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VIRTUAL RUSH

By

JEFFREY FEDER

A THESIS

Submitted to Michigan State University In partial fulfillment of the requirements For the degree of

MASTER OF ARTS

Department of Telecommunication, Information Studies and Media

ABSTRACT

VIRTUAL RUSH

By

JEFFREY FEDER

First impressions of a Fraternity are very important during the "Rushing" process. Some organizations rely on their history, some on distinguished alumni, and others rely on their house on campus, and the members that reside within it.

In order for a Rush to be successful, it should result in more new initiates into the Fraternity than the number of members graduating every semester, thereby achieving an increase in membership size. Rush guests might be interested in joining a particular house because they have friends in that house, or they might be interested in being part of the Greek system as a whole, and not sure what Fraternity is the best for them to join.

Those potential Rush guests that are not sure what house to join may visit several houses to help in making their decision. This is generally not good for the smaller houses, because they are not as noticeable. Since there is such a limited time allotted to visit houses during the actual Rush week, I decided to come up with an alternative, the Virtual Rush, so guests would be able to come and visit our house whenever they felt like it, without being obligated to squeeze us into their tight schedule at a particular time.

ACKNOWLEDGEMENTS

When I first came to Michigan State University as an undergraduate freshman, I had an idea of what I would like to do for a living. I always told people that asked, that I wanted to do special effects in movies, create video games, and do things with virtual reality. However, since I didn't want to limit my options, fully knowing that most students go through multiple majors throughout their college career, I decided to enter MSU as an undeclared student. Within a semester, I found out about the Telecommunication department, and never looked back.

Throughout the years, I found a pleasant home within the Telecommunication department, so much so, that I decided to stay here for my Master's degree as well. I would like to thank Carrie Heeter and Brian Winn for helping me throughout the years and for being nice enough to let me attend some Master's level classes in the last years of my undergraduate study, which truly helped set the stage for my Master's to go as smoothly as it did. I would also like to thank Bob Albers for being nice enough to grant me a Graduate Assistantship for my one year as a graduate student. Without that job, paying for my Master's would have been ever so much more difficult. Teaching really helped me further develop more expertise in my field, and greatly helped me become more confident with my public speaking.

I would like to thank both Jesse Page and Andrew Bare for their help in being part of a team of researchers with me during our experiments that are used in Chapters 2, 3,

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and 4. We were certainly an interesting team, and I really enjoyed working with both of you.

Most of all I would like to also take this time to thank my parents for their support in every way throughout school, and throughout my life. They're great people, and great inspirations.

Lastly I would like to dedicate this paper to Pauline Spector. She was my grandmother that unfortunately passed away during the time I was working on this thesis. I love you and miss you!

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CHAPTER ONE

INTRODUCTION

In the beginning of every semester, the Greek system goes through a recruitment session referred to as "Rush Week". During Rush, both Fraternities and Sororities conduct different events and welcome potential members into their orders.

There is a general process Fraternities undergo to recruit new members.

PRE-RUSH WEEK EVENTS

Gaining potential interest:

- Invite friends from class, sports, dorms, etc.
- Post flyers around campus (dorms, bus stops, tack boards, classrooms, etc.)
- Put up A-Frames in selected locations (wooden boards with contact information, along with information about the Fraternity and its famous members.)
- Wear Rush shirts around campus
- Sponsor events along with anything else to help get the Fraternity's name out

RUSH WEEK EVENTS

Activities at the Fraternity house:

- Play video games or sports
- Offer free food and drinks, along with different themed food days

- Have conversations about the Fraternity locally and nationally (if applicable)
- Watch TV
- Give personal tours of the house, along with answering any questions a Rush guest might possibly have.

NEEDS

On Michigan State University's campus, there are approximately 26 Fraternities that range from 15 to 120 members. The Delta-Psi Chapter of the Kappa Sigma Fraternity is one of a few "small" houses on campus. To be labeled as a small house on campus, you must have less than 50 active members.

The Fraternities with a large amount of members have some benefits over the smaller houses. Those houses have more financial stability and are able to afford to live in bigger homes, along with being able to have one-on-one parties with some of the bigger Sororities. The only way that smaller houses are able to have functions with the bigger Sororities requires multiple smaller Fraternities joining together to be able to match the numbers of one of the bigger Sororities.

A drawback of having a large Fraternity with over 100 members is the fact that it is very difficult to be able to really get to know everyone in the organization. The Delta Psi Chapter has been fortunate in that it is able to encourage a strong bond between members within its brotherhood. Every member knows everyone very well, and they all are very close. They believe that the limit of where you can start to lose that general knowledge of all the members is beyond the 60 member mark. They have been aiming to attain and sustain a 60 member house.

When a house has fewer than 50 members, it is very hard to sustain the life of the house as a whole. In every semester there is a recruitment period, but there are also a number of members that graduate.

The Delta-Psi Chapter has been a part of Michigan State University's campus since 1937. Throughout the chapter's existence, there has been a big fluctuation between active members from semester to semester. There were points where there were as few as ten members, and as many as 55 members. However, in the past ten years, the chapter has been losing more members each year than it has accepted into its order. At this rate, the survival time of the Fraternity will be very short, since once you lose more members than you replace, there won't be anyone left to recruit new members.

Kappa Sigma is not the only Fraternity on campus that has been suffering inconsistencies with membership; the entire Greek system has been slowly suffering over the past few years. Regulation changes, along with bad publicity for the Greek system in the media over the years have greatly discredited the Greek system as a whole. Once you attract a young student into considering Rushing a house, they still have to convince their parents that the Greek system isn't the same as what they hear about in the media.

The Delta-Psi Chapter needs to recruit more members. A new and innovative method might help further its existence by recruiting more new members. Currently Fraternities base their Rush events on physical activities and events. The potential of a technology enhanced Rush has not been explored. Virtual reality 3D communication environments are a new technology with potential application as a Virtual Rush. Using emerging technologies, it is possible to create a virtual representation of the Fraternity house and host virtual events there, in cyberspace.

There are several advantages to creating and applying a Virtual Rush. For instance; the Fraternity will be able to extend its interactions with potential Rush guests beyond the designated times allotted to all houses, giving this Fraternity an advantage in the race for members. Rush guests will be able to interact and even tour the actual house without having to leave their homes or dorm rooms. Those people who are shy and not sure if they want to join a Fraternity may feel more comfortable exploring virtually whether they have any interest in being part of the order. It will be easier to help both the Rush guests and the existing members base their relationships in a non-biased, nonsuperficial manner (since personal looks and other superficial elements don't necessarily need to come into play).

With the ease of being able to interact in a Virtual Rush, the members hope that the guests would feel comfortable visiting the house again and not intimidated into thinking that the Virtual Rush was a one time event. They hope that this project will help Delta Psi stand out as innovative and interesting, because they are the only Chapter to offer a Virtual Rush.

PROJECT OBJECTIVES

The object is to create an appealing, innovative web delivered virtual communication space that will promote the Delta-Psi Chapter of the Kappa Sigma Fraternity. The 3D environment will be used to help give an inside look of the Chapter house, along with enabling potential new members to interact through this new technology with the current members of the Fraternity.

The 3D communication space will be linked from the Chapter's website, and will always be available for potential Rush guests, current members, and alumni to interact whenever they want. The virtual environment will hopefully be a way for people to visit the house, when doing so is not physically possible.

PERSONAL OBJECTIVES

One of the primary personal objectives for me was to create a project that was new and exciting. The modern use of 3D / VR websites is still very new to most people, and I wanted to challenge myself to work with something that I've never attempted before.

I wanted to gain better experience involving the creation of 3D objects and worlds, and to further my expertise with a rapidly growing program such as Adobe

CHAPTER TWO

3D USER INTERFACE AND NAVIGATION

INTRODUCTION

The World Wide Web began as a text-only medium used primarily by computer geeks. The HTML protocol expanded to include graphics, and eventually animation, video, and interactivity. VRML was the first non-commercial authoring tool and plug-in to make 3D navigable environments available over the web.

I was part of a research team that also included Jesse Page and Andrew Bare. We were classmates together in a Graduate Level course where we studied Design Research. The class was taught by Carrie Heeter in the Spring Semester of 2003 at Michigan State University. We conducted a study which would lead to the creation of the 3D / VR website as part of a class project.

METHODS

The first move our research team made in researching secondary sources was a search of the Secondary Research Sources Knowledgebase for TC841. The search yielded few results of free and informative research articles on our topic. We eventually abandoned that source and moved on to a Google search. Using the keywords "3D user interface research" we located several hundred results. In scanning through each of the items in the first five pages of results, we came up with the following six research articles that we felt could be helpful to our research topic.

Atmosphere, a program that I've been following and experimenting with for years since its beginning.

This paper is a supplement to the 3D virtual environment. This paper contains the history of this project, along with some tricks of the trade that I've learned throughout the years. For those who will be working with a new and ever-evolving program such as Adobe Atmosphere, I hope those tricks will help future endeavourers.

3D has not yet progressed as a dominating force on the internet. 3D has been mainly represented on the internet as animation and graphics. There aren't too many websites that promote navigation through a virtual environment, due to the lack of variety in 3D rendering programs made for widespread internet use.

Even though 3D websites haven't taken over the mainstream of the internet, there are still sites out there that have impressed web surfers in the past year. With advancements in technology with the ability to create realistic virtual environments for the web, there is hope that 3D navigable websites will start to become widely accepted in the near future.

RESULTS

1) Research in 3D user interface design at Columbia University (Feiner, 1996)

http://www.acm.org/sigchi/chi96/proceedings/overview/Feiner/fs_txt.html

This site gives an overview of research findings from design and survey projects involving user interfaces and knowledge-based user interfaces. Although the article mostly covered aspects of augmented reality, it did go into some theory about "Interactive Intent-Based Illustration", which uses graphical representations of real-life elements as interfaces (i.e. doors, stairs, switches, etc). Interactive Internet-Based Illustration is similar to the instructions that you would find on how to build a bike for example. There will be drawings that both show the dimensions of the different objects, along with how and where you attach different pieces.

It also went into some detail about using abstract environments for abstract visualization, demonstrating it is not necessary to use real-world physics when creating virtual environments. Structures can be built without limiting interactions to only those that would happen in real-life situations.

2) Eewww!!: Tangible Interfaces for 3D Navigation into the Human Body (Guzman, Ho-Ching, Matthews, Rattenbury, Back and Harrison, 2003)

http://guir.berkeley.edu/pubs/chi2k3/design_chi_short.pdf

This article discussed the use of tangible interfaces, which are physical devices used for navigation through a 3D environment, such as data gloves and the 3D mouse.

In this experiment, the authors used two physical devices with a group of 40 middle-school age children for navigating a 3D virtual model of the human body. This was compared to the standard monitor and mouse interface.

The vast majority of the students (66%) thought that the 3D plastic model of the human body with the free-moving fork was the easiest to use, while only 26% preferred the keyboard and the mouse.

3) Research in 3D user interface (Poupyrev, 1995)

http://www.hitl.washington.edu/people/poup/research/papers/lookfwd.html

This paper goes over some of the challenges of creating applications, as well as usability issues of the resulting 3D worlds. Poupyrev strongly argues that the usability of 3D user interfaces needs to be improved, "Because there are very few guidelines and no accepted standards on how to organize 3D interaction, application programmers develop 3D software ad hoc, sometimes even without consideration of basic principles of human depth perception."

The author feels that more research needs to be conducted in order to solve some of the problems related to 3D interfaces. Theoretical studies should result in the understanding of how we interact in 3D, which should lead to the creation of general guidelines and standards on interaction techniques.

He also feels that developers of 3D hardware will benefit as research will provide them with guidelines, standards and tools for developing 3D interactive systems more easily, quicker, and within budget.

Once more research is conducted, users, application developers and hardware manufacturers will mostly likely benefit from the findings.

4) 3D or not 3D? Evaluating the Effect of the Third Dimension in a Document Management System (Cockburn and McKenzie, 2001)

http://www.cosc.canterbury.ac.nz/~andy/papers/chi01DM.pdf

In this article, the authors did research to find out what the differences are between the efficiency of working with 2D and 3D interfaces for document management, and to find what people's preferences are for working with these types of interfaces.

The experiment asked the subjects to organize, place, and retrieve "thumbnail" images of web pages.

The results showed that there was no statistically significant difference in task completion times between using the 3D interface and the 2D interface, however there was a significant preference for using the 3D interface.

5. Revisiting 2D vs 3D Implications on Spatial Memory (Cockburn, 2002)

http://www.cosc.canterbury.ac.nz/~andy/papers/revisiting2Dv3D.pdf

This paper by Andy Cockburn details findings about spatial cognition and 3D user interfaces. Cockburn claims it doesn't matter much whether the user is navigating through a 2D or 3D world when it comes to spatial cognition. What is most important is that the "user interface items" need to be more personal and tailored to the users interests, and they should be "visually distinctive".

A test was conducted comparing a 2D interface to a 3D interface. Both sites included visual representations of flags and letters of the alphabet on blank cards. In the experiment, the subjects first memorized and then had to identify the location of the letters of the alphabet and national flags. A randomly selected letter or flag would be shown and the user would have to pick the card associated with its location. Pressing the mouse button on a card highlighted it. 44 undergraduate computer science students participated in the experiment. They were randomly assigned to either 2D or 3D.

The results showed no significant differences between 2D and 3D effects in how well the participants remembered the location of letters or flags. Participants remembered flags best when they knew about the flag's country and if the flags were visually distinctive, no matter whether they were in 2D or 3D.

Cockburn concludes from such testing that 3D interfaces make no more of an impact on spatial cognition than 2D interfaces.

CHAPTER THREE

QUALITATIVE ANALYSIS OF 3D VIEWER AND BUILDER PACKAGES

INTRODUCTION

Chapters 3 and 4 present preliminary research conducted by the author and two other students who took TC 841, Jesse Page and Andrew Bare.

For this competitive analysis project we chose to compare two 3D programs. We feel an analysis comparing the pluses and minuses of these programs, prior to the actual study of outside participants, could enhance and illuminate our understanding of 3D interfaces.

METHODS

We wanted to understand 3D viewer/builder packages that could be easily obtained online at no cost. After running an online search we identified only two such 3D viewer/builder packages. We examined and compared details of each using qualitative content analysis. Our sampling methodology is as follows:

Theoretical Population: All free 3D viewer/builder packages.

Study Population: All free 3D viewer/builder packages accessible online.

Sampling Frame: Free 3D viewer/builder packages located through an online search.

Sample: 3D State and Adobe Atmosphere, the two free 3D viewer packages we managed to locate online.

QUALITATIVE CATEGORIES

- 1. **Graphics:** How realistic is the environment? How realistic are the objects? Are the graphics sculpted or flat?
- 2. **Maneuverability:** Does movement of the avatar appear jagged or smooth? Does the program use momentum-based movement?
- 3. **Collision Detection:** Can you toggle collision detection on and off? Does collision detection conform to objects actual shape or does it create a simple block-like wall?
- 4. **Gravity/ Physics:** Can you toggle on and off gravity? Is physics or gravity involved? Can you manipulate physics or gravity? Can you change the intensity of the gravity itself?
- 5. **Download Time:** Are there any available options to help the pages download faster? Does it download relatively quickly? Does it download in steps and if so, what are they? Does it download everything at once?
- 6. Reliability: Does the program crash regularly? Is the program easily accessible? Do all web pages act consistently throughout?
- 7. Avatars: Are you able to create your own avatars? How easy is it to select or download a new avatar? Can you remove and place your avatar in the view at ease? What options do you have in removing your avatar and placing him in the view?
- 8. Angles of View: Can you change views without moving? Can you tilt and/or pan the view? Does it utilize a perspective or objective view?

