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Interactive computer/video game sampler CD-ROM disc

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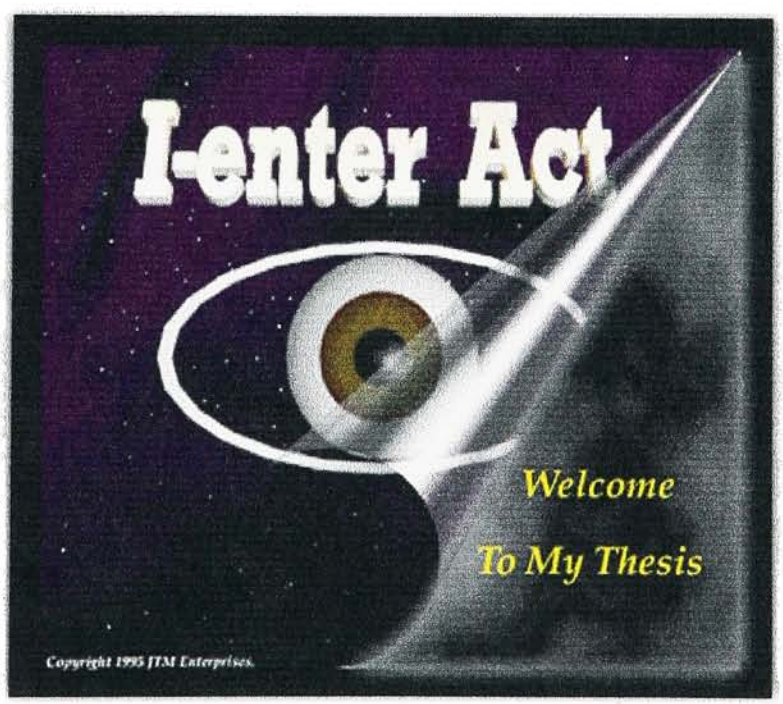
Rochester Institute of Technology

A Thesis submitted to the Faculty of the College
of Imaging Arts and Sciences in candidacy for the
degree of Master of Fine Arts.

Interactive Computer/Video Game Sampler CD-ROM Disc

by
Jeffrey T. Mariotti

6/09/97



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Chief Advisor: Bob Keough _____

Date 7-29-97

Associate Advisor: Jim Ver Hague _____

Date 7.14.97

Associate Advisor: Richard Zakia _____

Date 7-11-97

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Date 7.29.97

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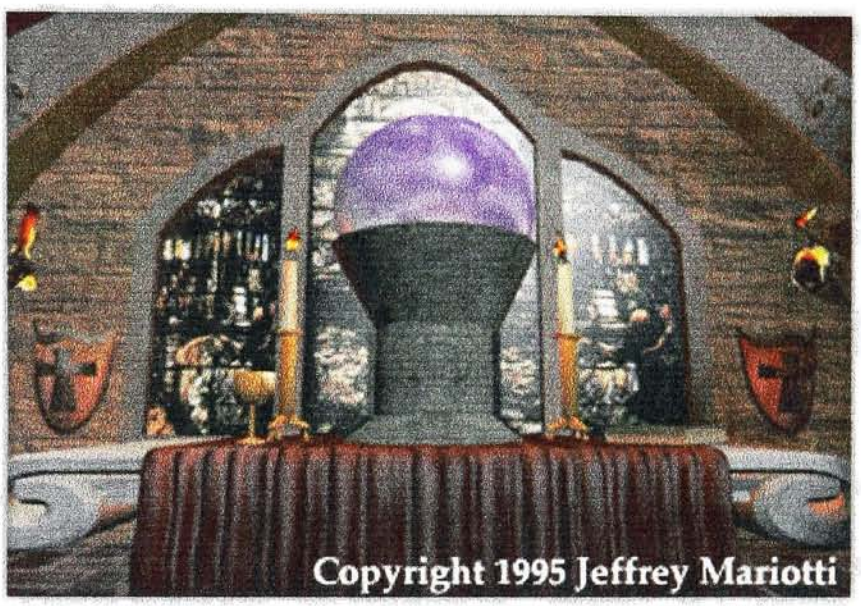

"If you can't express an idea easily, provide a picture"
-Lewis Henry Mariotti

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ACKNOWLEDGMENTS

Thanks to RIT, to the Computer Graphics Design Faculty and all others that gave me their time and advice to see me through this project.

Special graditude goes to:

To my Father: Lewis H. Mariotti

Chief Advisor: Bob Keough

Associate Advisor: Jim Ver Hague

Associate Advisor: Richard Zakia

DEDICATION

This project is dedicated to my parents for their time and support and people who have helped me make this thesis possible.

