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The Great Teakon: A 3D Video Game

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The Great Teakon: A 3D Video Game

A Capstone Project Submitted in Partial Fulfillment of the
Requirements of the Renée Crown University Honors Program at
Syracuse University

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May 2010

Honors Capstone Project in Computer Art

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Abstract

The Great Teakon is an experimental 3D video game that uses gameplay as a narrative device. Players take charge of Charles Teakon, a rising film star, during the silent film era in the early 1900's. But when Charles breaks his leg on set, he's forced into retirement and obscurity. After a 30 year hiatus, he decides to return to the film world and complete his unfinished movie.

As the protagonist ages, so will the players - not only is this reflected in the physicality of the characters, landscape, and architecture, but the actual mechanics for interacting with the virtual game world. Players will no longer will run as fast, jump as high, or recover from falls as quickly. This gives the user an opportunity to do more than just watch the narrative unfold, because in *The Great Teakon*, they directly experience the narrative through the change in play.

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Acknowledgements

I owe so much of this project to the terrific (and constantly changing) Computer Art Department. Heath Hanlin, Diana Salles, Sean Hovendick, Annina Ruest, and Andy Fedak have all been great professors and strong encouragements. I've been able to develop a wide toolset from their classes and lectures - but more importantly I've learned how to be a better artist. There's more to a project than just making it look pretty. It needs to engage and challenge the viewer on a more critical level.

I also want to thank my architecture professor Jonathan Massey and my architecture Teaching Assistant Eileen Allaverdian for all the help in researching architecture. I never realized how interesting the history of architecture could be before taking Professor Massey's class. His lectures helped in developing the architecture seen in the project.

Lastly, this project (and my graduation with two majors) would have been impossible without the diligent help of Carolyn Ostrander. From my very first day on campus, Carolyn has been invaluable in guiding me to the right departments to talk to the right people with the right paperwork signed.

Advice to Future Honors Students

Get a strong willed advisor quickly! Talk to somebody who will help create deadlines, cut material down to an obtainable, well formed 'box', and say whether or not you're really doing *good* work.

Also stand up to your strong willed advisor. If you like something and believe it's the right choice, do it. This isn't your advisor's project, it's yours.

Reflective Essay

Introduction

The biggest challenge in creating a video game is making an experience that people want to interact with over an extended period of time. Unlike film or photography, video games require a constant level of interaction. If a game is too demanding or confusing, the player will stop playing out of frustration. On the other hand, if a game offers no challenge or fun, the player has no reason to keep playing.

Developers throughout the game industry face this problem as well. For most of the industry's existence, developers have only had to think about how their core audience would receive and interact with their game. But the recent explosion of video games in the mainstream market has forced developers to actively think about and engage more than the core user. The days of hardcore video game experiences have disappeared, with even the most hallowed video game franchises (known for their difficulty) like *Splinter Cell* being streamlined for the new mainstream market. The new market is too large (and profitable) for developers to ignore.

The result is video games that are easy to pick up and play. The learning curve of controls are reduced as much as possible. Objectives are clear to the user to decrease frustration and time spent being lost.

These games have compelling narratives, interesting scenarios, and relatable characters in an effort to draw more people in.

Concept

My project, named *The Great Teakon*, is an experimental 3D video game set in the silent film era of the early 1900's. Players take control of Charles Teakon, a rising star in silent cinema. His physical abilities as a stuntman allow him to perform daring feats in his films. While filming his newest movie, however, he breaks his leg on a stunt and is forced into retirement. The narrative continues 30 years later, in which time Charles has become depressed and lonely. After an old film friend stops by and offers some encouragement, Charles decides to remake his last film and reclaim his name to fame.

The driving concept behind the narrative and gameplay is the effects of age. As Charles ages and loses his physical prowess as a stuntman so will the players. Instead of only showing his age through visuals and dialogue, Charles's age will affect the actual control and interaction of the video game. Many of the abilities and moves that the player has at their disposal at the beginning of the game will be taken away when Charles gets older.

Not only does this scenario provide a provocative experience for players, it is also a refreshing breath in the video game industry. Very few games feature a depressed 50 year old man as their central character.

Likewise almost no games pit players in early 1900's America. These settings are rich in history and once again provide new experiences for video gamers by reaching beyond the perceived limitations of video games as violent "Shoot-em ups".