- 9. **Importable Options:** What sources are available to download from? Is there available plug-ins? Can you import outside objects?
- 10. **Interface:** Can you toggle the use of the 3D card on and off? Can you choose to maneuver just by using the mouse? If so, how?
- 11. **Multi User Availability:** Does it have multi-user availability? How can you interact with other inhabitants of the 3D world? Can you tell who is logged into your environment?
- 12. Links to other locations: How are links represented? Can you utilize bookmarks? Can you go to other web pages in the program without using links?

INDIVIDUAL RESULTS

3D STATE:

- Graphics: The graphics are boxy with jagged edges. They have flat textures. There is no variance in color. The objects are not very realistic. They do not have smooth edges and aren't very believable. The objects seem to be used more as scenery than as actual objects.
- 2. **Maneuverability:** The movement is a bit choppy. Without the 3D card option off the movement is very choppy and jagged. With the card on the movement is very smooth, but slow. It seems processor intensive. 3D State uses momentum-based movement, your position slowly speeds up as it moves forward.
- 3. **Collision Detection:** You cannot toggle collision detection on and off. 3D State blocks the objects so that collision detection does not form to the actual shape of the object.

- Gravity/ Physics: You cannot toggle on and off gravity. You cannot manipulate physics or gravity. You cannot change the intensity of the gravity itself. In fact, there is no gravity or physics involved.
- 5. Download Time: There are available options to help the pages download faster. If you toggle off the use of the 3D accelerator card it will download the graphics and models, but will not take the extra time to smooth and shape them. This creates a rough version of the graphics. It does download relatively quickly. In fact, the creators of it boast that it can download as fast as or faster than regular html websites. This seems to be true. It does download in steps. Starting with moderately complex models and shapes, it then begins overlaying slightly more complicated models along with the graphics. With the 3D accelerator card on, it will go the extra step and smooth out the models.
- 6. Reliability: The program does not crash too regularly. It seems to function fairly reliably. If you toggle off the 3D accelerator card it runs a bit more smoothly. The program is fairly accessible and can be used in at least internet explorer on PC, however you must have a PC to use the program. There is no hint of it being engineered for any other operating systems anytime soon. The webpages do not act consistently throughout. The webpages that have more animation or more complex graphics and shapes seem to be a bit more choppy and processor intensive.
- 7. Avatars: You are not able to create your own avatars. New avatars are not that easy to select. The avatars are just flat and plain images with no interactivity. You cannot remove and place your avatar in the view at all.

- 8. Angles of View: You cannot change views without moving. It has a static height and viewpoint. You can pan your angle, but you cannot tilt up or down. 3D State utilizes an objective view. To fake the perspective it simply maximizes or minimizes the scale of the background objects.
- 9. Importable Options: There does not seem to be many forums to download from so imports are very limited. Basic textures or models created in its builder are the primary importable options. There are no available plug-ins for 3D state except for the default plug-in that allows you to view 3D state in a web browser.
- 10. **Interface:** You can toggle the use of the 3D card on and off. When available, there is an iconic button that allows you to do this. You can choose to maneuver just by using the mouse. Generally, in bottom left corner of the viewing window there is a directional pad that you can click to move in the basic directions.
- 11. **Multi-User Availability:** It does have multi-user availability. You can walk around and if you find someone else you can click on them to talk to them. There is a very basic list with 2D images of the avatars and the users' names so you can tell who is in your environment.
- 12. Links to Other Locations: Links are generally associated with a door containing a picture of the next room or the destination of the link. The problem with that is that sometimes graphics can be confused with actual links. There is generally also a tablet with the name of the links destination or a pop-up. It does not allow you to utilize bookmarks. You cannot go to other web pages in the program without using links unless you type in a new URL in the address bar.

ADOBE ATMOSPHERE:

- 1. **Graphics:** The graphics are shaped with smooth and rounded edges. There is a great deal of variance in color. The graphics are very realistically believable.
- 2. **Maneuverability:** The movement is very smooth and believable. It does not use any momentum-based movement. You generally just click and go.
- 3. **Collision Detection:** Atmosphere's collision detection conforms to the actual shape of the object. You can easily toggle on and off collision detection by clicking on an iconic button on the control bar.
- 4. **Gravity/ Physics:** You can toggle on and off gravity. Both physics and gravity are involved. You can manipulate physics and gravity by manipulating your character into floating or flying. If you are falling, you can adjust gravity by allowing yourself to float up.
- 5. Download Time: You can set what the default end download state of the graphics will be. You can view the graphics at any rough or completed state you desire and set that stage as your end download stage. It downloads very quickly by downloading in stages. It downloads in steps, starting with very primitive shapes, it then morphs those shapes into moderately complex shapes, then to advanced shapes, and then it adds in all the graphics and textures.
- 6. Reliability: The program seems to crash fairly regularly in common web browsers; however it seems much more reliable in its own external viewer. It is accessible as of now, however only works on PC. Unlike 3D state it is in steps to make it available across platform. All webpages seem to act consistently

throughout. There is no lag once the pages are entirely loaded no matter the amount of graphics, animation, or size of world.

- 7. Avatars: You can import new avatars in Adobe Atmosphere. They must be created outside of the program if you wish to create them. They can be imported along with pre-made animations and actions. It is very easy to select or download a new avatar. There is always a default list pre-made avatars. You can move or place your avatar in the view at ease. You can make your avatar transparent or opaque or you can completely remove him from view.
- 8. Angles of View: You can change the views without moving. By holding down the control button and using either the directional keyboard buttons or the mouse you can adjust the pan or tilt of the view. Adobe utilizes a perspective view. Objects size and dimensions are relative to direction and distance.
- Importable Options: You can download different forms of textures, models created in its builder program, and/or various 3D programs including third party 3D programs. There is the default plug-in that allows you to view it in a web browser, along with plug-ins for other programs such as Macromedia Director.
- 10. Interface: You cannot toggle the use of the 3D card on and off. You can choose to maneuver just by using the mouse. You must hold down the left mouse button and move the mouse in the desired direction.
- 11. Multi-User Availability: It does have multi-user availability. Once you are in a 3D world, you can view all available inhabitants and you can whisper (a.k.a. 'talk') directly to an individual. You can also talk to everyone. You can tell who

is logged into your environment by viewing a list of all active members with names along with a picture of their 3D character.

12. Links to Other Locations: Links are represented through animated icons represented by revolving red, green, and blue floating squares. If a link is inactive, it will float low to the ground. When a link becomes active it will spin higher in the air. To activate the links or go to another location you simply need to walk underneath the spinning squares. You can utilize bookmarks. There is a tab for bookmarks in the view window options. You can go to other web pages in the program without using links. You can either type in URL's, use the back or forward button as in html websites, or select from your bookmark pages and automatically be transported to those worlds.

COMPARATIVE RESULTS AND CONCLUSTIONS:

Neither program is perfect. They both have at least some minor flaws. They both stayed true to downloading quickly. Comparatively, we think that Atmosphere is generally better in quality, maneuverability, graphics, accessibility, options, importability, gravity/physics, and model believability. 3D State beat Atmosphere in reliability, along with having the option to toggle on and off the use of your 3D card to speed up the download time of the environment. In the overall view, however, Adobe definitely had the better program with Atmosphere when looking at our comparative qualitative categories. Atmosphere designers say they are attempting to make it cross platform.

CHAPTER FOUR

THE EFFECTIVENESS AND POTENTIAL OF 3D/VR WEBSITES

METHODS

A small task analysis helped guide the choice of which 3D builder package to use for Virtual Rush. We sought to compare how many college-aged males with average or above average computer knowledge reacted to using 3D State and Adobe Atmosphere.

We used a convenience sample, inviting students who were physically present at the CAS building of MSU. We verbally asked them to rate their computer expertise (from 1 to 5, with 1 being very little experience and 5 being an expert) and asked if they would be interested in partaking in the study.

Once they agreed to be involved with the study, they accompanied us to the location of the study. We presented them with a consent form to be read over and signed which explained the study and let them see the questions and tasks they would be asked to answer and attempt. (The consent form is included as an appendix.)

Our study involved five people and began with free exploration and thinking out loud for 15 minutes. Then we had the same five people go back through the sites and accomplish a list of specific tasks. They were observed "thinking out loud" about their experiences as they were navigated throughout two different 3D/VR websites, one using Atmosphere and the other 3D State. Both the Atmosphere and 3D State websites that the testers navigated through were representations of art galleries. The 3D State website was represented as one big room that resembled the inside of a museum with different paintings on the walls. The Atmosphere website had many different rooms with various photographs and paintings on the walls. We chose the art gallery sites for both programs, because we felt that it would be beneficial to compare two similar themed websites.

Because participants were physically present with the researchers, anonymity was not possible. However, the identities of the participants were not recorded with their observations. Pseudonyms were used both on the data note forms and in reporting of results below. The subjects were renamed to the following:

Subject 1: Adam Subject 2: Neil Subject 3: Scott Subject 4: Cory Subject 5: Matt

All of our five volunteers stayed the course of the questioning and tasks we presented them and no one left early even though they were entirely free to do so.

PRELIMINARY QUESTIONS

Prior to beginning the study, we asked those we selected five preliminary questions. The purpose of these questions was to somewhat understand what kind of computer background each individual was coming from. It also gave us an opportunity to ascertain what previous knowledge of and/or interest in 3D based computer programs and games they were bringing with them to this study. Below are the questions we asked them followed by comprehensive write-ups on the answers and insights they gave.

Q1: Please rate your computer experience from 1 to 5, five being an expert, one having little to no experience.

A: All of our subjects rated themselves fairly high on computer experience. Matt, Scott, and Neil rated themselves at level five, Cory rated himself 4 and Adam rated himself 3.

Q2: Have you had any experience using any 3D computer programs? If so, what program? Was a positive experience?

A: None of our subjects have had any specific experience with 3D computer programs outside of games.

Q3: Have you ever played any 3D based games? If so, what was the experience like?

A: Four of our subjects (Matt, Scott, Neil, and Cory) had played 3D based computer games. Only Adam had not. Matt thought the experiences were very enjoyable. Cory thought the games he'd had experience with were fun, but at times very confusing. Matt had found his experiences very enjoyable. Neil described his experiences as "fun".

Q4: Have you ever visited a 3D based website? If so, where? How did you like it?

A: Four of our subjects (Adam, Matt, Neil, Cory) had never before visited a 3D based website. Only Scott had visited one. Scott told us "I visited the 3D websites back during their first generation stage." He hadn't visited any in a long time.

Q5: If you have never used a 3D website, do you think you would like to?

A: All of our subjects stated they would like to visit a 3D website. Cory added that he was interested as long as there was a purpose to its use. He didn't want it used just for the sake of being used.

TASK ANALYSIS

We gave the subjects fifteen minutes to browse over the 3D content. After browsing over the content, the subjects were then instructed perform specific tasks for Adobe Atmosphere, then for 3D State. If the subjects were having problems completing any specific tasks after a period of 10 minutes, they were told how to complete the task. The entire process took approximately 40 minutes per subject.

ADOBE ATMOSPHERE TASKS:

a. Browsing Time:

The subjects browsed Adobe Atmosphere for 15 minutes. During their browsing we noticed certain tendencies among our participants. Neil asked if the keyboard could be used, after using the mouse for most of the time. Adam mostly used the mouse until he became frustrated with the tasks below. He then switched over to the keyboard. Matt primarily used the mouse and the tab panel on the right to control certain functions. He did not notice or click on the toggles below the viewer until he progressed through the tasks.

b. Locate and use an avatar (character) of your choice.

Adam, Matt, Scott, Cory and Neil all located and selected the Avatar with ease, using the right control panel. Scott used the tab method to select the Avatar, whereas Cory used the icon method.

c. Try to make your avatar appear on the screen.

Matt and Neil had trouble toggling the Avatar with the buttons below the viewer. They did not realize the toggles were placed there. Adam tried to drag the Avatar icon from the right control panel down to the screen. After some time, Adam had to be shown where the toggle was. Scott, found the toggle under the viewer with ease and selected it. Cory first went to the
control tab, then other tabs, but became frustrated without completing the task. Cory was eventually shown how to complete the task.

d. Try to do the moonwalk with your avatar.

Neil had a hard time finding the "Moonwalk" control function with the avatar he had selected. He viewed many different panels until he was instructed to choose another avatar. The robot avatar did not have the moonwalk control. Matt went to the tab panel and found and selected the moonwalk toggle with ease. Adam first questioned what the moonwalk control was. He then tried to use the toggle buttons below the viewer. He eventually used the tab panel on the right, but had to switch avatars to get the moonwalk avatar function to work. Scott tried to do the moonwalk manually. Then he tried looking through the icons, while holding down buttons on the keyboard and moving the mouse. Next he tried right clicking to see if the option was there. He eventually found the toggle during task letter "e".

e. See if you can locate a link to another location and use it.

Neil questioned whether the portal within the 3D world, and used that as the primary method to move through links. Matt did not realize portals were links. He used the "Bookmark" method within the tab panel to move through different links. Adam asked whether there was a link in the 3D world, then used the tab panel to move through links. He was eventually instructed to use the portal method. Scott looked through the toggle icons below the viewer, then selected the "Bookmark" and dragged the icon onto the screen. Cory found the portal within the 3D world, missed it, but then walked back and entered the link.

f. Try to find a way to look up on the screen.

Neil tried to use the tab panel on the right to tilt the camera up and down. There were no options there, he tried to find other means to toggle the function, and finally gave up. He showed a great amount of frustration, until shown how to tilt the camera using the "control + arrow" keys. Adam initially tried to use mainly, but could not tilt the camera. He then showed frustration and accidentally exited out of the program. Eventually Adam found out how the tilt the camera on his own. Matt had some delay in finding out how to tilt the camera, but eventually found the keyboard method. Scott tried clicking and dragging, and then right clicking, then found the control key and performed the task after a short delay. Cory, when to the tab panel on the right, tried scrolling with the mouse, and then looked through icons to find the function. Next he commented on how the function should be easier to find, went to the file options, and eventually gave up. He was eventually shown how to complete the task.

g. See if you can make your character weightless.

Neil, Scott, Cory, and Adam found and selected the gravity toggle under the viewer with ease. Matt had a hard time finding the toggle, and browsed through many tabs. He showed some frustration, and eventually gave up. He had to be shown how to complete the task.

h. Attempt to shut off collision protection, making your character able to walk through walls.

Neil, Scott, Adam, and Matt found and selected the collision toggle with ease, after they had spotted those toggle before had from the previous tasks. Cory went trough a series of tabs and panels before he toggled the function under "preferences". He never realized it was a toggle under the viewer.

3D STATE TASKS:

a. Attempt to move through the program and explore the 3D environment.

