GE_EMBASSY

by

GRAHAM NARDONE

THESIS, SUBMITTED TO THE DIVISION OF VISUAL
ARTS, IN SUPPORT OF SENIOR-YEAR ART RESEARCH, *B.F.A.EXHIBITION*,
AND IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF BACHELOR OF FINE ARTS

COLLEGE OF FINE ARTS

JACKSONVILLE UNIVERSITY

2007

By signing below, let it be known that we certify that we have read this study and that, in our opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate in scope and quality as a written thesis, supporting this student's senior-year art work and exhibition, for the degree of Bachelor of Fine Arts.

Jin Pei 4/23/2007
Visiting Professor in Animation

Selin Ozguzer 4/23/2007
Assistant Professor of Computer Art & Design

Cheryl Sowder 4/23/2007
Associate Professor of Art History

TABLE OF CONTENTS

Summary of Thesis, Submitted to the Division
of Visual Arts at Jacksonville University,
in support of Senior-Year Art Research, *B.F.A. Exhibition*,
and in Partial Fulfillment of the Requirements
for the Degree of Bachelor of Fine Arts

GE_EMBASSY

by

Graham Nardone

May 2007

Faculty Committee: Selin Ozguzer, Jin Pei, Cheryl Sowder
Major: Computer Art & Design with a concentration in Animation

As technology has rapidly advanced, the need for increasing complexity in game design has become paramount. Modern game development requires large teams of artists, programmers, and engineers working congruently in an effort to create a cohesive and exciting experience. As a result, a niche position such as Level Designer has become a necessity in the development process. These individuals are responsible for creating virtual environments, and they must possess a talent for visual design and game flow.

As a Level Designer, I intend to create a level on Valve Software's Source Engine. It will be made for the *Goldeneye Source* modification and tailored for multiplayer deathmatch gameplay. It will be sized to comfortably support sixteen players

in a multi-tiered environment. It will be themed to resemble a Russian embassy set in London and, as such, will feature Western European architecture. I will utilize some of the art assets provided by the Source Engine and the *Goldeneye Source* modification to augment my visual design. The balance between graphics and gameplay will be considered so that players will be immersed in the environment, yet it will not impede movement.

I intend to make use of my faculty sponsors and the *Goldeneye Source* developers to create the feeling of a team environment. This will benefit my work from the feedback and direction given, just as an employee in the video-game industry would.

II. Introduction

Creating a well-constructed and thought-out level for a modern video-game is no small task. The evolution of technology has ensured that with each ensuing generation of games, the time needed to construct a level will only continue to multiply. With this knowledge in hand, as I work through this thesis project it will be integral to follow a proper process of research, conceptualization, construction, and then implementation. With the self-discipline to follow this structure for development, I will streamline the development process and manage to construct a full level in a reasonable timeframe.

By the conclusion of this body of thesis work, I hope to have achieved a creation that would normally encompass the work of multiple members of a development team. Over the course of this project I will take on the role of a researcher, a concept artist, a modeler, a texture artist, and, of course, a level designer. The experience that I will gain

from tackling all of these challenges will better prepare me for entering the industry and carving my own career path.

It is my eventual hope that the effort invested into this thesis project will go beyond my education at Jacksonville University to become a part of the game I am developing, *Goldeneye Source*. This would ensure that my work shown in the *B.F.A. Exhibition* will only serve as a launching point for what my level will eventually grow into, as I continue to refine and improve it over time.

III. Conceptualization

I see myself as an enthusiast who has been given the opportunity to pursue something that I love. While I do not feel a natural inclination towards "art," I am very passionate about my work. As a child I was always drawn to electronics, technology, and the swiftly expanding videogame industry. My love of playing games eventually became a love of creating games, and this path has led me to where I now find myself in life.

I consider *ge_Embassy* to be the culmination of my acquired skills in level design. Levels can be thought of as containers for gameplay, or the world within which one plays. I am self-taught in videogame design, having devoted myself to this over the past decade, and continue to hone my knowledge as my interest grows. This project symbolizes the first level I have created from conceptualization to finished product in a manner similar to what would be done within the industry.

I hope people will explore both the visual and functional elements of the environment I will create. A level must not only be eye catching, it needs to be easily

navigated. Videogames tend to be an exaggeration of what can be found in real life. Architectural and monetary restraints that may limit a real building are not roadblocks in designing virtual environments. This allows my imagination to run wild when taking real places and turning them into exciting experiences. Viewers should see a reflection of these ideas put into practice within *ge_Embassy*, as I intend to design a grand environment that will be conceptualized from the ground up for non-linear combat. My ultimate goal as a level designer is to create a symbiotic relationship between immersive environments and intuitive gameplay.

IV. Thesis Investigation

Level Designers have one of the most important jobs when creating a game. They are responsible for putting everything together; from 2D/3D art to visual effects, and artificial intelligence, the designer is responsible for making it all work in a seamless experience. The first element of interaction between the game and the player is the level and, as such, special attention has to be given to this aspect of development.