Process

From the beginning of the project I wanted to make a 3D video game. The most difficult task was finding a setting and developing a narrative that fit the previously mentioned requirements. In addition, the project needed to provide a compelling concept that would challenge the user on an artistic and intellectual level. Otherwise there was no guarantee that anybody would actually play my game, leaving large amounts of my work left unseen.

At the beginning of the project, I drafted a couple different ideas but was unsure of which one should to produce. My first Honors Advisor, Diana Salles, explained the benefits of my premise for a game set in the silent film era. The silent film setting has no connection to the video game world which would help it expand beyond a predefined, niche market. That setting would make people's heads turn, whether or not they were interested in video games. This was the idea that would fulfill the main problem of the project - making a game that people actually want to play.

With this in mind, I began my research of silent films. I was pleasantly surprised at how rich and engrossing the films were. The

actors in the movies performed miraculous stunts, considering that they had no computer generated imagery. Real people narrowly escaped being hit by trains, fell down huge hills, and jumped from rooftop to rooftop. Likewise the narratives were just as engaging, despite being almost a century old. The humor of the different situations the actors found themselves in were funny even by modern day standards. It's a testament to the creativeness of the studios and production crews that produced these films.

During the era, most of the big name actors were the directors, producers, and writers of their films. They were given free reign on what they wanted to create. Of the big names like Charlie Chaplin and Harold Lloyd, I found Buster Keaton to be the most illuminating example. His stunts were by far the most ambitious while always remaining connected to the narrative.

The silent film era ended with the advent of sound in cinema, referred to as "Talkies". The one time novelty of seeing moving images onscreen was quickly replaced with hearing the images talk. This resulted in dialogue heavy scripts instead of visually interesting films. The comedy rested in dialogue instead of the physical humor, making the transition rocky for the silent film actors known for their physical prowess. Keaton was forced to use stunt doubles during his films because he was deemed too high of an investment to lose. The actors became just names - they were no longer consulted for their abilities in writing, producing, or

directing. This led to a slew of movies featuring the old stars that had very little charm of their earlier work.

In my research, I tried to normalize the era so that my game would feel like any silent film, instead of being a direct homage to a certain actor or style. Charles Teakon, the main character, is a visual conglomeration of different actors, with his hat being one of Keaton's famous porkpie hats while his mustache is clearly replicating Chaplin's iconic facial feature.

The preliminary research helped in developing a more informed narrative. The original idea was to have the player play through a typical silent film, but this does little conceptually to engage the history of film. One of the most interesting events during the early days of film was the displacement of the actors as sound was introduced, so I decided that narrative would include this transition. Inherent of that change is the difference in time; silent film was prominent for almost 30 years. As such, the actors aged and despite their good physical condition, wouldn't be able to perform the same stunts in their 50's as they could in their 20's. This laid the groundwork for the concept of age in this project.

My new Honors Advisor (now Andy Fedak, since Diana was no longer teaching at Syracuse) provided necessary direction and guidance for getting my ideas onto paper through the use of screenplays. Screenplays are documents that describe the narrative of a film entirely in visual terms. Instead of writing "Character X is *thinking* about the loss of his daughter", the character's thoughts have to be visually described, such

as “Character X furrowed his brow and paced the room quickly”. This was incredibly helpful in solidifying my concept, because my ideas had to be on paper in a visual sentence instead of just being a thought or image in my head.

As well, Andy helped in creating a “box” - a framework and foundation for the project. By making a small, tight box, the project has a more coherent goal and purpose. The screenplay (and it’s subsequent revisions) honed down my thoughts. With this completed, I could get started on producing work instead of endlessly altering the main idea.

Official production began in January 2010. The first screenplay introduced three acts into the narrative. The narrative would follow Charles Teakon, a rising film star, through his career as a stunt actor. The first act was about Charles filming his latest movie. Players play through the movie, which features stunts like jumping from rooftop to rooftop and avoiding large swarms of policemen. The act ends with Charles jumping off a building and breaking his leg, forcing him into an early retirement. Act two takes place 30 years after Charles’s incident when a big name studio brings him out of retirement to make a new “Talkie” movie. But after Charles is forced to use a stunt double and read a nonsense script, he quits the production and vows to remake his last movie. Act three then follows Charles through the re-filming of his unfinished movie, but with a much older (and less able Charles). By having Charles in the same setting 30 years later, players will better understand how his abilities have

changed. Also, the same setting would be helpful in condensing the amount of work that needed done because the same level could be used twice.