Neil first clicked on a painting, and then moved around. He switched back and forth between the mouse method of moving around, and the keyboard method of moving around. Neil eventually settled in with the mouse method. Adam mostly used the keyboard and arrow keys to navigate. Matt mostly used the mouse, with the arrow buttons in the lower left-hand corner. Scott used the keyboard method right away, and tried walking on top of objects, while experimenting with other buttons. He then tried clicking on the art, and

then on the people-like figures. Cory first tried using the mouse, and then went to the keyboard method to navigate. He then walked on chairs and tried to interact with the people-like figures.

b. Attempt to toggle on and off the 3D card and look at the difference.

Adam found the 3D card toggle with ease, and commented that the graphics with the 3D card on were clean and defined, whereas the movement was faster if the 3D card was toggled off. Neil found the 3D card with ease, and commented that quality of the graphics and movement was better with the 3D card toggled on. Matt also found the 3D card with ease, and commented that the world "looks better with the 3D card toggled". Scott found the toggle with ease, and commented that the quality of graphics with the 3D card toggle off was worse. He said the graphics were grainier, the edges were "nasty", and it was less pleasant. With the 3D card toggle on, the 3D world "jittered" and "flickered" less. Cory found the toggle with ease, and commented that everything looked better with it on. With it off, "everything seemed pixilated with less shadows". He also said that "everything looks flat and you feel you should click around instead of walking".

c. Attempt to view a description of a painting.

Neil clicked on painting and viewed the content within the left pane with ease. There was no attempt to click on the <u>www.morfit.com</u> graphic, which was just below each painting. Adam clicked on a few paintings, and looked at the right pane to view the contents. He did not realize the most of the content until he used the scroll bars to move the content within the pane up and down. Matt viewed a painting, and explored the <u>www.morfit.com</u> link. He also did not realize there was more content within the left pane, until he used the scroll bars. Scott viewed a painting with ease and explored the content right pane easily. Cory also viewed a painting and explored the content with ease, but accidentally clicked on the <u>www.morfit.com</u> link.

WRAP UP QUESTIONS

- 1. How did you feel about your 3D experience? Did it frustrate you? Was it enjoyable? Describe any feelings you had.
- A: Matt said that the 3D experience was alright, but he preferred a regular HTML website more. He admitted to becoming frustrated on a couple of occasions while trying to figure out controls. He said it was somewhat fun however.

Neil thought the experience was different and cool. He just felt that a couple of points could've been better. He didn't really get frustrated, and found it somewhat enjoyable. He thought that the programs were fairly well put-together.

Adam just said that it was a fun and interesting experience. He claimed that he didn't get frustrated, and found the experience enjoyable.

Scott thought that 3D state was simple, but didn't do a whole lot. Atmosphere was much better, but the key presses and controls weren't as obvious.

Cory felt that 3D state was easier to complete the tasks, and Atmosphere needed more obvious icons. He had a lot of trouble getting Atmosphere to do what he wanted it to do.

2. At any point did you feel nauseas from using the programs?

A: None of the users became nauseated throughout any of their experiences.

3. Which program did you prefer? Why?

A: Adam preferred Atmosphere. He liked it because the avatar was in front of him. He found there was more to do, and more controls. He enjoyed being able to move into new scenes.

Scott liked Atmosphere, but it wasn't full screen. Keeping it full screen might help from keeping it nauseating.

Cory liked Atmosphere better, because it was more realistic, and more meaningful. 3D state could've been just 2-Dimensional.

Neil liked 3D state better. He said it was easier. And it was the better program for him, as a 3D novice.

Matt preferred 3D state. He liked it better, simply because it was easier, and there was less to worry about.

4. Was one program easier to use? Was one program more interesting?

A: Adam felt that 3D state was easier to use, mainly because there was less to figure out, and everything was presented right in front of you. He found Atmosphere more interesting, yet more complicated.

Neil thought that 3D state was easier; he didn't find one program more interesting then the other. He just felt that 3D state worked better.

Matt felt that 3D state was easier for him. He felt that it was more simplistic. He felt that Atmosphere was more interesting for him, but a bit harder to use.

Scott said that 3D state was easier, and Atmosphere was more interesting.

Cory felt that 3D state was easier to use, just click and rollover. Atmosphere was better for searching, especially for viewing paintings using different views.

- 5. Did the galleries feel realistic? Did you prefer one gallery to the other? If so, why?
- A: Adam said the galleries were fairly realistic. He felt that the pictures were crisp and had good color. He preferred the 3D state gallery; the gallery itself was more interesting to him, compared to Atmosphere's. He felt that the paintings were better.

Neil felt that the graphics were good, but 3D state was a bit sharper. He was all about 3D state.

Matt didn't feel that either of the galleries were too realistic. He preferred 3D state because it was simpler, and slightly realistic.

Scott said the paintings were better in Atmosphere and more realistic. He felt that the paintings in 3D state had more interactivity.

Cory said that both galleries felt real. 3D state was like a museum, and Atmosphere was more like a gallery. Atmosphere was a bit more cluttered.

6. Having used 3D programs, do you know feel more likely to use one in the future or less likely?

A: Adam felt that he would have no problem using one again.

Neil stated that if it was available, he would consider trying it again. He said that he was more likely to try it now, after using it.

Matt said that after using the 3D programs, he would actually be less likely to use another one again. He felt that they were just too complicated.

Scott felt that it was a little bit more likely that he'd use a 3D website, but it depends if there's real content.

Cory said that his opinion hasn't changed. It would be good if it was used correctly, but bad if it was used as a "crutch", to make a bad site better.

7. Did you have any trouble maneuvering through either program and did you feel any lag.

A: Adam felt that the 3D card toggle button in 3D state had some delay. He had no other problems with either program.

Neil said that he had no lag. A couple of his controls didn't work however. Free moving camera (up and down) was confusing. He became frustrated that he couldn't get his avatar to do the "Moonwalk".

All that Matt had to say was that he felt that Atmosphere was "buggy". And he had no problems with 3D state.

Scott said there was more lag in Atmosphere. It was also a little harder to maneuver. In 3D state, he felt it was easier to maneuver.

Cory said that there wasn't any problem. The link through him off in Atmosphere, and he commented on the collision detection being good.

8. Do you have any final comments on the experience?

A: Adam said that it was an interesting experience. The programs amazed him.

Neil said that the experience was "pretty cool".

Matt felt that Atmosphere didn't work well, and overall...Atmosphere was too complicated to work overall.

Scott had no final comments.

Cory felt that this approach is too complicated for common people. But, it would probably be good for tours and modeling experiences.

CONCLUSIONS WITH OBSERVATIONS

A majority of the subjects felt that Atmosphere was a more interesting program, but had a few little quirks in it. The program gave you much more control and had more potential; however, there were some bugs in the program, and everyone had a lot of problems getting through some of tasks we asked of them.

3D State seemed to be a much simpler program overall. The simplicity of it seemed to make it not as interesting to most; however, there were generally no complaints on its performance and overall effectiveness.

Even though there was a good response for 3D State, I ended up choosing Adobe Atmosphere as the 3D builder package I was going to use for Virtual Rush. Atmosphere was the only program to incorporate a chat function, which would be a very important tool for user interactions during Virtual Rush. Atmosphere was also the one program that was totally free to use, unlike 3D State that would cost \$400 for the developer kit.

Overall, most of the subjects enjoyed the experience. However, the overwhelming feeling from them was that 3D based websites are more of a novelty, not a new medium.

PRIMARY AND SECONDARY PERSONAS

By looking over the volunteers and finding out about their interests, we put together the following two personas. Cory was particularly interested in art and helped

inspire the secondary persona. Most of the other participants were heavily into computers and lent a great deal to the first persona.

Primary Persona: Ron is a 20 year-old computer science major, who is just beginning his first semester being an active member of a Fraternity. He is very excited to be a member of this organization, but still doesn't feel that he knows all of the active members as well as he would like, but he feels that he will continue to gain acceptance over the next few months. He lives in a dorm room on campus with a friend that he joined the Fraternity with. He really wants to meet new people and wants to help bring in new members to the organization to experience the same thing he just went through.

He spends a good deal of his time working at a local computer and office store to pay off his school bills. He enjoys his job, but doesn't get to interact with many customers. He is a very sociable guy when you get to know him, but is generally a little shy when first meeting new people. He would like to be able to become a bit less shy when it comes to introducing himself to new people.

He enjoys web browsing and loves to check out new technologies on the Internet. When he does have free time in the evenings he enjoys relaxing by playing video games. He enjoys games of all kinds, but has a particular interest in 3D style role playing games. He thinks the 3D style is interesting when used on the net, but would like to see it used in more places where it actually adds to the experience. He has a great deal of interest in seeing more 3D programs and applications on the Internet. **Secondary Persona:** Al is an 18 year-old art major, who is very interested in becoming part of the Greek system, but doesn't really have too much prior knowledge of how the organizations are set up, and what would be the best Fraternity for him to be part of. He is new to his University and would like to meet new people. He is very sociable, and enjoys going out to parties and trying new things.

Al became interested in the Greek system because many people in his family were members of various different Fraternities and Sororities. They all helped send a positive message to Al over the years involving the Greek system. He doesn't have a job, but his parents promised him that if he took care of his grades, they would assist him in paying for the Fraternity of his choice. Al is very interested in what college has to offer, and is constantly stimulated by advancements in technology.

He has a good computer and Internet access, but only considers himself to have average computer knowledge. He would like to see more online sites with viewable real world artwork. He has an interest in how 3D technology makes it possible to view artwork online in virtual galleries, but has been disappointed by the low quality and lack of usability of most of the online galleries he has visited. He is looking forward to seeing advances in 3D technology and its applications.

CHAPTER FIVE

PRE-PRODUCTION

METHODS

In order to create a Virtual Rush experience, I would first have to figure out how I wanted to create the house, and what it would look like. There were many obstacles I had to overcome in order to figure out what would be the best way to show off the house for this project. I had a few design goals:

Accuracy: I wanted to give visitors a sense of what the house is really like.

Appealing: I wanted potential members to like what they see, and consider becoming members.

Members: I wanted to allow for an alternative opportunity to recruit.

Visitors: I wanted to provide an opportunity for visitors to ask questions.

TAKING PICTURES

I was not able to obtain floor plans for the building, so I had to attempt to get a good layout of the building with my eyes and through digital pictures that I took. I found it to be necessary to take digital pictures of the house for several reasons.

First, I thought it would be a good idea to take pictures of various rooms to get a bit of a feeling for their layout, and to see if I could find any similarities between the rooms that would help make my job a bit easier, when it came to building the entire house. I was also not sure in the beginning how much detail I was going to put in for the texturing of the walls, floors, and furniture, and it would also be good for me to be able to get samples of fabrics from furniture, and paint colors from walls.

Second, I wanted to be able to get a good sense of the way the walls and separate cubbyholes of the individual rooms were laid out, so I would be able to try to get a sense of how the walls are related to each other in proportion to the other rooms. When I went into various rooms, I realized that due to the layout of many of them, I wasn't going to be able to get the whole room in the shot, but I thought taking pictures of odd angles and tricky corners would be the best solution for me. When you walk through the house either in real life, or in my virtual world, you will see that a lot of the rooms have minor parts that stick out in various corners, or slight slants along the ceiling. I shot those tricky corners from both inside and outside the rooms, and I was able to get a really good sense of how they were all related to each other.

I didn't need to go completely photo crazy, because I actually had the luxury of living in the Fraternity house at the time that I was creating most of this project, so just going down the stairs to get a simple glance of a corner of a room, or to get a better idea of how much open space was available in a room, wasn't much of a problem.

ATMOSPHERE TIPS AND TECHNIQUES

Before I really got my hands dirty in creating my virtual house, I thought it would be a good idea to just mess around with Atmosphere's Builder tool, to gain a better

perspective on what already exists online on how to build a room, such as: building walls, making doors, and creating complex shapes. I also searched for existing furniture, to see how other designers combined shapes and perhaps to adapt and reuse existing furniture.

The 3D building tools in Atmosphere are set up differently than professional 3D building programs, such as 3D Studio Max or Maya. With those programs, you have many more detailed options to control what your object is going to look like, along with greater choices of original shapes. Atmosphere was much more limited with these options, and the creation of objects was done in a different way.

With 3D Studio Max, if you want to create a cut-out of a triangle in a box, you would have the option of creating a cube from the library, taking different points of the box, and intruding them into the original shape. You could also have the option of creating a separate triangle that you would use to carve a hole through that original box. In Atmosphere, however, there are only three basic shapes available: cube, cone, and cylinder, in order to create any type of complex object, you have to create that separate triangle, and "subtract" from the box. The subtract function would become very handy, and quite necessary if you were ever to create anything outside of the very limited basic shapes.

ATMOSPHERE VIEWS AND PALETTE WINDOWS:

Adobe Atmosphere Builder has many different palette windows that will all come in handy during different points of your creation process.

Views:

The views window allows you to toggle between different views and vantage points; to better help you see your world and objects from every possible angle. The four different views are:

- Top View: Allows you to view your world from a bird's eye view, above the objects looking downward. This helps you get a better understanding of how
- Side View: Allows you to view your world from a side view, so you can get a better understanding of how comparatively tall different objects are.

long particular objects are.



 Isometric View: Allows you to view your world at a slight angle which is much like a mixture of both the top and side views. 4. **Player View:** Allows you to view the world as it is going to look when you're viewing it in the viewer. This is a great view for you to use, when you get into making minor perfections and comparing your geometry to the pictures you've taken. Later on when you start with texturing, this is also the only view that you are able to use to assign textures to objects.

All of the different views have their main uses; however I personally didn't use the Isometric view that often. And once you get through the main structure of the building, you start using the Player view the most often.

*Hint for future Atmosphere Builders #1: You are unable to do some basic things with your objects library when in the Player view. You are unable to change object's names, or change its location in your library (ex., placing objects in folders).

Fixed Tools:

These are the different control tools that you can use in your world window. These different tools change depending on what view you're in. In the building views, you can select objects, rotate objects / the world, and perform various types of zooms. In the Player view, you can select, erase, and sample textures from the world and save them in the Variable Tools window. r 2, 2, 3 (6 & a 🛪 🗐

Lighting Control and Builder Settings:

This palette window doesn't really get used too much, until the later stages of creating your project. The lighting controls hold all the settings that you might want to set involving lighting your objects in the finished world. This becomes very important; because without lighting, if you were to publish your world online, you won't be able to see anything when you're in your world, as it will be completely dark.



The builder settings just set minor settings such as if you want the computer to cache some of your objects on someone else's computer, or the compression format in which to send the file.

Objects and World Settings:

The world settings window can be set up from the beginning, and don't need to be changed very often. This window does have some importance in that this is the window where you need to set the link to get the chat function to work, if you want that as part of your project. The objects window will be used very often. This is the library of all the objects in your world. A big tip that I would give to anyone who is planning on creating a world would be to be very careful in making sure to remember to name all of your objects and group them together, if possible, from the very beginning. This will greatly help you sort through all of your objects when your world expands. This is especially important if you create a world like mine that has a few hundred different objects. Believe me, they add up!

In the objects window, you are also able to toggle some of the different objects properties (ex., Invisibility, Locked, Subtractive, and JavaScript).

Variable Tools:

This window gives you options for the starting tools you can use to create

different objects in your world. The tools do change between some of the views. When you're in the building views, your tools consist of various objects, different slabs, stairs, walls, floors, tools for setting anchors to different objects (being able to relatively move objects, if you move the parent object), tools for setting both entry and portal points (you would use this if you enter links to different worlds), and if



you import any outside objects (for example: Viewpoint objects: 3rd party objects created in another program).