Perhaps one of the simplest things a designer can do in the pursuit of an exciting level is to put themselves in the shoes of a player. If one can predict how a player will act, or respond to certain events or situations, one can design a level to fit those actions. Frustration, repetition, and unfairness are three things that a player should never experience within a level. Alternatively, a player should be having fun, being challenged, and feeling a sense of accomplishment during their playtime (Valve Software).

Of course, before creating a level it is important to understand how the game you are developing for works. Having a comfortable grasp on various gameplay elements and features can give a better idea of things to utilize that will fit with the planned level. The next step is to define the level with a theme. Try to think of one sentence that will instantly give anyone a mental image of what they can expect to see when playing it. After choosing the theme, an excellent way to begin designing the level itself is to choose a "climax" of the level (Fig. 1). This is essentially the section that will have the most work and thought poured into it, and the area that players will instantly remember when they think of the level. Once a theme and a climax are established, the design for the rest of the level should begin to fall into place naturally.

Figure 1.
The City Plaza, the 'climax' of the introductory level in *Half-Life 2*.

It is important to draw an overview of the map and begin to establish where important gameplay elements will occur on it. For single-player levels this may include pointing out where scripted sequences will take place, or where the player will encounter enemies (Fig. 2). In multiplayer the design focus will likely shift to weapon spawn points, or game flow chokepoints throughout the level.

One of the most integral aspects of a level is to give the player an objective to accomplish. No matter how visually arresting an environment may be, a player will wander aimlessly and soon lose interest if not given an objective to pursue. In single-player levels this can be a complicated task, involving scripting, dialogue, and other dynamic elements. Considering that I will be focusing on multiplayer, this task is simplified for my project. In multiplayer the objective is already defined for the player through the type of game being played, and the level should serve, above all, as an interesting backdrop for the action.

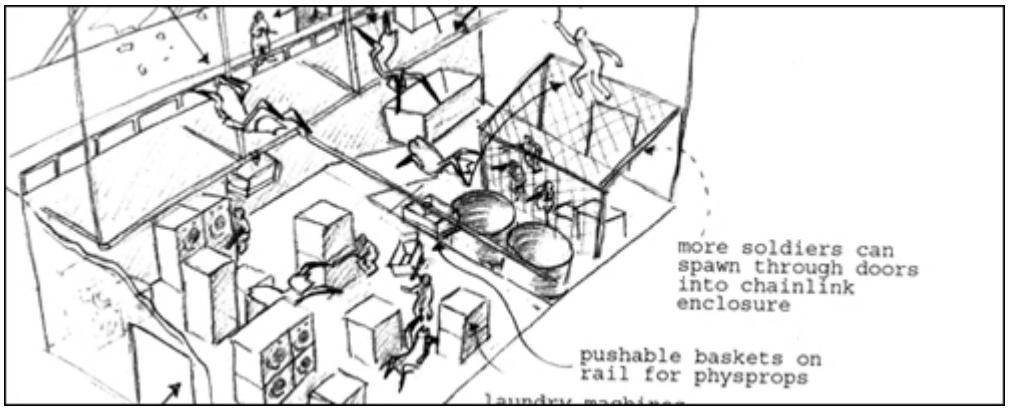

Figure 2.
A concept sketch of a section of the Nova Prospekt level in *Half-Life 2*.

Orientation is an often missed step in level design. It is also another example where it is an easier element to accomplish in a multiplayer level. One of the best ways to help a player establish his orientation is by changing the textures used from area to area (Fig. 3). This simple visual queue subconsciously registers with players as they move through the level, and provides reference points to return to should they desire something from that area (Valve Software).

Another consideration when designing a level is to properly plan space for different weapon types. A normal first-person shooter will feature weapons that can be slotted into three different categories: close, medium, and long range. It is important to decide whether the map you are constructing will support only one of these weapon types, a combination, or all three. With its small rooms and narrow hallways, *ge_Embassy* supports close and medium weapons as its ideal play style. However, between the grand hall and atrium, there is enough space provided to make a longer-range weapon a viable alternative. Most multiplayer maps are designed to allow players to choose from all three, as it cannot be pre-determined what weapon sets a server will use beforehand.

Figure 3.
A basic but effective example of textural orientation in *Counter-Strike*.

Only at this point do the immersive elements of a level, such as visuals and sound enter into the design. While many people would label these as the most important parts of a level, no matter how captivating a game initially looks, players will quickly lose interest without exciting gameplay to back it up. Therefore, visuals should always be considered as a way to complement one's game design. The visuals of a level should

always be built from large to small. While such a style may go against conventional thinking, it is far easier to alter a level that is still in construction when it consists of only the large sections rather then finite details.

Figure 4.
A basic area of a map can look very eye-catching with a striking use of lighting.