The final screenplay's biggest alteration was the second act. Act two originally incorporated a tremendous amount of work for the quantity of narrative purpose it introduced. The revision moved Charles from the movie set to his apartment. Here players discover that Charles has become an alcoholic and depressed by exploring the apartment space. One small room is more manageable and achieves the same plot points as the movie set.

With the screenplay finalized and the box correctly defined, work began on the game engine. The game engine is the heart of the video game. Without it, nothing changes in the virtual world and the player has no way to interact with the game. I chose to use the proprietary game engine Unity, as it allowed me to quickly implement and test code. This is inline with my iterative method of writing, which is a back and forth process of writing code and starting over. Once the first version of the code is compiled and achieves acceptable standards, I start over from scratch. By doing this, I can use what I learned from previous builds and apply it to the new build in a more succinct manner. Each rewrite is clearer conceptually and more reliable in practice.

Unlike many of the programs I developed in my Computer Science classes where the result of the program is a few lines of text, video game

code results in 3D visuals. As such, to test the code there must be object moving around on the screen. Since none of the artistic assets had been created, I used blocks in the preliminary stages of the code. The blocks were easy to implement and also provided the benefit of being easy to debug. The turnaround time for new builds was expedited through the use of simple objects, as there are no animations to worry about.

While working on the code I was developing the levels for the game on paper. Level design is pivotal to the success of the game because players can only progress the narrative by completing the levels. If the levels have overly frustrating moments or do a poor job navigating the player through the space, the user will probably stop playing the game. The design directly paces the experience and this pace is responsible for keeping the user engrossed in the game world.

The pipeline for producing artistic elements breaks down into several steps and programs. The workflow starts by creating objects in a 3D modeling program named Maya, animating those objects in Maya, moving the objects to be textured in a 3D sculpting and painting program called Mudbox, and finally exporting the objects, animations, and textures into the game engine (Unity).

While I've had experience with modeling, this was my first time using Maya. Using Maya involved migrating my abilities to a new toolset, as previously I had only used another 3D modeling program named Lightwave. It was a necessary transition because unlike Lightwave, Maya

is most commonly used by developers in the game industry. This semester was a great opportunity to learn the toolset. Along with the new tools I adhered to different modeling techniques to become a more acceptable modeler. One technique was developing models with proper polygon flow, which is the structural makeup of the model. All models are made up of thousands of polygons and when completed correctly the polygons move in a predictable manner. Polygon flow is a testament to thoughtful design and modeling expertise. Another consideration I developed was using as few polygons as possible. A model with too many unnecessary polygons taxes the game engine, making it run slower. This results in a choppy frame rate and restricts the game from running on a typical computer.

I animated using the same techniques I developed in Lightwave which allowed for a faster production time than modeling. I did some research into new techniques, but found that they were unnecessarily complicated and time consuming for the amount of animation that I needed to produce. My process started with blocking out the animations and then refining them. Blocking out animations involved putting the characters into different positions at the proper times. Once all of the positions were set the movements in-between the poses were refined. After rotating and moving all of the bones in the character's skeleton, the result is a cohesive animation.

From here the models were textured. Texturing is painting color onto the models, which are normally a single shade of grey. The color makes the models appear more realistic and provide much needed variety. Texturing in Mudbox, which is program specifically for coloring 3D models, was a completely new experience for me as I had never used a program quite like it. Mudbox is great for video games because it allows the artist to incorporate high levels of detail into low polygon objects. Essentially Mudbox creates incredibly dense polygonal models and then bakes (converts) those models into a texture. This texture is then applied to the original, low polygon count model. Doing this makes the model appear more detailed and realistic without slowing the engine down too much.

Another technique for creating lifelike models is light mapping, or placing shadows onto the textures. Lights and shadows are some of the more intensive for a game engine to compute. To alleviate some of the pressure from the computer's processor, shadows are calculated in Maya and then put directly onto the textures. Where there's a shadow, the texture become darker. Then when the models are put into the game, the shadows have already been created, resulting in less work for the game engine.