When you're in the Player view, the tools go away, and you get a paint bucket tool, with which you can color different objects or object faces with various colors. You can adjust what the colors are in the Objects window, along with setting different downloaded textures, and different settings.

Tool Inspector:

This window is good to set in the beginning, and try not to change it too often if

possible. I liked to set the spacing to **0.1 and snap to grid**, because it gave you more of a range to change the location of where you were placing different objects, in relation to each other. The bad part with that is that it's a bit harder to line things up. Keeping the spacing at **0.2** isn't such a bad idea in the beginning stages when you're just building walls, because you don't have to worry about the walls misaligning.

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Tool Inspector	
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Move: 10	X Y Z Apply
Position X: 5.92462 Y: 3	254769 Z: 59.629

CREATING WALLS AND FLOORS:

When you look at the tools they give you to create objects, it seems that creating buildings was the original focus of the creators of Adobe Atmosphere. There are tools for creating walls, floors, and stairs. When you first start creating a world, a blank world is the starting point. Everything you make from there on is based on that starting point at 0 degrees X, Y, and Z. To create a floor, you click on the floor icon in the variable tools palette, and click on whichever of the views that you feel is the most comfortable to use.

CREATING DOORS:

The subtraction tool was also the only way that made sense to create a door. What you have to do to create a door would be create your wall, and then create a thin box that you will use as a cutout on the wall. Once you create the box and set it to be just a bit wider than the wall, you can change the box into being subtractive, and it will carve a box shape out of the wall. You must make the box wider than the wall or else it will not cut through. You must make sure that you set the subtractive box as close as possible to sit along the floor and the corners of the walls. If you misjudge the placement of the subtractive box, you can inadvertently cut a hole into the floor, which can cause people to fall through the floor.

CHAPTER SIX

PRODUCTION

STARTING OUT

To start production of my house, I tried to think of the best way to create the whole house. I at first wasn't sure if I was going to create the house room by room, since I wasn't sure how much disk space each individual room would take up. In order to keep my entire website as small as possible, in order to make it easy to view by many people, taking into account that all the viewers might not have fast internet connections; I tried to limit the file size of the entire project.

After much debate, I decided to start with creating the house from top to bottom. The way the house is structured there are only two big rooms on the top floor, and all the other floors are laid out in a more structured way with several smaller rooms. The length the top floor stretches to the size of the entire house, making it easier to get a true perspective on how to gauge the proportions of the other rooms and objects to the bigger rooms.

The top floor also had some of the house's more difficult to develop cubbyholes and cut outs, followed by a slanted roof. I thought that if I could master creating the harder objects and angles in the beginning, it would be a good basis for creating the more basic dimensions later on when I reached the lower floors.

ROOM #1:

The room that I decided to start with happened to be my room on the top floor of the house (the room with the green walls at the top of the stairs if you were looking at it on the website). It was a big room with a slanted roof and a few tricky cutouts. I used a comparison of digital pictures and other perspectives to compare how the layout and sizing of this room in my creation was, in comparison to what I was able to view in my Player window.

ONE vs. MULTIPLE WORLDS

After I finished building my first room, I had to decide if it would make sense to create the entire house as one world, or to just make the rooms individually, using this first room that I created as a bit of a template on which to base the other rooms. If you were to look at the house, you would immediately notice that my first room is much different than most of the other rooms in the house, and it wouldn't exactly be the best room to base all the other ones on. I was also thinking that since the rooms are various sizes and shapes, it would be hard to build the rooms separately at first, especially if you're hoping to keep the proportions of the rooms accurate in the different sections of the house.

I decided, at least at first, to create the entire house as a whole, and if it ever made sense to break the house apart into different sections later on, then it might not be as hard. At least I would know that my proportions of all the individual rooms would be fairly accurate, because they were made using the same dimensions as the rest of the house. Another problem that I was afraid I was going to have to run into later on was, that I had absolutely no idea as to what the file size of these worlds were going to be when they were all finished. Figuring in all the different shapes and sizes, I was afraid that the individual rooms might be a very high file size, so breaking the whole house into smaller sections and linking to different worlds just for the individual rooms might be the way to go to create less of a lag for those guests to the site.

Luckily I noticed very quickly while finishing up my first room and starting on my second room, that the file size was incredibly small for all of the rooms, because I figured out that Adobe Atmosphere actually creates these objects using Vector graphics, which keep it all as a math function, instead of counting individual pixels. This was great for the file size, and I knew could be good for me later on if I were to create different objects to place in the world, and I wouldn't lose any quality or gain file size if I stretched or pulled those objects.

Another down side to creating the different worlds for the rooms inside of the house would be that it would be incredibly annoying if every time a guest wanted to go to another room, they would have to find and walk through an Atmosphere representation of a link. Atmosphere's representation of a portal between different worlds is displayed as three rotating floating boxes that circle above a point that you are supposed to walk through. When you go through a portal and arrive at its destination point, you are dropped at some other location. This way of representing travel throughout the house

would become very repetitive and annoying due to the fact that there would be many closely related rooms to walk between. That would also become very confusing.

The use of portals in this type of world was also researched in my first experiment, and was valued as not being too effective. Most people weren't sure what the links really did, and were confused when they were dropped in different locations. Also, the way that other sites represented these links was to have a flat picture on a wall where the door would be so you can have an idea of where you will end up if you wanted to go into that room. This whole theory and method was tossed out, because I would have drastically degraded the realism and flow of exploring the house if it was used.

<u>ROOM #2</u>

After I created the first room, I decided to create the second room from the template of my first room. These two rooms had a lot of similarities between them, and I thought that it would be good to base them on each other.

The second room had the same amount of floor space as the first room, and also shared the same slanted roof. I first tried to create the room in pretty much the same way, and attempted to at least get the outer walls to match with the other room, and then I proceeded to mesh the two different rooms together. I took the model of the first room, and pasted it into the world where I was creating the second room, and placed them next to each other, at about the distance I felt they were apart from each other.

Once I had the bases of the two rooms matched to each other, I continued to mesh the two together. For instance, I removed the slanted roof from one of the rooms, and stretched its length to cover both of the rooms, along with lining up all of the subsequent walls and floors.

Now that I had the whole top floor done, I had the basis for the rest of the house. I knew the floor and outer wall dimensions would provide parameters for me to work with when building the other floors. One other thing that would help me work out the location of where to put the walls from the other floors is that I noticed several similarities between the floors. The way the house is set up, is that all of the stairwells are located in the middle of the house and all the other rooms are built around them. Also, there is a chimney wall that is located in the second room that I built in the house, and the shape of the chimney goes straight down, all the way to the basement. Once I properly positioned that chimney wall in the second top room, I was able to have a directory point throughout all of the other floors of the house on which to base my building.

With the top floor all finished, I had to position and figure out how to create the stairs. Once I figured out how to adjust the size of the stairs, there would be very little to the building of the structure for the rest of the house that I hadn't attempted at that point. This was the exact objective I was trying to set in the beginning: that I would get to experience every type of difficultly in building different structures in the beginning of this project, making it easier later on which to base the other floors.

THE SECOND FLOOR

I duplicated the outer walls from the top floor and pasted the copies just below the original walls from the top floor. I thought this would give me a good understanding as to how high the walls need to be on the other floors, along with knowing truly how much space I have to work with for both the stairs and the other walls I was going to enter in eventually.

*Hint for future Atmosphere Builders #2: Duplicating existing shapes and objects will become a very valuable tool to people that are creating big projects such as this one, with similar objects and characteristics in different areas. My suggestion is to select an object that you want to duplicate, right click on the object directly or in the library and select duplicate, and you will notice that it will make a copy of your object and paste it in the world right next to your original object.

One minor problem that exists in the duplication process is that duplicate objects have the same name as the original, so I suggest that once you create your duplicate, you immediately go into the library and change its name so you won't get confused in the future.

One good feature of duplicating your object that you might find is that when it pastes the new object, it will do so slightly to the side of your original object. If you were to duplicate your object in the top view, it will move just slightly off from the original on the X-axis so you can see the newer object, but the Y-axis will be the same. The same

type of principal applies if you were to duplicate an object in the side view, where it the new object's location will change slightly along the Y-axis so you can notice it, but the X-axis will be the same. This becomes really handy, because you don't have to worry about readjusting all of the axes, just the one that you wanted. You just need to remember to duplicate in the view that you wanted to paste your new object in.

For instance, when I wanted to create the second floor walls, I just had to duplicate the top floor walls in the side view, and adjust the Y-axis points to be directly under my original walls.

I created a floor to span across all the outer walls that I set for the second floor and was able to figure out how high the stairs from the top floor down to this floor needed to be. I positioned the stairs to what I thought was accurate, and had to create a cutout box in the floor of the top floor so that you can actually walk down those stairs.

*Hint for future Atmosphere Builders #3: The stair-building tool is pretty helpful, because it will actually create and adjust the amount and level of the stairs depending on from where you position them along the different axis. However, once you create the stairs, it is still necessary to insert a subtractive box to be able to take the stairs through the floor if it still exists.

Most of the doors and entrances in the house are very basic in a box-like shape, that can be easily formed by creating a box cutout, however, in two locations on the

second floor, and one location on the first floor, there stands a curved cutout along the top of the entrance in their respective hallways. This curved cutout was created by adding in a cylinder subtractive object along the top of the cutout positioned to sit along with the usual box cutout to make the main opening. This took a little while to correctly position, because I did not want to have the cylinder expand beyond the desired edges, and to make it look like a seamless cut along the original edges of the main box cutout.

BASIC TEXTURING

Before you start with lighting, you will have to assign textures to the walls and objects to your world. Atmosphere does a good job by automatically configuring all of your walls and different sides of objects in your world to be represented as different colors to help you better recognize the shapes and sides of your objects in the player view.

In order to create simple textures, all you have to do is go into your player view and click in the Variable Tools window on the paint bucket. Your icon will change to a paint bucket, and you can click on whatever wall / object that you wanted to color.

*Hint for future Atmosphere Builders #4: There is a setting for your objects that I overlooked many times in the beginning, and I feel that if you know to look out for it, it will greatly help you with your texturing process. In the Object Inspector palette under the Surface tab, there is a setting to apply your texture to either an object or to a face. Setting a texture to an object will paste the texture on the entire object. This is bad if you

chose to make your carpet blue for instance, because it would make the ceiling on the floor below blue. What you want to do is apply your texture to each face. Depending on how good a job you do with creating your walls and connecting them to each other, you might sometimes have a little piece sticking out, and you can apply the color to just one face so it meshes with the other walls if that was the case, without affecting the rest of the wall.

***Hint for future Atmosphere Builders #5:** Whenever you set a color that you like and plan to reuse again, you can use the eye dropper tool in the Tools window. When you use the eye dropper tool, you'll notice that it will create another paint bucket in your variable tools window. You can simply find the color that you wanted to reuse and paste that on whatever surfaces you want to use again. This is much easier than attempting to reset the Red, Green, and Blue levels every time.

THE START OF LIGHTING

I thought that once I got the top floor all done with the positioning of the walls, and the start of the stairs, that I could then start looking into what would be the best way to create the lighting. I knew that the file size was going to get bigger once I started doing the lighting, so I wanted to know to what degree it would change, which would help me if I needed to reconsider making all the rooms separate sizes.

I looked into a few different tutorials, and tried seeing how they treated lighting in some sample worlds. I found an object shaped like a lamp, and positioned that in a

corner of the room; along with creating a very simple cylinder that I placed in a spot on the ceiling to get light to the other part of the room. I was very interested in seeing how the lighting would add to the realism of the site, along with knowing how different settings can truly affect the outcome in both the file size and quality.

I was amazed with the quality of the shadows and extra colors when I put in just two simple lights, however, I noticed that with the default settings, the lights didn't seem to be too bright. I ended up setting all of my lights to be pretty bright, along with setting my Scene Brightness in the Lighting Control Settings as **7.5**. Changing the Scene Brightness setting actually just made the default shades and background for my entire world a bit brighter.

Making the whole world naturally brighter was necessary, because I never entered in windows throughout the whole house, because I felt that it would be too annoying to create and take away from the detail of the house. The openings of the windows would have allowed the natural world's "sunlight" shine into the house. Without the windows present, that light was closed out, leaving me to make the starting light brighter to compensate.

I noticed that the use of lighting, even just for the first room, increased the entire file size. Later on, the more floors that I entered in seemed to cancel out the degree of increase in file size overall. Atmosphere needs to calculate the use of lighting in an environment. If there is no lighting calculated, the file size can be small, since there is barely any light that will be represented in the final world. However, when you add in lighting, there are surfaces that need to be calculated throughout the entire house. As long as lights from different rooms don't affect each other, then they can all be calculated separately, making the overall file size smaller even though there are multiple rooms.

Both the modeling and lighting became a bit trickier around the staircase from the second to the first floor, due to the way that it was set up. The staircase consists of two smaller staircases, consisting of three stairs each, which both connect to the master stairwell that goes down to the following floor.

The lighting had to be done in a somewhat different manner than how the rest of the house had been set up by that point. The hallway was much more open compared to the bigger general rooms that I worked with earlier. I wanted to stay as true to the real setup of the actual house, and didn't want to add in false lighting, so at the top of the stairs, I positioned three different lights that aimed in different areas to illuminate both the side hallways, the wall at the top of the stairs, and all the way down the stairs. Getting these lights to be positioned in the right way to get a realistic effect and make it easy enough to see everything was pretty difficult and took a lot of time.

*Hint for future Atmosphere Builders #6: The rendering of the lighting takes a very long time to calculate, especially when you add in a lot of different lights and different

types of objects to be reflected as well. You should pay attention to the setting for both the textures you use, along with the settings you have for the rendering process. Shutting off textures from receiving light from other surfaces for instance might be a good idea if the degree is very small. For example, if you have a green wall next to a white ceiling, the green will rub onto the white ceiling a bit; this is something that you might not want to happen everywhere.

Rendering near the end of this project ended taking up over an hour a session and is very processor intensive. This can become very annoying, especially when you're only trying to make little changes. I suggest that you practice lighting just in certain sections at a time if you can, so you don't need to wait for all the other sections to catch up. Without rendering the lighting, even if you set the lights to be in your world, they won't work. The rendering is a powerful and essential feature of building worlds in Atmosphere although it often feels like an unfortunate necessity that you will have to endure.

THE FIRST FLOOR

After finishing the second floor, creating the first floor was pretty easy. I already knew all the dimensions of the outer walls by using the same methods that I used to create the second floor. This floor was pretty similar to the floor above it, with the exception that I wanted to add in more advanced textures to the floors and walls in particular parts. The first floor has a hardwood floor, and I wanted to truly represent that by texturing in a Gif or Jpeg onto the floor. I first attempted to take digital pictures of the floor boards on the first floor, and I was thinking of cropping the pictures in Adobe Photoshop and saving it as a file that I could use. I realized that the quality of the pictures probably wouldn't have worked as well, and would've been really hard to create in a manner that would be seamless, so I decided to look for different graphics that I could use. I found one that I decided to place in, that looked like floorboards and was designed to be used as a seamless background.

ADVANCED TEXTURING

Since the floorboards graphic wasn't just a simple color that I could create straight from Atmosphere's tools, I had to figure out how to embed textures. I looked up a few different examples, and realized that it wasn't too hard to do, or so I thought.