Once a level's basic blueprint has been mapped out, the next visual aspects to address are the textures and lighting. These should be done congruently, as they really depend on each other to maximize their effectiveness. As mentioned earlier, textures can help orient players within a level, and the same can be said for lighting. Lighting not only can highlight and draw attention to certain points of a level (Fig. 4); it can be used to lead a player through a level. Darker sections are typically areas that players will explore after they have thoroughly examined a well-lit room. Another consideration is that the color of a light or texture will convey a certain mood or emotion to the player. The darker an area is colored, the more unsafe a player will feel within it. Dark blue tones will create a scary atmosphere for a player. A light red tone will convey a feeling of warmth. Softer tones of yellow can establish a sense of balance. The lighting of a level should follow a few simple conventions. The three basic rules are to always have a

source that the light is originating from; always make sure that the source fits with the amount of light that it is generating; and make the light a color that fits with the environment (Valve Software).

Sound is an extremely important part of level design, and it also is the aspect that is most commonly underutilized. Like everything else within a level, sounds are used to transform a virtual environment into a believable world. It is vary rare in real life to be in an area with absolutely no sound, so the level designer's job is to find appropriate ambient noise to fill various sections of a level. Two different types of sounds are used to accomplish this subtle design element. The first is a background sound, such as hearing an air-conditioning system running in an old building. Unique sounds are then layered on top of the background sound, serving to break the monotony of a background sound continually looping. A unique sound could be anything from hearing a thunder clap to the beeping of a computer. Unique sounds are not played continually; instead they should be used at random intervals, to add the sense of an actual world that exists beyond the players own actions.

Figure 5.
The use of fog completely changes the atmosphere of this scene.

The final piece of the puzzle in a successful level is the addition of special effects throughout the map that make it a spectacular experience for the player. When appropriate, effects such as sparks, smoke, water drops, dust particles, and many more, enhance the sense of a living world (Fig. 5). Level designers have a tendency to be heavy handed with the addition of special effects, but more subtle additions will greatly increase the believability of the effect, rather than causing it to stick out. Two great examples of special effects are present within *ge_Embassy*. The first is in the basement, behind a locked gate that the player cannot pass through. From a distance, a broken overhead light can be seen, that occasionally emanates showers of sparks. It is important that this effect is beyond the player's reach, as close examination of it could break the illusion. The second example is in the kitchen's freezer, where players instantly know that the room is sub-freezing temperatures by the layer of swirling frost on the floor, and the condensation forming by the air vents.

V. Media/Materials and Processes

For this project my level has been created on Valve Software's "Source Engine," the technology behind award-winning games such as *Half-Life 2*. Most of my work has been completed by using the "Valve Hammer Editor," a program created specifically by Valve for editing their game engines (Fig. 6). Additional work has been carried out within programs such as Photoshop, Illustrator, and Lightwave, as I created custom-art assets for my level.

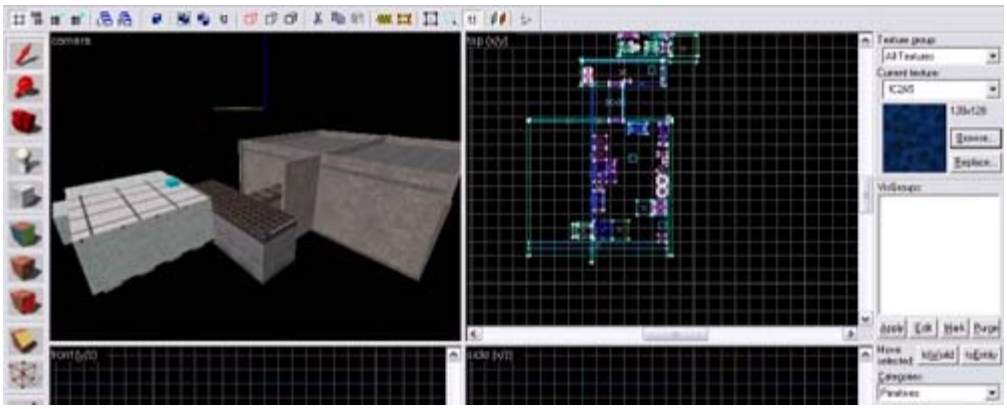

Figure 6.
A view of the Valve Hammer Editor that is used for level design on the Source Engine.

The first step in level design, as previously discussed, is to decide the theme that a level will adhere to and to conduct preliminary research so that the work will have a consistent flow. Early on I selected the setting for my map, a Russian embassy located in London. I therefore studied a mixture of Eastern and Western European architecture to establish the general look that I wanted to achieve with my level. This research helped to guide my decisions in both the geometry of my structures and the choice of textures I used for decorating their surfaces.

Following the research came another important step that prior to any work on the computer. In this stage I drew concept sketches of what individual rooms of the Embassy were to look like (Fig. 7) and, most importantly, I drew a blueprint for the various floors. It was integral that I have a functioning blueprint before beginning the creation of the level digitally, because future problems with the layout could be caught and corrected in an early stage. It is far easier to correct any scaling or game flow issues while it is still just a sketch, than attempting to rearrange all of the work once it has been built on the computer. I found this sketch work to be of particular importance when designing the

second floor, as I went through various iterations of how I wanted to separate the residential quarters from the office spaces that would be housed there.

Figure 7.
An early test of *ge_Embassy's* outer wall based upon concept sketches.