After the models, animations, and textures were completed they were moved into the game engine and integrated with the code. Changing the code from simple boxes to more complicated objects reintroduced another round of iterative code compilation. For instance,

the main character's model would twist its back improperly after rolling on the ground. Despite numerous attempts to iron out the glitch, I could not discover why it was doing that. By rewriting the code I was able to implement the character model without the improper transformation.

In conjunction with rewriting the character code, the environment needed to be properly scaled. Some of the buildings came into the project smaller than intended since the character ran across the rooftop too quickly. This required reworking the model in Maya and reimporting it into the game engine. Normally the models could be altered with quick and simple changes, like extending a building an extra couple of feet or making the legs on a table shorter. Some models needed to be completely redesigned, however, since the alterations were too large to be quickly adjusted. One of the buildings had to be three times as thick. If had just been stretched, the model would have appeared strange and out of place.

Once all of the scaling was done, the models put into their proper locations, and the code now capable of interacting with the models, the game was playable from beginning to end. I was able to move from the first level all of the way to the last level. But the game was far from being complete, as there were no checkpoints, no storyline, no tutorials, no menus, no special effects, etc. These are all of the requirements for making the game a game! No direction, no purpose, and no explanation are three qualities necessary for a frustrating experience. The game's

success rests in the player being able to play the game on their own with no intercession or guidance from me. After all, I won't be looking over everyone's shoulder when they're playing the game.

The remaining parts of the game were added one at a time. Once one of the features was added and working correctly, I moved onto the next feature. Often newer features would break some of the older features, requiring different portions of the code to be reworked. For example, trying to implement the elevator at the end of the level broke the character's controls; as soon as the player touched the elevator, they would fall straight through it and the game would end. As frustrating as some of the bugs were, this was a more lovable process than the original coding because each feature produced tangible results. I could see the game forming and coming together in real life instead of just floating around in my head. This process provided tremendous motivation after a long semester of separated work, since the models, code, textures, and story had been residing in separate programs.

This process brought the game to its current version. While it's not the complete three act structure that I had originally imaged, the latest version provides enough content and story to give players a glimpse of the full product. Players play through the first act of the game which introduces them to the game world and the narrative that will be further expanded upon in subsequent versions.

Insights

I've come to appreciate how beneficial diverse video game design can be. Going into the project I did not think that the game would require more than knowing how to program and model. But once I started to learn more about the history of film and architecture, I realized these disciplines are pivotal in creating modern video games. These fields offer incredible insights into game design.

Learning more about silent film brought about the idea of having an aging character, because so many real-life actors were displaced because of their age. In researching architecture I discovered that scholars believe social and cultural traditions are encoded into architecture, defining their form and construction. In designing the buildings in my video game I was able to extend through their form, as the mindset of the different eras are ingrained into the architecture. I appreciate the need for different people and disciplines in creating interesting video games.

By no means do these fields have to dictate what happens in a game (certainly movies and literature always don't adhere to how history has panned out) but they provide necessary inspiration. Making a game set in space opens up the disciplines of space travel, physics, philosophy of alien life, etc. Researching these fields can help in creating more engaging narratives and gameplay choices.

Creating this project has also taught me I need a more flexible workflow. For this project I developed two different production pipelines;

one developing only artistic assets and the other developing the game engine. I combined all of the components at the very end of the project, which resulted in many of those components not properly fitting together.

The artistic assets has no impact on how the game plays. The player's experience is strictly defined by all of the elements combined, not separated. There needed to be more regular and systematic builds of the game, perhaps having a biweekly build for testing purposes. This way there would be definite checkpoints throughout the development process. Problems combining the art and the code would be ironed out earlier in the process leaving more time for fine tuning the game to be fun.

Influences and Context

From a gameplay standpoint, the biggest influence of *The Great Teakon* is *Mirror's Edge*. *Mirror's Edge* is one of the more successful innovators in introducing platforming mechanics to a first person perspective. Much of the success comes from representing the main character's body onscreen, placing the character more realistically in the game world to help immerse the player. *Mirror's Edge* also rethought the controls of platformers (a genre of games that involve jumping from platform to platform) by reducing the actions to two buttons; one that moves players up, the other that moves them down. This streamlined experience made the game feel fresh by not putting a focus on complex

button presses. As well, easy to understand controls lower the learning curve for new players, which developers are trying to reach out to.