I noticed that if you planned on embedding a texture, there are several ways you can go about it. The best way was to first go to the Import Textures selection under File. In there, you can import whatever graphic you wanted, and there should be a representation of that graphic in the Variable Tools window.

You can click on that picture and set it so that you can paste it onto whatever surface you wanted. The picture actually wasn't positioned the way I wanted it to be originally, so sometimes you might need to adjust the picture's size, location, and rotation. This will help you position the graphic you want, without having to change how the file is created in the first place. I found this to be a good option, if you wanted to reuse the same graphic in multiple places, but with subtle differences, you knew that you didn't need to recreate different files.

*Hint for future Atmosphere Builders #7: I noticed the hard way that the naming of the location of the textures that you use in your movie is a bit unorthodox to the usual naming scheme that you would think to use for other websites.

For example, if you wanted to use a Jpg named "chrome.jpg", and it was up one level in the textures folder, you would normally label it: "/textures/chrome.jpg"; however in Adobe Atmosphere, you need to add a "." (Period) in the beginning, or else it won't work online. So it would look like: "./textures/chrome.jpg".

That period in the beginning might not seem like a big deal, and you might even notice that your textures seem to be working when you're looking at them on your computer, but they will *not* work on the internet without that period in the beginning.

THE FORMAL ROOM

The formal room is one of the most pleasant and interesting rooms in the entire house. This room is very important during the rush week and I felt needed to be represented in a more natural way compared to most of the other rooms. This room is unique in how it is set up just for people to have conversations with couches all over, and a mixed green and hardwood wall.
I wanted the walls of this room to be as accurate as possible, so I took many pictures of the wall where it was completely exposed. I brought the best picture into Adobe Photoshop and rotated the picture so it would appear to be as straight as possible, cropped off the edges, and used a function in Photoshop to blend the edges together. This is a technique built into Photoshop to help you create seamless backgrounds.

When I was done editing the picture and compressing it down to a small size, I imported it into Atmosphere and pasted it onto the walls of the room. For the parts of the walls that were being intruded in from the stairwell above, I pasted the same picture of the graphic onto those corners, and just stretched them so you would not see the hardwood, since that's not the way the room naturally looks.

For all of the stairwells in the house, I had to create a slanted slab to place behind the stairs, due to the fact that you would be able to see through the stairs to whatever wall was behind it. I had to always remember to set the texture of that slab to be identical to the colors of the stairs throughout the house, so you wouldn't notice anything different.

Continuing throughout the rest of the floor was pretty standard, with a few minor exceptions. The entrance for the stairwell from the first floor down to the basement was a little different. There was a drop down portion of the ceiling that came down over the entrance, along with a very small landing spot at the top of the stairs, between either of the two hallways. The drop down ceiling is actually the landing spot for the stairwell a floor above. It is the part of the stairs where the two small staircases meet in the middle between the two sides of the second floor, and it is the top of the stairs that continue down to the first floor.

Getting the positioning of the ceiling to be accurate was a bit difficult, because whenever I made a subtle change, I had to move back up to the second floor stairwell, to make sure that everything was still aligned correctly. Whenever I had to readjust the smaller side stairs, I had to go back down to both the formal room and the main first floor hallway, to make sure that the stairs weren't coming through the ceiling in either of those rooms. There were slanted slabs covering both the stairs and forming the cuts into the ceiling for both of those rooms and I had to make sure that everything was accurate and there weren't any holes.

Once I was able to get the ceiling properly positioned for the stairwell down to the basement, I had to then create the stairwell down to the basement itself, along with using multiple subtractive boxes to make the cuts into the walls so you can descend down the stairs.

THE BASEMENT

The basement is a very essential part of the house. It is the most commonly used room throughout rush, with the Formal room being a close second. The basement is made up mainly of a few big open spaces, along with the kitchen where most of the food is kept during the actual rush. The open area for the rest of the basement is the most open

area in the entire house. This is where everyone comes to talk, watch television, play games, etc.

The basement was set up a bit differently compared than other floors. This floor doesn't consist of multiple rooms with furniture and desks. It also was different than the rest, because it had two different levels.

When you first make it down the stairs and walk to the right, you will enter the kitchen. The kitchen is pretty open with what seems to be a lower ceiling compared to the other floors in the house. There is a cutout from one of the walls so you can see the open area in the basement, along with a few small steps that you can walk down so you can enter the basement area.

The open area of the basement is lower to the ground than the kitchen is, but they share a ceiling. In order for me to create this entire floor, I had to do my usual process of creating another floor of the building, by continuing the floor and walls down to the same height that I had for the previous floors. Along with that, I also was able to configure the height of the stairwell between the basement and the first floor.

After I had the basic dimensions of the basement laid out with the placement of the walls and positioning of the area I designated for the kitchen, I had to recreate another level of flooring that would sit above the general flooring I had for the entire basement. Due to the kitchen layout being very boxy, creating a square floor to hover over the floor wasn't too difficult. I had to keep on adjusting how high I wanted this kitchen floor to sit above the general floor of the basement, since I didn't want it to leave too little a space for the users to be able to maneuver through the kitchen, as a route to make it up the stairs to view the rest of the house. The raised kitchen floor would end up extending through the kitchen area, past the stairwell, and onto the other side of the stairs, towards the boiler room.

Now I often debated how I wanted to treat the boiler room in the basement. After much thought, I decided to treat the boiler room the same way I treated the bathrooms. I will just end up placing closed doors with signs on them to point out what the rooms are, but I didn't see the need to allow entry into these rooms. There was no point to show the inside of a bathroom or a room that houses the boiler, along with the washer / dryer for the household. These aren't exactly important stops on the tour, nor did I think it was necessary to waste time modeling them.

The positioning of the boiler room however was something very important to take into account. The outer perimeter of the room helps line up the walls of the basement from both the continuing of the raised flooring of the kitchen, to shaping out the area in the basement area near the bar / DJ booth at the end of the open area.

THE KITCHEN

Along with the formal room on the first floor, I felt that the kitchen also needed to have a little bit more detail in its structure and layout, compared to most of the other

rooms. Just putting up a sign that says kitchen, wouldn't necessarily make it believable to the virtual rush guests. So, I decided to take advantage of some special shapes and designs that the kitchen held compared to the other rooms.

If you were to walk into the kitchen from the stairwell between the basement and the first floor, you might notice that the wall to your left is lined with kitchen cabinets that run along the floor all the way to the back wall, as well as making the turn around the corner for a little bit. Along with the bottom drawers, there were cabinets that run along the ceiling for most of the way to the back wall as well. These cabinets sit right underneath a box-like extrusion in the ceiling that runs along the ceiling to the back wall, and continues around the corner to the wall that separates the kitchen and the basement common area.

I first created the bottom cabinets that run along the floor by stretching out cube shapes to stretch along the floor. Once I had these in place, I could make more accurate judgments in the sizing of the cabinets that were going to sit above these lower cabinets by being able to compare the two. I proceeded to create the floor cabinets, then moved onto adding in the ceiling ducts cutout, and finally the top cabinets underneath those, making them slightly less thick in comparison to help continue the realism of the room.

There is also another counter that sits on the opposite side of the room from the beginning of the first set of cabinets. This counter was also made in a similar fashion by using a cube shape and stretching it out. Once I was done creating it, it was very easy for

me to adjust its height compared to the floor, since it was supposed to be the same height as the other counters in the room, I just had to make them all the same height.

Sitting right above this individual counter, there is also a cutout in the wall so you can see into the basement from the kitchen. I created this cutout just as I created the other ones throughout the house, with a subtractive box. The sizing of this cutout was very easy as well, since the width of the cutout is the same size and positioned right above the counter, and stretches from the top of that counter all the way to the ceiling.

It took me a little bit of searching to find some good and free graphics to use as textures to the kitchen. After a while, I found a good one that I used for both the checker box tiling of the floor of the kitchen, the wood finished cabinet doors for the cabinets, and finally a grainy white surface for the counter tops.

Since the open area of the basement is pretty much just an open area, there wasn't really too much that had to go into it, and since it was the last room that I was planning on working on, as you could imagine, a nice relief. The only thing I did in the basement was to create a few barely noticeable steps from both the entrance cutout to the kitchen along with the bigger opening towards the boiler room on the other side of the stairs. Originally I didn't insert these steps, and depending on how quickly you ran to the doorway, you might not make it into those other rooms. Obviously this wouldn't do, so I inserted in the little steps by just simply creating two small cubes that I laid against the corner of the wall and the floor.

The last finishing touch that I put into the basement was trying to recreate a mural that we have drawn on our back wall in the basement. I took a few pictures of the mural that represents our Fraternity's badge and our inaugural date on Michigan State University's campus. After trying a few different ways of just laying in different edited versions of pictures that I took, I decided to recreate the graphic. I found a black and white version of the picture, that I colored in with Photoshop, along with adding in the little extras such as the Delta Psi Chapter inaugural date.

FURNITURE AND OTHER OBJECTS

Once I created all of the rooms, put in all the lighting and textured all the walls it was time to start finding, creating, and laying my furniture and objects in all of the rooms of the house. The lighting and texturing certainly helped make the house look very believable, but without the furniture, it just didn't look like a real house.

During the time that I was creating this house, I was trying to make up a small library of both textures and objects that I was able to find in either Adobe Atmosphere examples, or from various other Atmosphere resources around the internet. I really wanted to have a few different versions of similar objects, so I would possibly be able to import them into my world in the different rooms, so that there wouldn't be the same looking furniture all over the house.

I was able to find some good versions of basic furniture, such as couches, loveseats, tables, and television sets. The good thing about these objects was that they all were created in Adobe Atmosphere and it was easy to import them in. All of these objects were saved as individual .AER files that I could just import directly into Atmosphere. Whenever you import an object in, you would see a representation of this object in the Variable Tools palette window, and could just simply click and place it into the world wherever you wanted.

*<u>Hint for future Atmosphere Builders #8:</u> You must always be aware that after you import a standalone object into Atmosphere, it doesn't mean it's necessarily going to have the right size at the time when it's dropped into your world.

Many times when I would first import an object such as a couch into my world, it would be half of the size of the entire house. A good trick is to group all of the parts of that object together, and transform its size equally so you can adjust all of its parts in proportion. Whenever that's done, then it's not too hard to reuse furniture once you have at least one placed in the world.

Another good thing about using objects that you imported in from other .AER files is that they hold the same qualities and can be edited the same way as are all of the other existing objects in your world. For instance, I was able to reuse the same looking loveseat in various locations around the house, but by applying different color textures to the fabric, they all looked different. *Hint for future Atmosphere Builders #9: Something else that is very important to keep in mind with the use of Atmosphere created furniture and objects is that they increase the file size of your world depending on the complexity of the object, along with being calculated into the lighting configurations if you don't adjust them not to do so later on. Mainly, very complex objects can lag down your world. Believable-looking, and more importantly, simple objects such as basic chairs and tables, are good to use if you are able to. Keeping the levels low on how it is affected by lighting is somewhat up to your discretion after that, depending on the realism you want out of the furniture.

Through my searches and collection of various types of objects to use in my world, I came upon various forms of Viewpoint objects. All of these objects were originally created in different types of leading 3D programs such as 3D Studio Max, and the quality of the objects were far and away much better quality in design and realism in comparison to the objects I obtained through Atmosphere. Besides the higher grade of quality in realism, they all seemed to have built in lighting attached to each individual object that bent and moved along with your positioning of them, which certainly gave them a believable feeling; with the exception of some objects being possibly a little too shiny.

While inserting and trying out a bunch of different Viewpoint objects, I noticed one really positive attribute to these objects. Their file size was next to nothing. Each imported object amassed only a minuscule amount of bytes to my overall size, which of course was a huge bonus. However, to accompany that one positive attribute, I of course noticed a few negatives that went along with the use of these Viewpoint objects:

*Hint for future Atmosphere Builders #10: Viewpoint objects don't seem to have any hit detection attached to them. So, these objects might look nice, but no matter what objects you place into your world, the inhabitants of your world will easily be able to walk through these objects. Of course, this might pose as a problem depending on what objects that you're planning on using, along with their main function. Since the Viewpoint objects and the forms of texturing were created outside of Atmosphere, you are unable to alter these textures once they're brought into your world. A positive to this is that they are not calculated into the lighting of your world.

One other negative thing involving using these Viewpoint objects is that it greatly increases bugs and inconsistencies involving the reliability of Atmosphere working correctly, especially in the earlier releases.

During the time that I was creating my world, I never really ran into too many problems with the program acting buggy or shutting down on me too often until I started attempting to use Viewpoint objects. I was originally using Builder Version 67, without knowing that a later release was available only a few months before I really started working on the modeling for this project. The later release of Builder Version 117, was a bit more reliable, however it had some different representations and options in the adjusting areas of objects such as a different representation of being able to rotate an

object that I wasn't as comfortable with involving the newer Builder version in comparison to the older one that I was using for the previous months.

There were two different ways that the Viewpoint objects made Atmosphere act unreliably. One way was that the program would just randomly crash, and crash often. This was obviously a bad and annoying side effect. The inconsistencies of the reliability of the program in these final stages, of course became a real annoyance.

The other major side effect of using more then two or three Viewpoint objects in an environment was that after I finished my session of working on the world and saved everything, the next time that I tried to open the last saved version of my site, none of the viewing windows would work, nor would they show anything in them. The only thing that would work would be the individual player view in the editable window. This of course was almost more frustrating, because I would have done a lot of work without the program crashing, and I thought I was saving the project, and then found out that it had become obsolete, because I would not be able to edit or add anything after the session had been closed. During these times I had to face a lot of different decisions on how I wanted to handle these Viewpoint objects. These objects truly enhanced the realism of my world, but were they worth all of this grief followed by lost time in having to recreate previously saved work?

At this point, I tried reaching out to different contacts that I had, along with writing to various forums of other Atmosphere builders. It is through a contact that I was

able to find out that there was a newer build of the program that wasn't as buggy, and which helped me in that I did not have to throw out the use of the greatly desired Viewpoint objects.

Just as I was attempting to use the different type of Atmosphere objects in various rooms with different texture colors, I attempted to mix up the relationships of different Viewpoint objects in various rooms. I had two different types of chairs that I decided to use throughout the site, but only found one acceptable desk and bed to use in the different rooms. I tried to mix up the types of chairs, along with the different types of objects to place on top of the desks in the different rooms, in order to make the room's furniture unique to each other.

EMBEDDING THE WORLD INTO A WEBPAGE

Just as the builder versions of Atmosphere were being updated and released during the time I was creating my project, the known ways of displaying these websites luckily were advanced early into the creation of my project.

When I first started creating the basic design of my first room and wanted to test the chat and interaction abilities of my world the only way that you could truly enter a world was to use a separate Adobe Atmosphere Player. For this to be able to work for my project, it would force all of the virtual rush guests to download and use a version of the player, which of course would be an annoyance for all of the users of this world. I was very much hoping that I wasn't going to have to force all of these people to

download and use a program that I'm sure they wouldn't use under any other circumstances outside of this project.

Luckily only a matter of months into my project, there was a great expansion of resources linked online in all different forms that helped in many ways during the creation and experimental phases of this project. One such resource was the creation of plug-ins that would allow the capability for an .AER world to be able to be embedded into a webpage, along with built-in detection if you have a player on your computer, and which would help you link to where you to be able to install it if you chose to download and install the player. This was of course a great resource and helped make the idea of implementing this world as a common webpage.