An important contrast between level design and 3D modeling is that any sketch work done for a level will remain simply that - a reference sketch, instead of being imported to the computer to be used as a backdrop to model on top of. My sketches are simply used as loose guidelines to be inspired by, rather than strict limitations to be imposed on my creations. At this point I was able to launch the "Valve Hammer Editor" and begin the brushwork of my level. Brushwork is the foundation in the creation of a level, and it was this process that I used to form the preliminary shapes to my rooms (Fig. 8). In level editing, a brush can be thought of as a basic geometrical element that will form the shape of things such as walls, ceilings, floors, and support pillars. Any architectural element that is not too complex in shape will likely be created using a brush.

While placing these initial brushes, it is important to build them in the proper scale in relation to the player who will be running through this world in game. To this end, for the initial pass through the level, I did not place proper textures on the surfaces.

Instead, I employed developer textures that have grid elements to them, so that I could easily coordinate the size of the various brushes that I was using.

Figure 8.
The basic brushwork for *ge_Embassy's* layout begins to take shape.

Once all of this basic architecture was in place, it was time to go through the level and place all of the entities that govern the gameplay that the player will experience in the level. Entities are not actively seen by the player in the level; instead they are invisible elements placed within the level that tell the game engine how to behave and what effects to create on screen. Some of the most frequently used entities tell the engine where players should start, what lighting to create in a room (Fig. 9), and where weapons should spawn in a map. Entities can also be used to add detail to a level, such as environmental effects like fog, rain, or snow. Entities can trigger sound effects, control the properties of an animated model, or teleport a player to another section of a level. Anything that is done within a level beyond the basic architecture is always controlled by an entity. In a finalized map, there will generally be thousands of hand-placed entities that the level designer has to tweak to provide just the right experience.

The final stages of level design entail the visual elements that will be the most recognized and remembered by the player. The purpose of saving this portion of work

for the end is that, if it becomes necessary to go back to a previous stage and alter your work, you will then likely ruin the visual detail work that you have carefully placed. This would cause you to have to restart your work on an area almost from scratch.

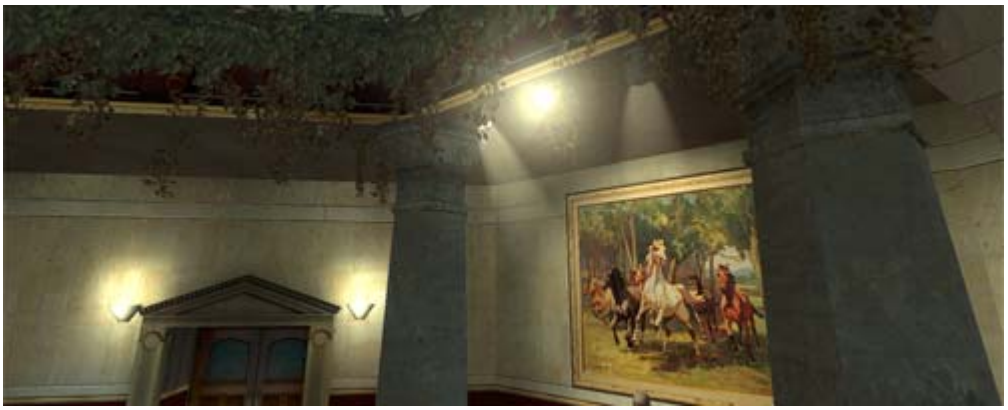

Figure 9.
The beams of light illuminating the painting are examples of entities.

The first element of adding visual spice to one's environment is removing the grid textures used for scaling the architecture and replacing them with textures appropriate to the level's theme. When I tackled this process with *ge_Embassy*, I was forced to do it in two parts, due to the lack of viable art assets in the Source Engine. I went through the various rooms of the level and selected the textures in the Source Engine that most closely matched the feel I wanted to capture with each room. After I completed this step throughout the map, it became obvious that I needed to devote a significant amount of time to creating custom textures that would bring my level's theme to life.

Through the use of texture websites, photography websites, and taking my own camera to locations in Jacksonville FL, I built a library of photos that I could digitally alter into game-ready textures. I brought these photos into Photoshop and Illustrator, where I could digitally alter them. The typical process for turning a photograph into a texture involves cropping the image until it is sized by a power of two. I then used the

offset filter so that I could see the edges of the image and blended them together so that the texture tiled properly when it was repeated over a large surface within the game. The next step within this stage is usually sharpening the image through a variety of filters to give it a crisp look. I created a normal map on textures where I wanted to emphasize the bumps or the reflectivity of a surface (Fig. 10). This is a special texture the Source Engine will render as having increased depth on its surface. This excellent method is for making a flat wall look like it has a deformed surface, without creating additional geometry for the engine to render.