Another important video game is *Half-Life 2*, which uses the first person perspective as a storytelling device. Previously, video games relied on traditional film techniques (like changing camera angles) to tell the story. *Half-Life 2* innovated by having the story happen around the player, with the camera always positioned from the player's perspective. This helps engage the player because the camera never cuts to another angle, just like real life. The intimacy of a fixed angle is unique to video games, since in film the first person perspective is used to alienate the viewer.

Metal Gear Solid 4 is a game that failed to use gameplay and narrative to its advantage. Like *The Great Teakon*, *Metal Gear Solid 4* puts players in control of an older man. The producers of *Metal Gear Solid 4* promised that the main character's age would have implications on gameplay. Unfortunately, the only representation of the character's age was that he would randomly rub his aching back. Apart from that the character did everything as normal - running, jumping, fighting, swimming just as well as when he was younger. The game missed a unique opportunity to intertwine narrative and gameplay, but instead it only represented age through visuals and dialogue.

The narrative of *The Great Teakon* provided an avenue to research and incorporate the changes in architecture over a 30 year span. In

researching the changes of structures from 1900 and 1930 the most notable change was the emphasis of functionality. One example is the difference between the Brooklyn Bridge and the George Washington Bridge in New York City. The former has steel construction underneath but the structure is surrounded (and therefore hidden) by traditional masonry work. The latter, however, embraces the structure and makes no effort to disguise the steel. The changes in architecture are representative of the changes in culture. Architectural historians view structure and form as ways to understand culture and society. Values of the time are encoded into buildings. Using the styles of the eras in the transformation of the city that Charles inhabits was another opportunity to extend the narrative in *The Great Teakon* beyond just dialogue.

Several recent developments in the video game industry have afforded me to create my Honors Capstone Project. One of those developments is convenient, low maintenance distribution. Previously developers had to pitch their ideas to large publishers. Without a publisher, developers lacked the capital necessary for advertising, package design, large scale DVD burning, and connections with storefronts all over the country. Publishers, afraid of losing money in an investment, only published games with proven success, leaving little room for new ideas. But with the advent of Steam on PC and Apple's App Store on the iPhone, both online services of purchasing digital goods, games can be distributed digitally at almost no cost to the developer. The online

storefront allows for easy community building, with websites like Newgrounds featuring social networking to help promote developer's games.

Another important development is the release of affordable tools. Creation tools like Maya and Mudbox as well as game engines like Unity, Unreal, and Crytek have been prohibitively restrictive. Game developers were once again forced to go through publishers in order to gain the necessary capital. These tools, however, have significantly dropped in price, many times becoming completely free. This is in an effort to recruit new talent from major studios, because low cost software lets more people gain experience. In fact, last fall Unity made a free version of their game engine, hoping that developers would flock to their platform and become lifetime users of the engine. This technique trains developers to use the company's software over competitors, locking them into product loyalty and future support.

The last important development is the widespread acceptance of video games beyond a hobby. This is in large part thanks to the Nintendo Wii, which changed the game industry by introducing motion controls in addition to reaching out to non-gamers. Nintendo's efforts have brought video games into more households and has introduced video games to more age groups than ever before. The increased market of video games breaks down social barriers that once existed and prevented new users from trying to play video games. Prior to the mainstream success of the

Nintendo Wii, games were seen as an exclusive hobby or children's games. As such, adults rarely played games and self classified "non-gamers" refused to cross the gap into the gaming world. But once again, the accessible nature of the Wii eliminated social barriers of gaming.

Significance

These changes in the gaming industry have led to the rise of concept. Before affordable tools, developers had to develop their own engine and tool sets. The amount of effort involved in creating the tools made the project more about the capabilities of the toolset instead of the actual game. The evaluation lies entirely in the technology, which does little to engage a non-technical user. The recent changes, however, eliminate the time spent on developing tools, allowing for more time and effort to be focused on developing a compelling concept.

As the first 3D video game submitted to the Honors Department at Syracuse University, this project signifies an important time student game development, where projects are moving from pure tech demonstrations to pieces of art. Art is achieved through the use of concept, because a strong concept is what engages the player on a more intellectually critical level. In the case of *The Great Teakon*, the use of age challenges the player to face and internalize the effects of growing older. The player's ability to experience the change through play empowers the concept. The

challenge of growing older is commonly shared among people making this concept appeals to a wider audience that developers crave to engage.