You can view an example of some of the code that you can use to embed a world that you created into a webpage. (The code is included as an appendix.)

Those scripts will define what file you're planning to embed into the page, along with defining the different window sizes of how much space it will take up on the screen. There are also scripts in there to help resize the image if the resolution of your screen changes. There's a loading function that is also triggered to help load the world into your webpage before it is fully displayed.

Along with that code, it is also important to add these scripts near the top of the page. These scripts are used to attach any outside JavaScript that you may want to

implement in your world. (There are various forms of JaveScripts that you can implement that can do anything from animations to default messages when a world is fully loaded that are included as an appendix.)

GETTING THE CHAT FUNCTION TO WORK

Once the world was able to be put online, making sure that the chat function could work became a very important piece of the puzzle. Even though there has been a growing network of resources for developers involving using and creating Adobe Atmosphere projects, there still weren't any posted directions on how to enable all the different types of capabilities that can be applied to an Atmosphere world; for example, being able to get the chat function to work online.

Apparently there seemed to be a revolution of sorts in the methods to get the chat function to work with Atmosphere worlds. Luckily I was able to obtain some tips from a fellow developer in methods to get the chat function to work. There are a few minor things that you have to perform; however neither of us was sure if all of the steps were completely necessary.

*Hint for future Atmosphere Builders #11: In order to get the chat function to work, there are a few things that you need to remember to do in your Atmosphere Builder world before you save and export your world. One step that neither I nor my colleague was sure about was to set your Reference URL in the World Settings window of Atmosphere to a URL that has the same name as your .AER file, but instead of having the .AER value at the end, it needed to be linking to a .CTL. For example, if your world was called **virtualhouse.aer**, then the Reference URL would have to read **virtualhouse.ctl**.

The one definite value that you would have to enter to get the chat function to work was that you need to make sure that you link to the Atmosphere server. In order to get this to work, in the Server input box right above that Reference URL input box in the World Settings window, you need to type in: **yacp://atmosphere.adobe.com/**. As long as you have this typed into the Server box, you shouldn't have any trouble networking all of your viewers together after that.

One other important thing to keep in mind is, even if you are not planning on using the chat function, you will need to enter the correct server name into that same server input box, if you're planning on being able to see and otherwise interact with any other people in your world.

An interesting function of having your world linkable to other viewers is that you will be able to see and interact with anybody that loads your webpage. Obviously, if you created a page that is greatly visited, having too many people logged on at once may force the world to lag a bit, but fortunately there is another input box labeled User Count in the World Settings window that allows you to set the maximum amount of people you would like to gain access to your page at one time. For instance, if you were to set the User Count to 30, there could never be more then 30 people logged onto your site at one time.

CREATING MY OWN AVATARS

After I was able to get the entire world created, I felt that it was a good idea to work on creating different avatars to use for the Virtual Rush that I would teach the active members to use, so they would look different than the rush guests that visited the site. Having the active members stand out from the Rush guests would help the guests know who they should talk to, if they wanted to get a tour or find out more about the house.

I set the default avatar that a guest would be viewed as, as the default blue guy with a grey shirt and black hair. This is the same default avatar that Adobe Atmosphere sets everybody to be as when they are using Atmosphere for the first time. The avatar is just a basic shape, not too tall, and doesn't really have any special animations attached to it. When I was originally designing the house, I designed it in proportion to the size of this default avatar. I needed to make sure that an avatar such as that, would be able to fit through various doorways, and would be able to easily maneuver throughout the house.

To create my own avatar, I felt that it would be best to attempt to just alter the look of that same avatar. I was able to find and download the .AER file of the default avatar, and proceeded to make different versions of it, that I would later use. I wanted to reuse the same basic shape and size of the default avatar, because I knew I wouldn't have any problems with having to readjust anything other than the looks to be able to work smoothly with maneuvering throughout my world. I made and saved two different alterations of the original default character. They were both fairly similar to each other. All I did, was I changed the avatars' texture colors. Since the default character was saved as an .AER file, I was able to add and alter textures in the same way that I was able to do something similar when it came to the furniture earlier in the creation of the world. I gave the character flesh colored skin, and a white shirt.

To make it very obvious to all the guests to the virtual house, I felt that another good thing would be to put some graphics on the shirts, so they would know that it was being worn by active members. What I did from there was I created two separate Photoshop documents, one with a "K (Kappa)" and the other with a " Σ (Sigma)". I placed the letters on the chest and the back of the active member's avatars. This way no matter where you saw them walking around, they would stand out even more.

I ended up just creating two different version of this new "Kappa Sigma Avatar", one with black hair, the other with blonde. Later on after the experiment I ended up getting some more requests to more personalize some of these avatars; making different color skins and shapes and sizes to better represent different members. This is something that I would consider doing sometime in the future if they really requested it further.

SIGNS AND LABELS

With the idea of texturing the Fraternity letters onto the shirts of the Kappa Sigma member avatars, I started to think that labeling could be a good idea in more than one

area. I knew where what all of the rooms really looked like, along with knowing which room is known as the formal room, but rush guests most likely wouldn't be able to make that distinction. I also thought that if some rush guests wanted to really get a good sense on how many people could really live in the house at one time, they might want to know about how many people usually lived in the house, in terms of how many single and double rooms we had.

I found a fairly basic sign like object that was created in an .AER format, and placed these signs near the entrances to various rooms. I tried positioning them in areas that wouldn't get in the way of people that are trying to move around the room, but at the same time, position them in a very visible area from any angle that someone might be near a room, so they would be able to easily read the sign from outside the room.

When I was done positioning the signs in the most visible and least annoying areas throughout the house, I created several Photoshop images of some plain text that would best define the name or type of room that you would be looking at. The kitchen, basement, and formal room were mainly the only rooms that weren't labeled either single or double room. This would later become very useful during tours around the house, due to it being easy for a newcomer to be aware if they are in the formal room for example, since it's properly marked.

I chose to texture some of the closed doors in the house in a similar manner. I did not want there to be any doors positioned near the entrances of any of the rooms due to

the fact that slightly opened doors might cause confusion and interrupt the even flow of maneuverability. I placed simple textured thin boxes along the walls in the locations of the closed doors.

The reason I had closed doors, is that there were particular rooms that I didn't feel were necessary to the house, such as the boiler room and various bathrooms. Since they weren't really part of the tour, I just textured them all basically the same, with a graphic of a door, but I put up individual signs on them that were labeled as "bathroom", "boiler room", etc. With the labels in place with these doors, I figured that the viewers would have a good idea what the doors are there for, and would understand why there was no need to model those individual rooms. Keeping and labeling those rooms in there were still necessary to keep a high value of credibility to the actual houses design and the texturing and labeling of the doors certainly seemed to be the best overall alternative.

CHAPTER SEVEN

VIRTUAL RUSH

METHODS

The final goal of this research was to evaluate the effectiveness of conducting a Virtual Rush in the future, along with evaluating if there could be other possible uses of internet related events to provide more exposure to future potential guests of the Fraternity system.

For this user testing, I wanted to get a good range of highly and not so highly active people during past Rush events within the Delta Psi Chapter. I also wanted to gain participation for true potential Rush guests, regardless of their computer background. I was hoping that regardless of their computer background, we would at least be able to gain their attention through the "WOW factor" of having a Virtual Rush.

I used a convenience sample with the Rush guests, inviting students that found out about the Virtual Rush event from word of mouth, or other means. The guests were sent to a webpage consent form that simply informed them all about the project and the purpose of the experiment, along with requiring them to accept the terms of the agreement prior to gaining access to the Virtual Rush. (The consent form is included as an appendix.) For this research, four members accompanied me to participate in a lab I reserved in the CAS building of MSU. Four members that weren't able to attend in person, logged in from outside locations such as their dorm rooms in the same fashion as the Rush guests.

Part of the consent form granted permission to save personal information for potential further use. We wanted to be able to meet and gain information related to potential Rush guests in the hopes that we would be able to contact them later to invite them to participate in a live Rush event.

The study began with four people in the CAS building computer lab at MSU, with a total of twelve participants logging in over a 2 hour period online (4 members in the CAS lab, 4 members online, 3 rush guests, and myself). The active members logged in to the website and explored the virtual house starting about 15 minutes before the designated starting time for the actual Virtual Rush. I wanted to make sure that all of the current members fully understood how to interact and maneuver throughout the environment before the beginning of the test. I was also hoping that they would be able to gain a better understanding of how to answer potential questions involving how to use the program if they were ever asked by guests to the site, so there would be more than one troubleshooter available. During the practice session prior to the actual Virtual Rush, participants commented favorably on how realistic the virtual house looked.

Due to the fact that the participants that were physically present in the CAS lab for the testing with the head researcher, anonymity was not possible. For those who logged on from outside sources, anonymity was possible if they chose not to give any information. Pseudonyms are used both on the data note forms and in the reporting of results below. The subjects who were present in the CAS computer lab were given the following pseudonyms:

Present Active Members in the CAS Computer Lab:

Subject 1: Adam Subject 2: Pete Subject 3: Mike Subject 4: Jay

Pseudonyms were also used both on the data note forms and in the reporting of results below for those participants logging in virtually. I chose to include only five participants from this group (two active members and three potential Rush guests). I only chose to use the data from two of the active members that signed on online, due to the fact that the other two were not logged on for more than five minutes each and did not fully participate enough to give me accurate results.

Virtual Participants:

Virtual Active Member Subject 1: Nick Virtual Active Member Subject 2: Russ Virtual Rush Guest Subject 1: Joe Virtual Rush Guest Subject 2: John Virtual Rush Guest Subject 3: Steve

All of the participants stayed active and involved with conducting the Virtual Rush throughout the two hour experiment. Some participants were unable to stay logged in for the entire two hour period due to personal engagements that either started before Virtual Rush was over, or ended after the project started.

TASK ANALYSIS

I gave all the subjects a two hour period to interact with each other, to take notes on what they liked and disliked about the world and the experiences and to feel free to comment about any and everything throughout their participation in the experiment.

In order to monitor everything that was occurring during the two hour experiment, I took notes and constantly checked various forms of data that were coming in during the entire span of the experiment.

I had a window open that showed all the current people who were logged onto the site, along with their personalized names and pictures of their avatars. I constantly monitored and counted all the people on that list every few minutes. A good feature that is built in with the chat feature is that every time a new person logged into the world,

there would be an announcement that would state that someone new has entered the world, making it easy to keep track when people log in.

Besides monitoring who was logged on, I made constant copies of the general conversations that took place during the entire two hour span. By being able to view both a log of people that were in the world, along with being able to see how the general conversations that went on after the entire project was over, I could get a better understanding of how the interactions between participants went during the experiment.

I was pleased to see that everybody took advantage of the chat function and seemed to be very comfortable communicating through it. There were conversations between active members and Rush guests that seemed to parallel the typical conversations they might have at a real Rush event. Questions about the Fraternity, exchange of e-mail addresses and phone numbers, and general chitchat were all very common amongst the participants.

The Rush guests were not the only ones that went on tours throughout the house. All of the active members visited all of the rooms of the virtual house, and at times would try to meet others in the same room.

I noticed that some participants seemed to have trouble setting their names to go along with their avatars near the end of the Virtual Rush. While they were attempting to figure out how to set their names, about half of the participants figured out how to change

their avatars to something different provided in the default list of avatars. I noticed that some of the avatars that people changed into seemed a bit different from the usual list of avatars I knew of. It seemed as if the available selections in the default list of avatars changed slightly sometime prior to the Virtual Rush

Once the first person was able to change his avatar to something else, everyone seemed to want to try it. The only problem that came about with the meshing of different avatars was that some of the avatars that people chose were too big to maneuver easily in the virtual house. The avatars would not be able to fit through certain doorways for example. Once they ran into these issues, everyone seemed to realize that they needed to make sure to adjust the size of their avatars if they wanted to use something other than the default avatar. After spending some time toying with the different styles of avatars, most people just converted back to one they knew would fit in the environment to ensure maximum maneuverability capabilities throughout the virtual house.

FOCUS GROUP FINDINGS

At the end of the Virtual Rush I conducted a focus group consisting of the active members who were present in the CAS building at the end of the two hour period.

The focus group consisted of about a one hour period of questions, which followed a short introduction to the focus group itself. The questions were broken up into three different categories. The first set of questions was related to the realism of the site. The second set of questions was aimed at the different types of interactions that the subjects either noticed or encountered on their own, and the last category of questions involved the overall feeling of the Virtual Rush.

THE REALISM OF THE SITE:

- 1. Did you find the model of the house to be a good representation of the actual house?
- A: They all felt that the model of the house was a very good representation. Many of the subjects mentioned that they were very surprised to the amount of detail I went into in creating the house. There ended up being a few cuts in walls and connections in ceiling patterns that some of them were unaware of, and when they visited the house recently after the Virtual Rush, they again commented on the detail that was put into the model.
- 2. How did you feel about the amount of detail in the individual rooms? Should there have been more or less? What details would you add or remove?
- A: There weren't beds in one of the double rooms and the fire hydrant was missing. (For those of you that have never visited the house in real life, there is an unattached fire hydrant in the corner of one of the common rooms on the second floor).

There was a good response to the use of various different colors in many of the rooms, along with the varying types of furniture.

There was also a very good response involving the way both the formal room was represented, along with the big Kappa Sigma sign on the back wall of the basement.

- 3. Do you feel that the slight proportion differences I made in the rooms and hallways to enhance the mobility through the world were a good idea? Or, do you feel that I should have just kept it all realistic, as not to be lying to the guests?
- A: Pete said that if I would have created everything in actual size that it would have possibly made it harder to navigate through the different hallways, such as the second floor commons area, and some of the smaller single rooms.

Everyone seemed to universally agree that they didn't feel that the proportion changes were too drastic and unrealistic. They claimed that they would have made the same adjustments if they were involved with the creation process.

Everyone felt that maneuverability was more important than exact measurements as long as the measurements weren't completely unrealistic. Due to the actual size and configuration of the house, there are many areas in real life that are a bit difficult to maneuver through, and they thought that my modeling caught the right essence of those rooms, without the annoyance of becoming an issue with maneuverability.

- 4. Do you believe that the guests will be deterred to visiting the house or encouraged to visit it after viewing this virtual environment?
- A: Everyone seemed to feel that the virtual house would encourage people to physically visit the house. Both Pete and Adam joked that one of the reasons is that the virtual house that was being represented was a lot cleaner than the real one.

Mike felt that it would help get potential rush guests interested initially in wanting to see what the house looks like in reality. They would be able to gain a better understanding of the house itself before they arrive in person, and would even be able to figure out their way around the house.

Jay thought that it would prove to be interesting to see if a first time visitor to the house would be able to make their way around the house without getting lost, which due to the design of the house, happens often to first time visitors.

They all felt it would be interesting to be able to imagine someone knowing their way around a place on their first visit.

INTERACTIONS:

- 5. Did you talk to any Rush guests? If so, about how many?
- A: Everyone spoke with several Rush guests. Nick mentioned that he spoke in-depth with one of the Rush guests. He spoke with some other Rush guests as well, but Nick seemed to be the only one that truly conversed closely with one of them.

6. Can you give me an example of some of those conversations? How long were most of your conversations? What kinds of things did you talk about?