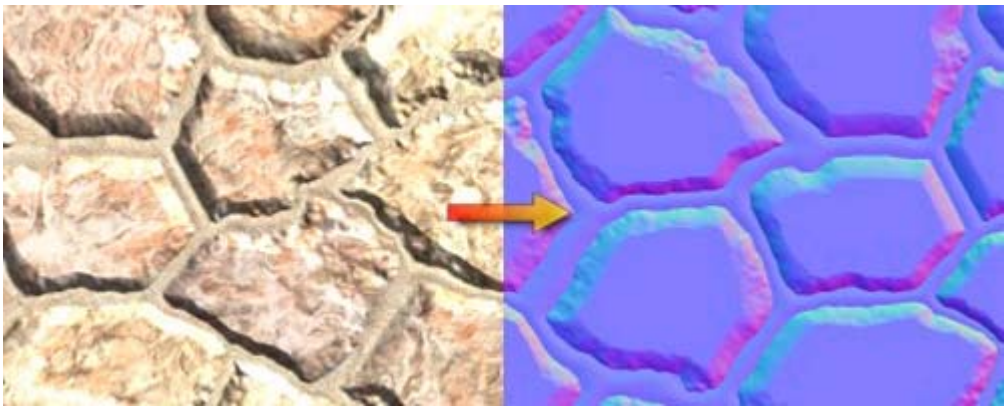

Figure 10.
To the left is the original photo; on the right is the normal map that will give it depth.

After the creation of all of these custom textures, I made another pass through my level to add them all into their intended places. With these new art assets in position, my level looked less like a level built for *Half-Life* and more like an individual artwork that will stand alone on its own merits (Fig. 11). Upon the level's completion, I estimate that approximately 85% of the surfaces are covered with my own custom texture assets.

Figure 11.
Custom textures create an ornate look that could not be accomplished by stock art assets.

The final step in level design is to add many props to my level. Props are essentially entities, but because of their unique contribution to a level, and the step at which one adds them, justifies speaking about them separately. Props are complex visual elements that add all the detail to a level to transform it into a believable and entertaining world (Fig. 12). A prop is technically a 3D model that is imported from a program such as Lightwave, 3D Studio Max, or Maya. An example of an object that would be placed in a level as a prop might be a chair or a light fixture. While these objects technically could be created with brushes, a 3D modeling program provides the designer with far greater control in creating intricately detailed objects. With this process, an item set as a prop is also better optimized when running in game than an object made solely of brushes. Another benefit of a prop is that I can control its behavior within the game. For instance, I may create a room that is filled with chairs. If a player were to enter this room and shoot the chairs, he would expect them to react to the force of the bullets. Through the entity controls, I can give a prop physics that enable it to react to such actions within the world realistically. Due to this, the worlds I create became far more believable and immersive.

Figure 12.
The utilities, counters, and the items placed upon them are inserted into the map as props.

Within my level, I have many such props that are interactive to keep the players from feeling like they are existing within a sterile world. At the same time, I had to be careful to not allow this interaction to become a detriment to gameplay. In certain cases, if there are too many props that are able to be moved by the player, they can end up blocking routes of movement, thus hindering the map's playability. This all has to be carefully balanced along the way by the level designer through multiple play tests. One of the most impressive examples of physics enabled props within my level is in the freezer inside the kitchen. Within it there is a row of meat hooks hanging from the ceiling. As the player shoots or runs into them, they swing from their wires in a natural motion (Fig. 13), eventually coming to a stop through the force of gravity placed upon them.

After all of these steps have taken place, a level is essentially complete. However, professional level designers will likely find that, through extensive play testing and possibly even in future patches to a game, they will need to revisit their designs to tweak them in pursuit of a perfected level. *ge_Embassy* will be subject to this process as

well, as I have plans to expand it further than what will be shown in the *B.F.A. Exhibition*.

Figure 13.
The meat hooks react through physics after force is applied.

VI. Sources of Inspiration

Having thoroughly immersed myself in the culture of videogames, I have absorbed many aspects of their design and construction over the past decade that have shaped the level designer that I am today. To pay proper reverence to all the games that have influenced my work in this project would be a long-winded effort. For the sake of brevity, I will discuss, instead, some of my major sources of inspiration that have not only had a hand in the visual aspects of my art, but have actually changed the entire process I use to create my designs. Companies such as id Software and Valve Software have reached the pinnacle of their industry due in no small part to their careful attention to the process, which ultimately produces excellent products.

Id Software

After being founded in 1991, id Software has created best-selling franchises such as *Wolfenstein*, *Doom*, and *Quake* (Fig. 14). I consider them to be the father of the First-Person Shooter genre. This type of game, more commonly called a FPS, is my preferred medium for level design. Being the ones that started this entire segment of the industry, there is much I can learn from id Software's process and design philosophies.

The technology behind the company is largely driven by one man: John Carmack. As a programmer, as well as co-founder of id Software, Carmack is responsible for the advances in technology in each game id Software develops. Before the development team can begin work, Carmack builds a new game engine from scratch.