From this point, I hope to distribute the game online and continue developing the project. Through word of mouth and social networks, the game will be able to interact with a variety of different people in many different places. The feedback provided from users will aid in changing the game to be a more engaging experience. With the game being only version one, there is room for improvement and iteration. Implementing this feedback will make for a more coherent game and enjoyable experience.

Even without this game's completion, this project offered a necessary glimpse into designing video games. The process of designing an entire video game has changed the way I think about video game design. I've had the opportunity to encounter different challenges in design and implementation, which has given me a more balanced view of how games are made. This knowledge will be invaluable as I continue making games as an artist and a professional.

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Capstone Summary

The Great Teakon is a 3D video game set in the beginning of the 20th century. Players are in control of Charles Teakon, a rising star in the booming silent film industry known for his death defying stunts and slapstick humor. During filming for his next blockbuster movie, Charles hurts himself on a stunt and is forced into retirement, given that he can no longer perform his infamous stunts. The story resumes 30 years later, a time in which Charles has become depressed and isolated. But after some of his old film buddies encourage him out of his slump, Charles decides to re-film his unfinished movie and reclaim his name to fame.

The driving concept of this project is to effectively mix gameplay (how the player interacts with the game) and narrative (the story). Players have the opportunity to control the same man at two very different points in his life; one as a young, physically capable man and the other as an aging, physically challenged man. His deterioration in abilities (like shortness of breath, not being able to run as fast or jump as high) will be directly represented in how players interact with the game. They will experience the same degradation, rather than just seeing his age through visual cues. Much like Charles has to readapt to the changing world around him, players will need to adapt to the changing controls. This direct interaction provides unique narrative opportunities that can only be found in video games.

to be focused on developing a compelling concept.

Despite being an entirely digital piece, the project started completely on paper. Video games encompass many different techniques and disciplines, so the project needed to be properly scoped. Otherwise, time could have been wasted on creating artistic assets and implementing computer programs that might end up being unused. This was especially important given the timeframe being a little longer than a semester and that only one student was creating the project. There was no time to waste creating unnecessary elements. This was done through writing screenplays, designing characters on paper, and drawing storyboards describing the player's progression through levels. These elements helped define the scope and the pace of the project.

Just like film and literature, video games must be organized thoughtfully to keep the viewer's attention. Careful attention was paid to making challenging, but not overly difficult, levels. Likewise, the levels needed to provide opportunities to have fun in the game world while also keeping the narrative consistently moving. When players get stuck in an overly difficult portion, or the narrative grinds to a halt leaving the player directionless, there's no guarantee they will want to finish the game. This results in wasted work, because large portions of the game will never be seen.

The next step in the project was creating everything outlined on paper. This meant a lot of time was spent creating object, buildings, and

characters on the computer. To incorporate them into the video game, all of the objects must first be sculpted, then painted, animated, and finally exported. This is the workflow behind all of the components that are seen on screen.

This process was complimented with the creation of the game engine. The game engine is what makes the project interactive. On their own, the objects won't move, animate, or react to the player. Instead, this needs to be implemented through code in the engine. Also, the player's interactions are defined within the engine.

Determining the player's abilities and interactions took several trial tests, because no two people play the same way. One person might have better reflexes than another, or one person might be well versed in video game playing compared to another who's never played a video game. The project must be accessible to all of those groups of people. This results in some level redesign - either to make difficult parts easier or make the level progression more obvious so that players don't get lost.

As the first 3D video game submitted to the Honors Department at Syracuse University, this project signifies an important time student game development, where projects are moving from pure tech demonstrations to pieces of art. Art is achieved through the use of concept, because a strong concept is what engages the player on a more intellectually critical level. In the case of *The Great Teakon*, the use of age challenges the player to face and internalize the effects of growing older. The player's

ability to experience the change through play empowers the concept. The challenge of growing older is commonly shared among people making this concept appeals to a wider audience that developers crave to engage.

From this point, I hope to distribute the game online and continue developing the project. Through word of mouth and social networks, the game will be able to interact with a variety of different people in many different places. The feedback provided from users will aid in changing the game to be a more engaging experience. With the game being only version one, there is room for improvement and iteration. Implementing this feedback will make for a more coherent game and enjoyable experience.