A: Nick gave a few tours to some of the Rush guests. He said that they followed him through the house, into many of the different rooms. They often would ask what rooms we all lived in, if we were living in the house. They would also ask how close the shown model was to the actual rooms.

Some of the guests were actually over to the house prior to this event, so they didn't need to ask for comparisons between the real and the old rooms; meaning that those guests didn't ask as many questions involving the house. They were more focused on just speaking with the current members who were logged in, and just mainly chatting.

In terms of how the guests virtually interacted with the active members, the interactions appeared to parallel the real progression of human interactions that

normally occur during a live Rush event, which includes the chatting and the house tours.

7. Do you feel that you interact more or less with Rush guests during normal events then you just did during this Virtual Rush? Why?

A: Pete felt that it was a lot harder to interact with Avatars instead of real people. He felt that he interacted a little less then he would in a real world situation. There were less general things that he felt that he could talk about, without involving like experiences involving their surroundings.

Jay believed that in a real life situation, there are subtle breaks in conversations depending on the situation that helps change subjects, such as going to get a drink or something to eat. While you and the guest go to get something to eat together, it is always easy to have a conversation over their favorite type of soda, for example. Changing the momentum and topics of conversations is a little more difficult in a virtual chat arena, especially if you're meeting the other person for the first time.

Everyone seemed to agree with a comment made by Nick that with this virtual world setting, it was much easier to give a tour around the house compared to the real world. Moving around the house takes much less time, and is almost effortless. They all seemed to really enjoy the ability to be able to talk to each other no matter where in the house they were located. In real life, you're limited to interacting with the people only in your general area, but in this virtual environment, you have the ability to sustain a conversation with someone on the top floor, while you're still located in the basement.

- 8. Would you consider this virtual 3D communication environment to be a good tool to help normally shy brothers feel comfortable interacting? Do you think the experience might have an impact on how comfortable shy brothers will feel in future live events?
- A: They all firmly stated that they felt that a lot of the guys that are normally shy in person are very talkative on the internet. So, it will help them a lot to have a tool such as this.

Mike who is normally a pretty shy guy in real life situations during previous Rush events stated that he felt that both himself and his roommate who has a similar state of being during Rush events would be more active and able to talk more. There are some people that feel more comfortable speaking to people online, due to being nervous about speaking in person, at least in introductory situations. They all believed that once you get to know someone through this world, you'd be very willing to talk to them, and feel comfortable to talk to them when you meet them in person later on.

- 9. Did any of the guests ask you to take them on a tour? If so, can you explain how you went about doing that?
- A: Nick said that he felt that it was a bit hard to give a tour, due to the fact that you can't truly see what's behind you, and you can't tell if you're moving so fast that the person following you could get lost. But, with the chat function, along with the signs in the rooms, it was pretty easy to figure out what room you lost the other person in. It was pretty easy to double back, and find the lost guest.

He continued stating that once you make sure that you have the person following you; it became a very easy and smooth process to show a person around the house.

The tour seemed to proceed in the same format as the real life tours. The Rush guest would follow you into whatever rooms you would normally show them, along with the guest being able to ask questions involving the house, who stays in the rooms, along with any usual general questions involving the house itself. One Rush guest asked how accurate the rooms were, and Pete mentioned that they all were very accurate. And he stated that the Formal room was the pinnacle of accuracy.

Nick later stated that he found it interesting that he noticed that he showed the Rush guest the same rooms, in the same general order that he normally shows them in live house tours. He commented on how he found it interesting that without even thinking twice about it, he felt that he was really in the house during the tour, enough to go about his usual routine.

10. Did you ever use the whisper function, where you can have personal conversations that didn't involve the whole group?

A: Pete said that he was going to attempt it, however, he couldn't figure out how to get it to work.

I realized later on that it was probably better for me that they didn't, to make it easier for me to monitor all of the general conversations that took place during the experiment.

11. Did you find it beneficial to be able to talk to all the inhabitants of the virtual house without having to move from room to room?

A: Everyone gave an overwhelming response in favor of the ease of being able to talk to everybody at once, no matter where you were located in the house.

Pete stated that he thought it was very beneficial. If a Rush guest was following him, and the guest got lost in another room, Pete would never be able to find him, without the chat function working the way it was. In real life, you are able to yell out to another person if they're not in the same room, which is the closest to the ability to talk to anyone that is not in your general area in the real world. If you weren't able to talk to someone because they were just a matter of virtual feet outside of the current room that you were currently in, then being able to effortlessly hold conversations with other inhabitants of the world would be extremely difficult.

Nick went on to explain how he liked the fact that he was able to give someone a tour around the house, while still being able to hold a conversation with someone else in a completely different part of the house at the same time; which is clearly something that would be impossible to do in a real life situation.

12. What did you think of the quality of the guys that you spoke to?

A: They all seemed pretty interesting. Most of them have met various brothers in the house prior to this experiment; however, they all seemed to take very well to

everyone during this experiment. One Rush guest was very excited to come to the house for real after being part of the experiment.

13. What was the reaction that you feel that you received from the Rush guests?

A: All of the Rush guests said that they truly enjoyed the experience. None of them have ever participated in anything close to this before hand, and seemed to all very much enjoy the whole event.

Steve who was a Rush guest, stated that the Virtual Rush was a very interesting tool, and he could imagine it being very easily accepted in the future.

Steve mentioned the same thing during the actual experiment, and was seconded by Pete during the Focus Group Discussion afterwards.

OVERALL FEELING – DID IT HELP?:

14. How did you feel about the overall experience, as an active member who has participated in non-virtual Rush events?

A: Pete thought the whole event went very well, even though he felt that it didn't have as much of the bonding aspect as a real event would have. He later stated that he still felt that it was an invaluable tool that can be used for people that missed Rush entirely, or for some reason were unable to attend particular events.

They all agreed that they liked being able to get to know the Rush guests on a personal level, as opposed to pressuring them into having to act cool in public. You were able to see if these people were able to hold a true and interesting conversation, while being in a much more laid back atmosphere.

- 15. Do you think any of the visitors will consider coming back for the actual Rush events during Rush week? Possibly even some that might not have considered it before?
- A: Both Adam and Pete pointed out that one Rush guest mentioned he was planning on coming to the house for the actual Rush. Nobody seemed to be absolutely sure about any of the non-original potential Rush guests at the time, since they didn't mention anything about it.

They all said that they believe that there would be a great number of people that would be interested in just finding out about what a Virtual Rush even was, and would probably attend the initial Virtual Rush online solely out of curiosity.

The curiosity that would help gain attention to the website, along with the apparent success in the overall feelings towards the use of the Virtual Rush had the potential of spawning off more Rush guests.
16. Did you get the feeling from any of the guests that they would want to avoid coming over to the house, due to this event?

A: They all said that they got the impression that everyone seemed to enjoy the event, and only took away a positive feeling involving it. Nobody seemed to notice any signs of anyone taking anything negative out of the event that would cause anyone not to come over during actual Rush events in the future.

17. Do you think we should continue to use this site for future Rush events?

A: Everyone said yes. They all seemed to find it to be a good experience, and thought that regardless of how it would effect the amount of people that we would gain for future events in the house, they didn't seem to feel that it would hurt in any way, nor would any events have to suffer with using this as another tool in the future.

18. Do you have any final comments on the experience?

A: Pete mentioned that he felt that I put the whole world together very well. He continued to mention how realistic the house looked, especially the Formal room which he continued to praise on how good it came out.

Both Mike and Jay mentioned how they felt that it was an overall perfect representation of the house and very nicely done as well.

CONCLUSIONS WITH OBSERVATIONS

A majority of the active members agreed that the house as represented on line looked very true to the real house. They liked the idea of having another tool to be used to help with the Fraternity's Rush, and very much liked the ability that this tool can be used easily by anyone at anytime. The ability to help promote conversations between everyone involved with the event was a success, along with the ability to interact with everyone at the same time, no matter where in the house you were located. Some of the participants forgot that they were sitting in front of their computer for part of the time, and truly imagined that they were in the house.

There was a good overall response amongst the Rush guests as well. They all seemed to be interested in the event, and were very impressed in the realism of the world. They felt that it was a good experience, and helped spark further enthusiasm involving participating in future Rush events.

It was a good experience in all forms. It seemed that after the experience, many active members took some positive notes about how they personally react in real life situations such as what was simulated during this event, and will learn to be more sociable in the future. They all believed that this was a step in the right direction, involving coming up with a new tool, and new methods to help gain more members.

Some of the active members that helped out during this project were between lightly active and non-active during past Rush events. And the Rush guests all seemed to be very enthusiastic and excited over the upcoming Rush week, and being involved in this experiment.

CHAPTER EIGHT

CONCLUSION

After making several different versions of the 3D world, along with having to suffer at times through redoing the same additions during the time where I was having problems with Atmosphere constantly crashing, I was able to complete the virtual house and get it to function correctly online for the experiment.

I feel that I fulfilled my original hopes in creating a tool that would hopefully be used in the future, along with greatly exceeding my expectations of the realism of the house, along with the amount of acceptance the project was able to get later on. I was a little doubtful in my personal abilities to model an entire world just by sight without any extensive previous experience, but once I got started, it seemed to be a bit easier than I originally expected.

GETTING RECONSENT

I unfortunately ran into an issue involving being able to use my first experiment and the observations that came out of that experiment. I had to go through an appeal along with having to gain consent from all of the participants of that original experiment again, to ensure that I would be able to use that information in my thesis. The experiment that I'm referring to makes up a majority of the fourth chapter of this thesis paper. Even though the appeal worked, it greatly slowed down the progress of this paper for a while.

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ADJUSTING TO ADOBE ATMOSPHERE

Adobe Atmosphere was a fairly easy program to pick up and understand how to use in its basic levels, however, I was very glad that I had at least some minimal experience involving 3D modeling and texturing before I started this project, because it helped me to better understand how to create types of shapes along with the know how to piece them all together in a realistic fashion.

It was a bit annoying midway through the project when I ran into some of the negative effects of working with a program in one of its earlier Beta editions. There was a bit of lost time and uneasiness in working with a program that you would fear could crash on you at anytime. I learned to save after every addition, along with creating newer versions of the world if I were planning on adding in a complex object or shape, to ensure not losing all of my previous work. Being very efficient with the naming and ordering of files was very important throughout this entire project.

OTHER TECHNICAL ISSUES

Beyond the troubles I had involving using the earlier edition of Adobe Atmosphere, I ran into a few other technical setbacks involving the player itself. Unfortunately, up to the point that I conducted my experiment, there was no released version of a Atmosphere player that would be able to work on a Mac computer. Even though a majority of users that would be interested in participating in events like these, would most likely not be viewing it on a Mac computer, it would still have been nice not to have to cancel them out.

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Another major issue was that the player wouldn't work on all computers for some reason. All but one of the computers in the CAS computer lab must have had some setting on them that would not agree with Atmosphere, and would not allow anyone to view the world. It took me some time to be able to locate a standalone player to use outside of the internet browser to be able to log onto the site.

Later on after the end of this experiment, I decided to leave the website posted, and contacted a few friends that I thought might be interested in seeing the site. The site seemed to work for a lot of them, but for a few unfortunate ones, that might have had unusual settings on their computers as well; their computers either wouldn't load the page giving them errors, or even worse, would freeze their computers.

MODELING ISSUES

There were cases where I was forced to widen staircases along with any other neighboring objects attached to them. There were cases where if I widened the stairs, I would notice later on, that the stairs would then protrude through other walls. After I would adjust those walls, they would stick out of other adjacent walls. Mainly, one little adjustment had the potential to affect a great number of other things, so I needed to make sure that I was absolutely sure if some of these changes would be necessary.

I was also modeling this entire house without using any official floor plans. I was fortunate enough to spend a lot of time in the house over the years, along with living in the house for a good portion of my modeling step, however, I was unable to gain access into a lot of the rooms for a majority of the time when those owners weren't home, so I had to create the inside of those rooms by memory and to follow whatever structural guidelines I noticed to be constant with the rooms around the ones I couldn't view.

AVAILABLE RESOURCES

There were next to no resources in any means involving tips or forums from which I could gain information on how to create a project such as this, along with learning about issues that other people ran into in their worlds. For the most part, in the beginning there were almost no available examples I could even look at to get a full spectrum of what is possible.

Luckily a few weeks before I really started making my first sample rooms, there was a major update to the Adobe Atmosphere website, which included various forms of tutorials along with downloadable samples that I was able to save on my computer and use. This came in really handy when I was compiling my list of objects that I would later embed into my world.

Carrie also was able to help me get in touch with another developer of Atmosphere worlds who became a great resource when it came to getting quick answers to some questions that I wasn't able to find anything written about anywhere else. For that, I would like to thank Carrie again, along with Dave Rasmussen, who knew the answers to a lot of my fairly technical questions.

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HELP FROM THE CHAPTER

There was great enthusiasm from a group of active members of the Fraternity involving what I was trying to do for them. However, there were other members who either didn't want to give my project a chance, or were too concerned with putting on the live events so they didn't really put too much effort into promoting my Virtual Rush to potential Rush guests that they ended up meeting. This was a bit discouraging, but I never expected nor would suggest that the chapter forgo all live events in place of my Virtual Rush.

Another unfortunate setback was that I had previous confirmation from a lot of people that they were going to be available for the experiment, along with contacting and inviting a bunch of potential Rush guests to my event, and one way or another, some of them didn't show up for the event. Again, another unfortunate setback, however, the overall hopes of this site would be that if we were to gain even one new Rush guest through this method, then it would pose as a success.

FUTURE ENDEVOURS

Going by the reactions I received from many of the active members that viewed the site, if they would remember that it exists, they saw no reason not to implement it. Their only problem would be to gain enough support to be able to run and maintain monitoring all of the people that entered the site, and to make sure that there's enough representation on the Fraternity's end to make it worthwhile.

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There is a hope that alumni will also continue to use this site, as a way to visit and interact with current members of the Fraternity, if they aren't always available to visit the house as regularly as they would like to, because they live far away from the house or are too busy.

The expansion of a project of this caliber and emphasis was a very good experience for me, and so far has been gaining high acclaim followed my some healthy comments and questions involving how I put the whole thing together. I was able to show it off to my current employer as something that I hope to put into my portfolio of projects that I've worked on, and it is currently helping them push to gain a new client that potentially wanted to have a similar project created to help promote their facility. Granted that they get the client, I will get to lead the project, which would end up becoming another great experience.

I have just noticed that Adobe has finally released an official version of Adobe Atmosphere, and I will probably consider picking up a version of that whenever I can, especially if I get to lead that project. I will just continue to hope that they cleaned up a lot of the bugs that were only present in the earlier versions of Atmosphere, along with implementing some of the suggestions that I and other developers have sent into Adobe as suggestions to improve the program as a whole.

FINAL THOUGHTS

I am very pleased with the overall experience and am happy that I suggested trying out something new for my thesis project to better my skills in an area in which I didn't have too much experience. It's a good feeling to try to be an expert in a new field!

APPENDIX A

Experiment 1: Usability testing session consent form

Informed Consent to Participate in Human Subject Research The effectiveness and potential of 3D/VR websites

Principal Investigator:	Secondary Investigator:	Tertiary Investigator:
Jeff Feder:	Jesse Page	Andrew Bare
428 Comm. Arts &	428 Comm. Arts &	3027 Beau Jardin Apt. 308
Sciences Bld.	Sciences Bld.	bareandr@msu.edu
federjef@msu.edu	pagejess@msu.edu	

Purpose of the Research

The study will help show how competent the current web users are with the 3D/VR website interface. Along with that, we hope to determine how effective this new mode of media will be. After gathering and analyzing the data we collect, we hope to eventually create an effective and user-friendly 3D/VR website.