Once this foundation of development code is in place, the main body of work on a videogame can begin. Id Software has always prescribed to the theory that a more intimate workplace with fewer employees will, in turn, produce more cohesive games that express the original artistic vision. Currently, their staff consists of only twenty-two employees whose work is divided amongst concept artists, modelers, animators, level designers, programmers, and sound engineers. Steps are taken to ensure that the final product feels like

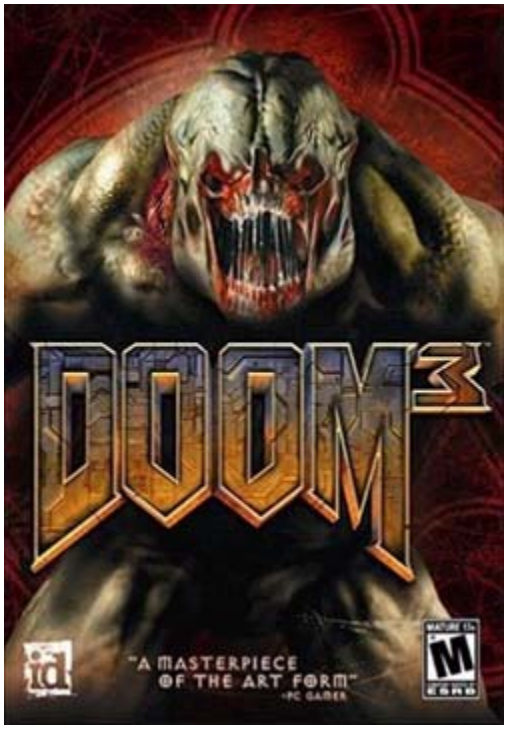

Figure 14.
id Software's most recently developed game; *Doom 3*.

a complete game, not a disjointed product cobbled together by many people. Each department routinely works together, even though their area of importance may not have a direct impact on one another's work (Kent, Steven). This method of interaction within the familiarity of a small group has many benefits to my own designs. To this point I have not yet had the opportunity to work in a niche role amongst a large group, so id Software's approach to development has had a profound impact on how I tackle projects. Throughout the course of this project, I have been able to gather advice and feedback from my committee sponsors and peers, which has mimicked this process.

At id Software, there is never a point in development for a level designer where it is an independent process. As the level designers build the basic geometry of a level, they are paired with an artist who will create the visual elements that will complete the level. While my thesis project has been an independent study that will not have any outside contributions to it other then feedback, I have taken part in this collaborative process through the use of existing in-game art assets. Ultimately, a level designer's work is never truly their own, but a team effort that everyone related to the project has a hand in. As a level nears completion, the aspect of teamwork is magnified in intensity. Id Software employees will regularly hold meetings, with the entire company attending. Afterwards, feedback is given on needed improvements, and work begins anew to incorporate the suggestions. This process is repeated as many times as is necessary, until everyone is satisfied with the quality of the level (Kent, Steven). Many parallels can be drawn between this system used by id Software and the same meetings and faculty critiques that my project has undergone before being deemed acceptable.

Valve Software

Another current high-profile company, Valve Software is a relative newcomer to the videogame industry. Having only developed and shipped two games internally - *Half-Life* and *Half-Life 2*, they are still exploring their creative boundaries. However, they have attained unprecedented success with their products (Fig. 15). They directly correlate this outcome with a design philosophy that they call the "Cabal." In terms of art style, when considering things such as form and functionality, I find my artwork to have the most similarities with what Valve Software produces. I not only have a great respect for their methods and their products, I continually strive to strike the same balance of visuals and gameplay that their games consistently offer.

When considering the success of their first game, *Half-Life*, it would be a natural assumption that its development process was a smooth one. In reality, Valve Software struggled through the creation of *Half-Life* as they worked towards finding an identity for their new company. Problems arose out of integrating a large team of artists and game-play designers into the development process. Attempts at imposing formal methods of interaction between team members proved pointless, and leaving each department to its

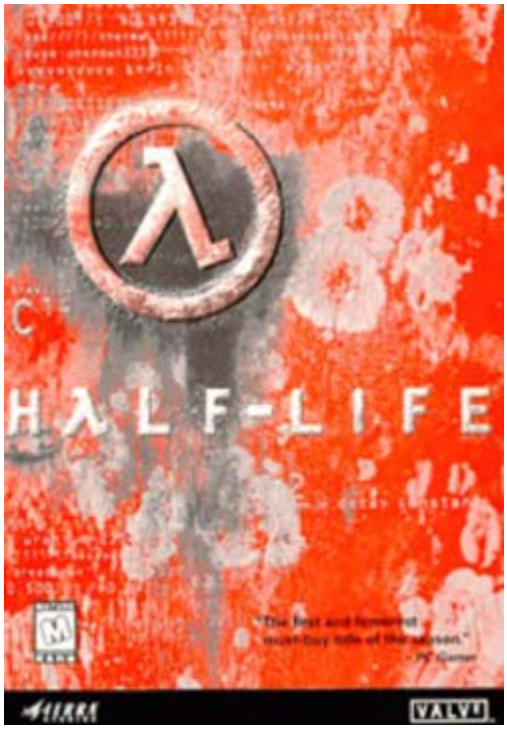

Figure 15.

Valve Software's worldwide best-seller; *Half-Life*.

own devices was disastrous (Birdwell, Ken).

Deep into the development of *Half-Life*, Valve Software realized that the game was not being created to the standards of quality they desired. They realized that this was a reflection of their misguided development process, and that radical changes would have to be made at the foundation of how their company operates to achieve the desired results.