Chapter 1 Introduction

Goals of the Study

Introduction

The main purpose of my thesis is to create an interactive Computer/Video Game Sampler CD-ROM for the Computer/Video game enthusiast. The proposed use of this thesis is a product which is based on a periodic subscription. The name of the product is called "**I-enter Act**" which stands for "You are taking part of an interactive program." The purpose is to demonstrate how animation, graphics, intuitive interface and sound come together to make an interactive program. The proposed use is to be a sample CD-ROM disc for the computer/video game enthusiast which contains hot new game releases, games forthcoming, new accessories and quick-time movies of games in action. Figure 1(on the next page), is an illustration of my poster for this thesis which graphically shows the goals of this thesis.

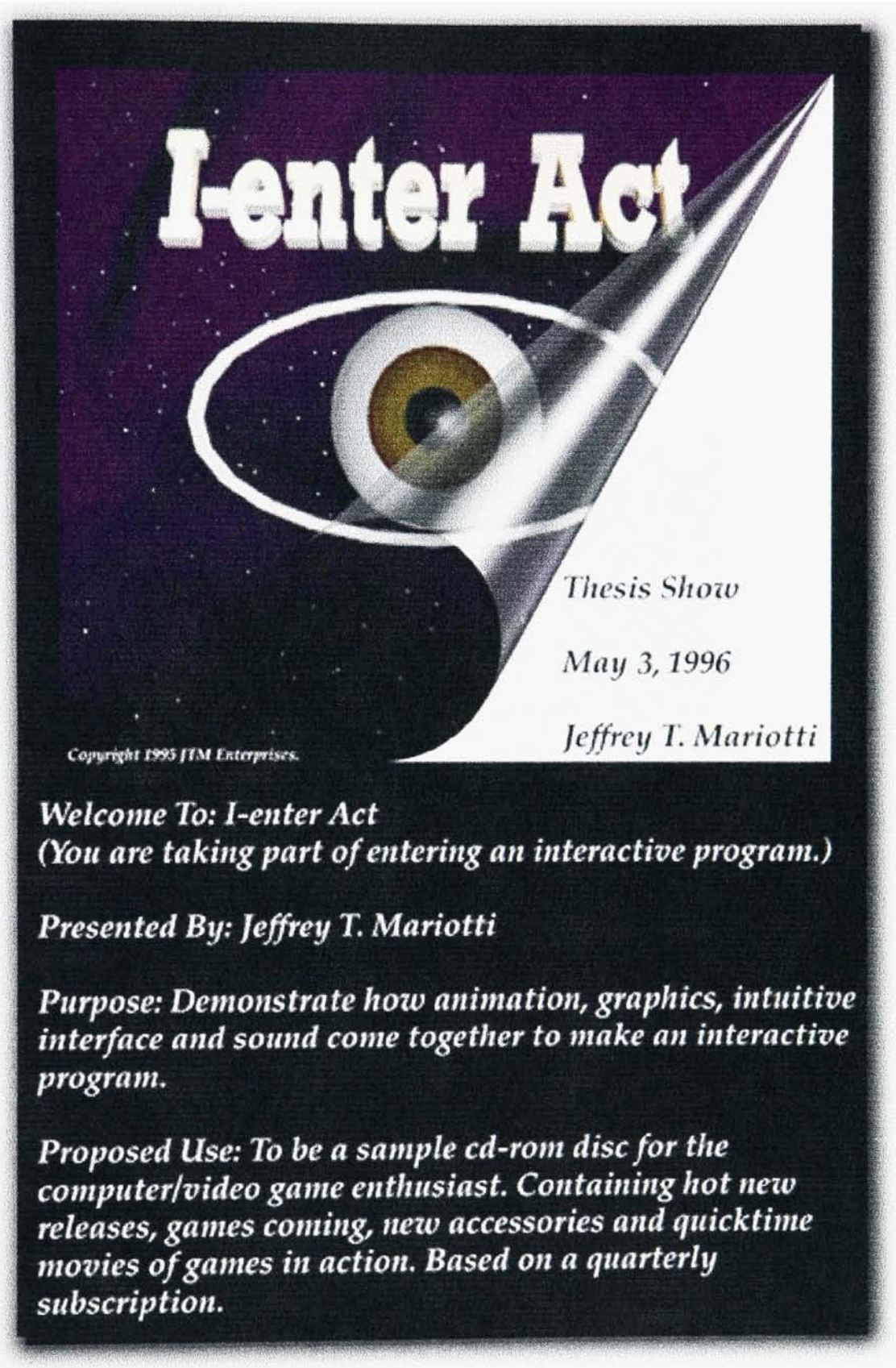


Figure 1. Poster for Thesis Show

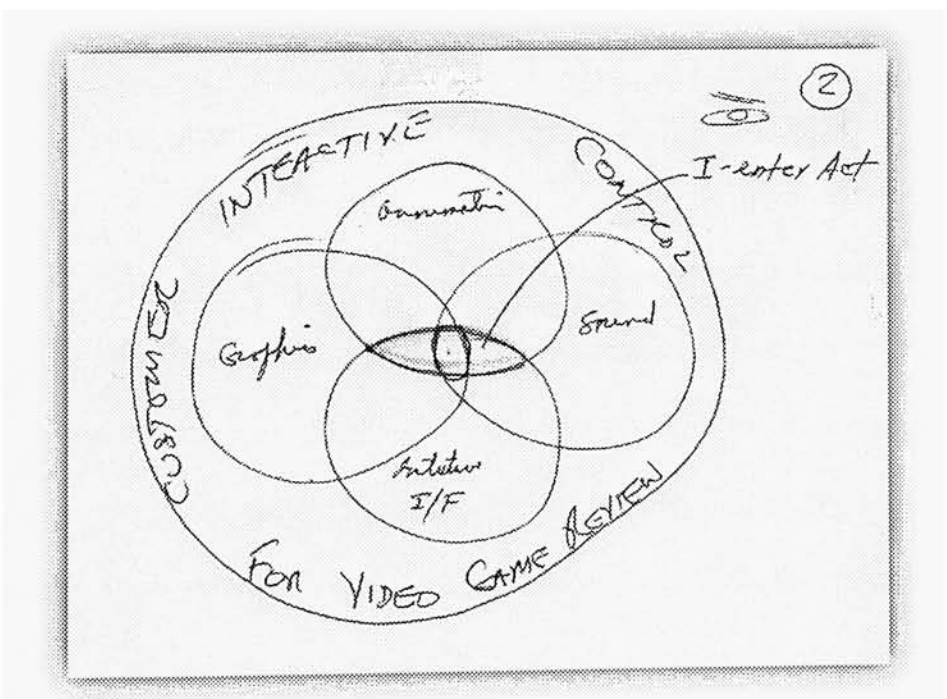
Chapter 2 Concept Design

Research and Development

Concept Design

