with only a blank world and some energy. You see several locations available to create, and you spend energy to add one of these to your world. Each location produces more energy and an additional benefit, such as attack, defense, or followers. Additionally, each location offers unique buttons representing interactions through which you can get more resources, train your followers to give you specialized benefits, or go on an adventure to face a random event. You can spend energy to level up your locations, increasing benefits and unlocking new interactions. Eventually, your world will attract the envy of nearby personalities and creatures, and they will attack. In combat, your goal will be to press a button as quickly as possible to exhaust the enemy's attack before they exhaust your defense. You will have the option to spend resources for boosts, so combat will be a mixture of action and strategy. Random events, including opportunities for both offensive and defensive combat, will pop up as you go about your business, so an element of surprise will always upset the orderly process of world building.

In addition to creating your own world, you will have the opportunity to explore other important locations in the universe. These "plot locations" will offer missions through which you can advance the story by spending resources or winning battles. Based on which missions you complete, multiple endings to the game are possible. Plot locations will be independent modules so that I always have the option of adding more. I currently have several plot locations in mind:

**The Core:** The capital of the known universe, the source of the system for nanorobot control. The most influential people in the universe live here along with their wondrous creations. Here you could work your way through the ranks and find yourself at the top of society.
The Underworld: Not everyone is able to control the nanorobots. People who do not have their own worlds are called Followers, and their best option is to live normal human lives in the Creators’ worlds. The least fortunate Followers, along with exiled criminals, live in the Underworld, a place separated from the power of nanorobots and dominated by poverty and warfare. What would happen if someone were to set the inhabitants free?

Ariana’s World: Ariana Clayton started as an ordinary Creator with an extraordinary understanding of the nanorobot networks. Lately she’s disappeared, leaving a world of beautiful and bizarre scenes disguising a maze of deadly traps. She’s protecting a secret, and whispers suggest that she’s about to transcend humanity and create a new order.

The Far Reaches: Humanity is just beginning to spread to another galaxy full of its own dominant races and technologies. Opportunities for friendship or conquest abound. If you’re not careful, your entire civilization could be threatened by a war between the galaxies.

I’m currently developing this game for iOS through an independent study with the Game Design Initiative at Cornell. I’ve chosen iOS because a long-term text-based strategy game is ideal for mobile devices, as players may like to play for only a few minutes at a time; and the iOS App Store leads in mobile sales. If I have extra time, I can port the game to Android or web. I hope to release a preliminary version by the end of the semester. Although I can hopefully complete the game infrastructure and enough content for a releasable game this semester, I’m requesting the Tanner Dean’s Scholars grant because I would need additional time to make Nano Empire truly magnificent. Once I have the game running, I will spend the majority of my time writing new locations, events, and missions, especially focusing on adding new plot locations. The more “cards” I can write, the richer the game experience will be and the more players will want to keep playing.

Another task that will require significant amounts of time is playtesting and balancing: this game will depend on intricate mathematical relationships whose effectiveness is best determined through experiencing the entire system. Personal playtesting will be part of the solution, but I also hope to make use of what I’ve learned in CS 4154, Analytics-Driven Game Design, about improving a game based on large-scale usage data. The overall approach is to pick a game design question that cannot be answered sufficiently through individual playtesting, collect data about players’ usage given different options, and determine which option produces the best player engagement, measured as time spent per player or number of players reaching each stage of the game. I can compare different conditions either by
comparing player engagement before and after a change is released, or through A/B testing: releasing two versions of the game at the same time, randomly assigning a version to each player who starts the game, and measuring which version results in better engagement. For example, I would like to know whether exponential or quadratic resource growth is more satisfying over time, so I will randomly assign one of two growth formulas to each player and compare player engagement over time for each growth formula. There are many more possible inquiries that would benefit from analytics, and I will determine which tests to perform after I decide through playtesting which design questions are most important. I can implement user data collection by creating a free online database and sending a data point whenever a user reaches a particular step in the game.

Over the summer at Cornell, I hope to iteratively add new features, evaluate the game experience with help from Professor Andersen, and revise my work. At the end of the summer I would release a major content update for my game. I can also release any interesting discoveries I make through data analytics as an article for the benefit of other game designers. I look forward to this opportunity to make a unique contribution to the emergence of game design as an art form.
Bibliography:

Andersen, Erik. “Game Optimization Through Large-Scale Experimentation.” Game Developers Conference (GDC) 2012.


Thomsen, Michael. “A Dark Room: The Best-Selling Game That No One Can Explain.” The New Yorker. 11 June 2014.