To bring this new direction to fruition, a group of employees were tasked with taking every great idea from their abandoned work and incorporating it into a small level. When they were finished, the entire team sat down to play through it. The results were fantastic; this was the vision that the entire game needed to create a fun experience. The challenge became taking this small fraction of what would become the game and fleshing it out into a full product.

This process would combine the strengths of a cross section of the company, putting them together in a group called the "Cabal." The task this group was set to was to create a complete design document for the game, detailing the exact specifics of everything that would happen within the game. Cabal meetings were semi-structured, brainstorming sessions that would focus on specific areas of the game. Members would continue to discuss an area until they were satisfied with everything that would take place within it (Birdwell, Ken).

In watching how Valve Software has grown as a company and has pushed the industry forward over the years, it has been obvious to me that they are a company to understand and parrot if I want my own projects to succeed. I have a deep admiration for the concept of the Cabal, and this thesis project is greatly enhanced by its influence on

me. This thesis paper can be thought of as my design document for the project, and as my paper grows to include my thoughts, successes, and failures, so too does my artwork. Much of this project has been an introspective thought process where, rather then being tasked with reaching certain objectives, I have been free to think on my own about achieving a uniquely original piece. In the same way that Valve Software has separated themselves from the rest of the industry through their polished designs, I too hope to distinguish myself from those who have come before me in the major of Animation by offering something Jacksonville University has never seen before.

What I take away from examining leaders such as id Software and Valve Software is that organized teamwork is paramount to finding success in the videogame industry, and those same principles can be applied to one's own individual projects. The process of design is different between the two; however, the overall goal of teamwork and constructive feedback remains the same. In forging ahead on my thesis project, I have sought the guidance and creative support that my sponsors and peers will provide.

VII. Conclusion

The ultimate success or failure of my thesis project rides on the gaming public that downloads and plays it once it becomes a part of *Goldeneye Source*. In the meantime, my personal feelings of accomplishment were affirmed at the opening of the *B.F.A. Exhibition*. I was very pleased by the reaction of viewers as they interacted with *ge_Embassy*. It was also interesting to note the type of people that my artwork attracted at the opening reception. While I saw both men and women from all age ranges try

interacting with my level throughout the night, the crowd that it predominantly drew was young men. In addition, when a young male started playing the level, typically other young men would begin to congregate around it. It was an interesting phenomenon to watch unfold and truly spoke to the common video-game demographic. Perhaps one of the most satisfying things that I observed was various children who played it and seemed enthralled while exploring the level for an extended length of time.

In looking back on the extensive work that I invested into the creation of *ge_Embassy*, there are a few notable missteps that led to more work for myself, or necessary cuts from the initial design. Something that should have been blatantly obvious to me when I picked the initial theme of a European embassy was the lack of available art assets in the Source Engine to support such a setting. Had I given more consideration to my choice of theme, I might have eventually settled on a more appropriate environment that would lend itself to the textures and models that I had freely available for use. This decision would have led to spending far less time during the project gathering photography assets and turning them into useable game textures.

Another issue that became obvious as work on the level progressed was that my initial blueprint for the level layout was far too ambitious for the timeframe I had in which to complete the project. In addition to the two-storied embassy's interior, original plans called for gardens surrounding the embassy and non-interactive city streets beyond its perimeter walls. A significant amount of time was spent in the initial construction of the outer facade of the embassy, which ultimately had to be scrapped for the *B.F.A. Exhibition* version of the map. Thankfully, the work done will not be a complete waste, as I will revisit the map in the future to complete the exterior. The very first concept

sketches I did of the level had plans for an underground parking garage and a roof-access helicopter-pad, which I smartly recognized as being excessive prior to beginning work on the computer.

Despite these problems, I can say that I personally feel *ge_Embassy* is a significant accomplishment and a resounding success. This is the first time I have taken a level concept from start to finish and have it consist solely of my own original design and layout. The level provides varied gameplay that can be explored in a non-linear fashion, making it ideal for multiplayer combat. In addition, I feel as though the custom textures I imported into the Source Engine for use in *ge_Embassy* really help bring the level's atmosphere to life. I am very pleased, that thanks to the custom art assets, the level feels like a unique experience that will not be available anywhere else. I felt that I overcame a personal challenge by using an ornate theme throughout a building with many rooms, while still creating unique areas with visual interest. I also kept in mind that gameplay would be of paramount importance in the design and would never take a back seat to striking visual elements.

To conclude, I eagerly look forward to a bright future for *ge_Embassy* as it becomes available to the public and continues to evolve. Every time that I create a new map, no matter the technology I build it upon, I find that there are always new things to learn and techniques to master. I am exciting about applying my increasing skills to continuing this project and any future endeavors that I undertake.

VIII. Acknowledgements

First and foremost, I would like to thank my parents for their never-ending support throughout the years as I have completed my education. My Dad, for always providing everything I would need to succeed, and my Mom for her continued support as I move forward. I only wish that my Dad would have had the chance to see all that he invested into me ultimately come to fruition.