Procedures

A usability testing session will be conducted to observe you while using various 3D interfaces. You will be given a small number of simple, specific tasks to accomplish with the prototype. You will be asked to think aloud and voice any difficulties you are having.

Foreseeable Risks or Discomforts

Participation in this research poses minimal risk to you. You may experience slight fatigue or frustration with the computer software. There is also the slight risk of motion sickness from the 3D. Short breaks will be allowed. If you feel uncomfortable at any time during the session, you may immediately withdraw from the study with no questions asked.

Benefits

The benefits for the subjects are helping three graduate students gain experience in conducting research as well as obtaining an opportunity to explore interesting new web interfaces.

Voluntary Participation/Withdrawal

Your participation in this testing session is voluntary. You have rights as a research volunteer. If you do not take part, you will have no penalty. You may refuse to participate before the study begins, discontinue at any time, or skip any questions that may make you feel uncomfortable.

You are allowed to ask questions concerning the study, both before agreeing to be involved, and during the course of the research study.

Confidentiality

Your privacy will be protected to the maximum extent allowable by law. Your name will not be associated with the detailed findings. The data will be stored on a drive on a password-protected computer, available only to the investigators.

Contact Persons

If you have any questions about this study, please contact the principle investigator:

Jeff Feder: 428 Comm. Arts & Sciences Bld. federjef@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Statement of Consent

_____ I voluntarily agree to participate in this study.

I consent to have my comments included in the written summary of the session.

Name: _____

Signature: _____

Date: _____

You will receive a copy of the signed and dated consent form.

APPENDIX B

Experiment 1: Focus Group Discussion Guide - Questions and layout of focus group

Questions and Tasks

Preliminary Questions:

- Please rate your computer experience from 1 to 5, five being an expert, one having little to no experience.
- 2. Have you had any experience using any 3D computer programs? If so, what program? Was a positive experience?
- 3. Have you ever played any 3D based games? If so, what was the experience like?
- 4. Have you ever visited a 3D based website? If so, where? How did you like it?
- 5. If you have never used a visited website, do you think you would like to?

Questions about Adobe Atmosphere and 3D State (asked while the subjects are using the programs):

- 1. Adobe Atmosphere Tasks:
 - a. Locate and use an avatar (character) of your choice to use.
 - b. Try to make your avatar appear on the screen.
 - c. Try to do the moonwalk with your avatar.
 - d. See if you can locate a link to another location and use it.

- e. Try to find a way to look up on the screen.
- f. See if you can make your character weightless.
- g. Attempt to shut off collision protection, making your character able to walk through walls.
- 2. 3D State
 - a. Attempt to move through the program and explore the 3D environment.
 - b. Attempt to toggle on and off the 3D card and look at the difference.
 - c. Attempt to view a description of a painting.

Wrap-up Questions:

- How did you feel about your 3D experience? Did it frustrate you? Was it enjoyable? Describe any feelings you had.
- 2. At any point did you feel nauseas from using the programs?
- 3. Which program did you prefer? Why?
- 4. Was one program easier to use? Was one program more interesting?
- 5. Did the galleries feel realistic? Did you prefer one gallery to the other? If so, why?
- 6. Having used 3D programs, do you know feel more likely to use one in the future or less likely?
- 7. Did you have any trouble maneuvering through either program and did you feel any lag.
- 8. Do you have any final comments on the experience?

APPENDIX C

Experiment 1: Usability testing session reconsent form

Informed Consent to Participate in Human Subject Research The effectiveness and potential of 3D/VR websites and Virtual Rush

Principal Investigator:	Secondary Investigator:
Carrie Heeter	Jeff Feder
2467 Funston Avenue	44 Furness Place
San Francisco, CA, 94116	Staten Island, NY, 10314
heeter@msu.edu	federjef@msu.edu

Last spring you participated in a one hour student research project about the effectiveness and potential of 3D/VR web sites for their TC841 class project. The student researchers were Jeff Feder, Jesse Page, and Andrew Bare. During the study, you were asked to use two different 3D interfaces and perform a small number of simple, specific tasks using those interfaces. The student researchers asked you four preliminary questions, observed while you used the web sites and then asked you to complete a short eight-item survey about the experiences.

Purpose of the Research

The study was intended to help show how competent the current web users are with the 3D/VR website interface. Along with that, the researchers hoped to determine how effective this new mode of media will be. After gathering and analyzing the data they collected, Jeff attempted to create an effective and user-friendly 3D/VR website.

Student Jeff Feder is now completing his DMAT MA thesis project. For this project, Jeff used Adobe Atmosphere to model his fraternity house. He scheduled a 2 hour "virtual rush" experience during which time potential new members of the fraternity house were invited to log in, tour the virtual facility, and chat with current members.

Jeff would like to include results from the TC841 study you participated in as a chapter in his thesis, and in potential further publication which may result from his thesis.

If you consent to allow Jeff to use the results in his thesis, your privacy will continue to be protected to the maximum extent allowable by law. Your name will not be associated with the detailed findings. The data will be stored on a drive on a password-protected computer, available only to the investigators.

If you do not consent to allow Jeff to use your results, your results will be removed from the study,

Voluntary Participation/Withdrawal

Your permission to include your data in this project is completely voluntary and your decision will have no penalty.

Contact Persons

If you have any questions about this study, please contact the primary or secondary investigator:

Carrie Heeter Professor of Telecommunication Michigan State University in San Francisco 2467 Funston Avenue San Francisco, CA 94116 <u>heeter@msu.edu</u>

Jeff Feder: 44 Furness Place Staten Island, NY, 10314 federjef@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish –<u>Peter Vasilenko, Ph.D.</u>, Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Statement of Consent

_____ I voluntarily agree to allow anonymous observational and survey data collected during my Spring 2003 participation in the TC841 student class research project about the potential of 3D/VR web sites to be reported in published research

Name: _____

Signature: _____

Date: _____

APPENDIX D

Experiment 2: Focus Group Discussion consent form

Informed Consent to Participate in Human Subject Research Virtual Rush: Focus Group

Principal Investigator:	Secondary Investigator
Contraction in the standard stranger	Leff Feder
Carrie Heeter	Jell Feder
2467 Funston Avenue	44 Furness Place
San Francisco, CA, 94116	Staten Island, NY, 10314
heeter@msu.edu	federjef@msu.edu

Purpose of the Research

The study will help potential rush guests get a unique experience involving their view into the Delta Psi Chapter of the Kappa Sigma Fraternity. Along with that, we hope to determine how effective this new mode of recruitment can be. After gathering and analyzing the data we collect, we hope to determine if this method of recruitment enhanced the user's experience at all, and led to the overall goal of attracting new people to the organization, possibly reaching potential rush guests that might not have been interested otherwise.

Procedures

A focus group discussion will be used after the two hour experiment has been conducted. The secondary investigator will act as the discussion moderator. The discussion will be recorded on paper by taking notes, and the participants will be referred to in the notes by false first names. When taking notes and writing up results, real first names will be replaced by false names.

Foreseeable Risks or Discomforts

Participation in this focus group research poses minimal risk to you. It will take about one hour of your time. If you feel uncomfortable at any time during the session, you may immediately withdraw from the study with no questions asked.

Benefits

The benefits for the subjects are helping one graduate student gain observations on the effectiveness of his production thesis, along with helping your organization test out a new way of attracting new members.

Voluntary Participation/Withdrawal

Your participation in this testing session is voluntary. You have rights as a research volunteer. If you do not take part, you will have no penalty. You may refuse to participate

before the study begins, discontinue at any time, or skip any questions that may make you feel uncomfortable.

You are allowed to ask questions concerning the study, both before agreeing to be involved, and during the course of the research study.

Confidentiality

Your privacy will be protected to the maximum extent allowable by law. Your name will not be associated with the detailed findings. The hand written notes will not refer to you by your real name. They will be destroyed when the written thesis has been approved.

Contact Persons

If you have any questions about this study, please contact the secondary investigator:

Jeff Feder: 44 Furness Place Staten Island, NY, 10314 federjef@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Statement of Consent

_____ I voluntarily agree to participate in this study and to have anonymous excerpts from my comments included in the written summary of the session.

Name: _____

Signature: _____

Date: _____

APPENDIX E

Experiment 2: Virtual Rush Group consent form

Informed Consent to Participate in Human Subject Research Virtual Rush: Virtual Rush Group

Principal Investigator:	Secondary Investigator:
Carrie Heeter	Jeff Feder
2467 Funston Avenue	44 Furness Place
San Francisco, CA, 94116	Staten Island, NY, 10314
heeter@msu.edu	federjef@msu.edu

Virtual Rush is a formal Delta Psi rush recruiting event. It is also the basis of an MA thesis project by former Delta Psi member Jeff Feder.

The project will enable potential rush guests to have a unique virtual reality experience meeting current members of the Delta Psi Chapter of the Kappa Sigma Fraternity and exploring the fraternity house.

Purpose of Jeff's Research

We hope to determine how effective this new mode of recruitment can be. We hope to learn whether this method of recruitment leads to the overall goal of attracting new people to the organization, possibly reaching potential rush guests that might not have been interested otherwise.

Procedures

During the scheduled 2 hour Virtual Rush, researchers will take note of who attends, how long they stay, and the kinds of conversations and exploration visitors engage in at the 3D/VR chat web site. Conversations at the site are public – anyone who is there is part of the chat and sees what is being said. Your public interactions and discussions will be captured electronically by the researcher, who will review participation as part of his assessment of the success of this recruitment technique.

(If you use the WHISPER mode to talk to someone, that conversation is private, will not be seen by others, and will not be captured.)

Foreseeable Risks or Discomforts

Participation in this research poses minimal risk to you. You may experience slight fatigue or frustration with the web site. There is also a slight risk of motion sickness from the 3D environment. If you feel uncomfortable at any time during the session, you may immediately log off with no questions asked.

Benefits

You are likely to enjoy the chance to experience an emerging form of virtual reality chat. The benefits for also include helping one graduate student gain observations on the effectiveness of his production thesis, along with helping an organization attempt new ways of attracting new members.

Voluntary Participation/Withdrawal

Your participation in this testing session is voluntary. You have rights as a research volunteer. If you do not take part, you will have no penalty. You are free to leave at any time. Jeff will be present at Virtual Rush. You are allowed to ask him questions concerning the study, both via email before agreeing to be involved, and during Virtual Rush.

Confidentiality

The recorded conversations will not be seen by anyone other than the researcher. Of course, conversations can be seen by anyone live, during the event.

How long people stayed will not be seen by anyone other than the researchers. However, the name of every person who attends Virtual Rush will be recorded and the list of attendees will be given to an active brother. Brothers will compare the list of Virtual Rush attendees with attendees at other Delta Psi Chapter rush events, to identify you as a potential rush guests and to see how many people who came to Virtual Rush also attend a physical rush event.

Your privacy will be protected to the maximum extent allowable by law. Your name will not be associated with the findings. The data will be stored on a drive on a password-protected computer, available only to the investigators. The data will be destroyed as soon as the thesis is completed and approved.

Contact Persons

If you have any questions about this study, please contact the secondary investigator:

Jeff Feder: 44 Furness Place Staten Island, NY, 10314 federjef@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Statement of Consent

By clicking on the link below to enter the Virtual Rush, I voluntarily agree to participate in this study:

I CONSENT TO PARTICIPATE AND AM READY TO ENTER THE VIRTUAL WORLD.

APPENDIX F

Experiment 2: Focus Group Discussion Guide - Questions and layout of focus group

Focus Group Questions

1) Introduction (5 minutes)

Moderator will greet and presentation of food and soda as appreciation for participation in the experiment.

Purpose statement:

"Your input during this discussion will help us better understand if this method of recruitment is beneficial"

Rules

Privacy and Confidentiality

Only your first names will be used. When writing up the results, your first names will be replaced by fake ones. This interview will be recorded onto a piece of paper, and will eventually be transcribed and stored in a password protected computer. The raw information will be discarded after the research has been completed. In the consent forms that you signed, you gave me permission to use your responses in my project report.

No right or wrong answers

There is no right or wrong answer. I would like to know how you honestly feel.

One person talks at a time

I would prefer if only one person talks at a time. This will help avoid confusion. Please speak carefully.

Moderator Role

I will be the moderator of the focus group discussion. My role will be to help keep the discussion on time and on task.

2) The realism of the site (10 minutes)

- 1. Did you find the model of the house to be a good representation of the actual house?
- 2. How did you feel about the amount of detail in the individual rooms? Should there have been more or less? What details would you add or remove?
- 3. Do you feel that the slight proportion differences I made in the rooms and hallways to enhance mobility through the world were a good idea? Or, do you feel that I should have just kept it all realistic, as not to feel to be lying to the guests?
- 4. Do you believe that the guests will be deterred to visiting the house or encouraged to visit it after viewing this virtual environment?

3) Interactions (25 minutes)

- 5. Did you talk to any rush guests? If so, about how many?
- 6. Can you give me an example of some of those conversations? How long were most of your conversations? What kinds of things did you talk about?
- 7. Do you feel that you normally interact more or less with rush guests during normal events then you just did during this Virtual Rush? Why?
- 8. Would you consider this website to be a good tool to help normally shy brothers feel comfortable interacting? Do you think the experience might have an impact on how comfortable shy brothers feel at actual events?
- 9. Did any of the guests ask you to take them on a tour? If so, can you explain how you went about doing that?
- 10. Did you ever use the whisper function, where you can have personal conversations that didn't involve the whole group?
- 11. Did you find it beneficial to be able to talk to all the current inhabitants of the virtual house without having to move from room to room?
- 12. What did you think about the quality of guys you spoke to?
- 13. What was the reaction you feel that you received from the rush guests?

4) Overall feeling – Did it help? (15 minutes)

14. How did you feel about the overall experience, as an active member who has participated in non-virtual rushes?

- 15. Do you think that any of the visitors will consider coming back for the actual rush during rush week? Possibly even some that might not have considered it before?
- 16. Did you get the feeling from any of the guests that they will want to avoid coming over to the house, due to this event?
- 17. Do you think we should continue to use this site for future rush events?
- 18. Do you have any final comments on the experience?

APPENDIX G

Code to Embed an Atmosphere World into a Webpage

<SCRIPT language=javascript>

//Replace the URL below with the URL of your atmosphere world file.

vmp1 = new MTSPlugin("INSERT FILE LOCATION HERE", "600", "400",

"", "classic", "ContentType=1;");

</SCRIPT>

</DIV>


```
<SCRIPT language=javascript>
```

document.all["progressLoading"].remoteChange = function(fValue)

{

```
document.all["progressLoading_front"].style.width = (fValue * 100) + "%";
```

}

window.resizeTo(830, 775);

</SCRIPT>

APPENDIX H

JavaScript to Embed into a Webpage, to Link to Javascripts within Atmosphere Worlds

<SCRIPT language=javascript

src="atmosphere-files/AtmosphereInterface.js">

</SCRIPT>

<SCRIPT language=javascript

src="atmosphere-files/AtmosphereSendJS.js"

type=text/javascript>

</SCRIPT>

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