I would like to thank the art faculty and the students pursuing art majors at Jacksonville University. Their feedback and support on my thesis project has been a critical part of maximizing the potential of my designs. In addition I would like to thank the art faculty at Florida Community College of Jacksonville for instilling in me the fundamentals of art, which made my smooth transition to JU possible.

In particular, I would like to thank my senior-thesis project committee members, Selin Ozguzer, Jin Pei, and Cheryl Sowder. The various aspects of my project have benefited greatly from the significant amounts of time they have spent evaluating my work. I also greatly appreciate their understanding during a difficult family emergency which interrupted my senior-thesis work.

I would be remiss to not profusely thank my fellow members of the *Goldeneye Source* development team, whose feedback directly influenced my design, my visuals, and my game flow. Their art assets, in addition to their knowledge, have helped immensely in bringing my level to life. In addition, I likely never would have had the chance to work on *Goldeneye Source* had it not been for the dedicated people on the

Counter-Strike development team. They took a chance on me, and the experience gained for working on such a high-profile mod will serve me well throughout my career.

There are several videogame companies that I feel I should acknowledge for the direct influence they have had on me, both in influencing my career path and in the skills I have gained from studying their work. Valve Software deserves all of my recognition for their *Half-Life* series, which has opened multiple doors of opportunity for me. Further, they have provided their venerable Source Engine which serves as the technology base for my ge_Embassy level. Id Software I thank for originating the job position of level design which I will seek in the industry following graduation. Rare Software and Nintendo deserve equal thanks for serving as the developer and publisher of *Goldeneye* on the Nintendo 64. This revolutionary videogame has shaped my design philosophies more then any other in my life and will always stand as a significant influence over my work.

Finally, I would like to recognize a few sources that have been especially important for this particular project. Robert Johnson at Capcom has been instrumental in assisting me with getting a foot in the door at industry events, and I value his friendship. *Resident Evil*, a game that Mr. Johnson worked on, was one of two important references I used in the design for the interiors of *ge_Embassy*. The other major reference comes from *Rainbow Six* by Red Storm Entertainment. In my humble opinion, their European Embassy level stands as the most accurate depiction of such a building in videogames to date.

IX. Thesis Body of Art Work

ge_Embassy

video-game level design, *Goldeneye Source*, *Half-Life 2* modification, 2007.

Figure 16, *Goldeneye Source* level, 2007.
Atrium / Lobby – A skylight offsets the plants and artwork that adorns the walls.

Figure 17, *Goldeneye Source* level, 2007.
Reception Hall – This room is intended for guests to mingle at social events.

Figure 18, *Goldeneye Source* level, 2007.
Meeting Room – Important dignitaries are seated around the table for discussions.

Figure 19, *Goldeneye Source* level, 2007.
Main Hall – This grand space provides quick access to many areas of the Embassy.

Figure 20, *Goldeneye Source* level, 2007.
Basement – This closed off area is accessed only by the Embassy's staff.

Figure 21, *Goldeneye Source* level, 2007.
Ballroom – This room is used for all of the most important social functions.

Figure 22, *Goldeneye Source* level, 2007.
Ballroom Side Room – These twin raised rooms provide space to relax off the main floor.

Figure 23, *Goldeneye Source* level, 2007.
Kitchen – Out of sight of guests, the staff prepares grand meals for Embassy functions.

Figure 24, *Goldeneye Source* level, 2007.
Freezer – Cold air pumps into the freezer, creating a layer of frost on the floor.

Figure 25, *Goldeneye Source* level, 2007.
Ambassador's Office – Used for more intimate meetings and any press conferences.

Figure 26, *Goldeneye Source* level, 2007.
First Floor Hallway – This elaborate area dazzles visitors with gleaming vaulted ceilings.

Figure 27, *Goldeneye Source* level, 2007.
Stairwell – Narrow and steep, these stairs provide alternate paths to the second floor.

Figure 28, *Goldeneye Source* level, 2007.
Second Floor Hallway – Vertical lights accent this stately wooden hallway.

Figure 29, *Goldeneye Source* level, 2007.
Bedroom – Living quarters are provided for visiting dignitaries with extended stays.

Figure 30, *Goldeneye Source* level, 2007.
Bathroom – A personal bathroom is connected to each bedroom for guest's convenience.

Figure 31, *Goldeneye Source* level, 2007.
Offices – Confidential government work takes place in the 2nd floor office space.

Figure 32, *Goldeneye Source* level, 2007.
Lounge – In the middle of the offices is a lounge for use by employees and guests.

Figure 33, *Goldeneye Source* level, 2007.
Facade – An early look at the outdoor concept design before it was cut from the project.

X. Bibliography

Birdwell, Ken. "The Cabal: Valve's Design Process for Creating Half-Life." *The Game Design Reader, A Rules of Play Anthology*. Eds. Katie Salen and Eric Zimmerman. Massachusetts: The MIT Press, 2006. 212-225.

Kent, Steven. *The Making Of DOOM 3*. California: McGraw-Hill/Osborne, 2004.

Valve Software. *Half-Life 2 Raising The Bar*. California: Prima Games, 2004.