The creation of an interactive CD-ROM for the Computer/Video game enthusiast is dependent on four major elements. They are: 1) Animation, 2) Graphics, 3) Sound, and 4) Intuitive User Interface. Each element acts as a system with the rest in creating the interactive engine, which I have termed as **I-enter Act.** While the purpose of this engine for my thesis is focused on the Computer/Video game industry, the same engine can be used for numerous other applications such as real estate, medical, multimedia, and tutorials.

Figure 2, illustrates how the four key elements inter-relate in providing the customer with an interactive control for reviewing new video games, accessories, and systems for all the popular game systems on the market, and those new, yet to be released.

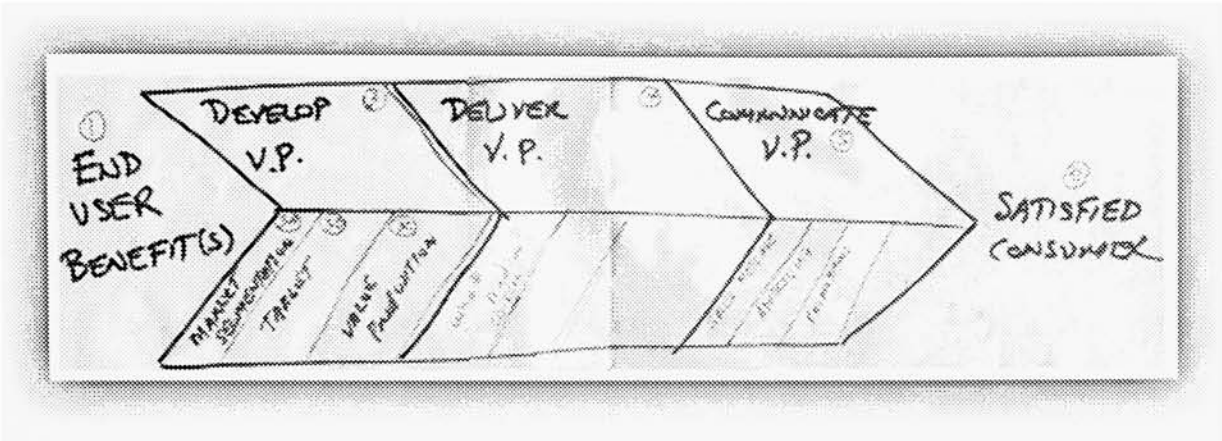


Design Sketch - Figure 2

The intersection of the four elements forms a conspicuously looking "**eye**". Thus, my trademark was born from this Figure 2 sketch. The logo I chose to use is the human eye which is the center of the interactive model. Please refer to Figure 3.

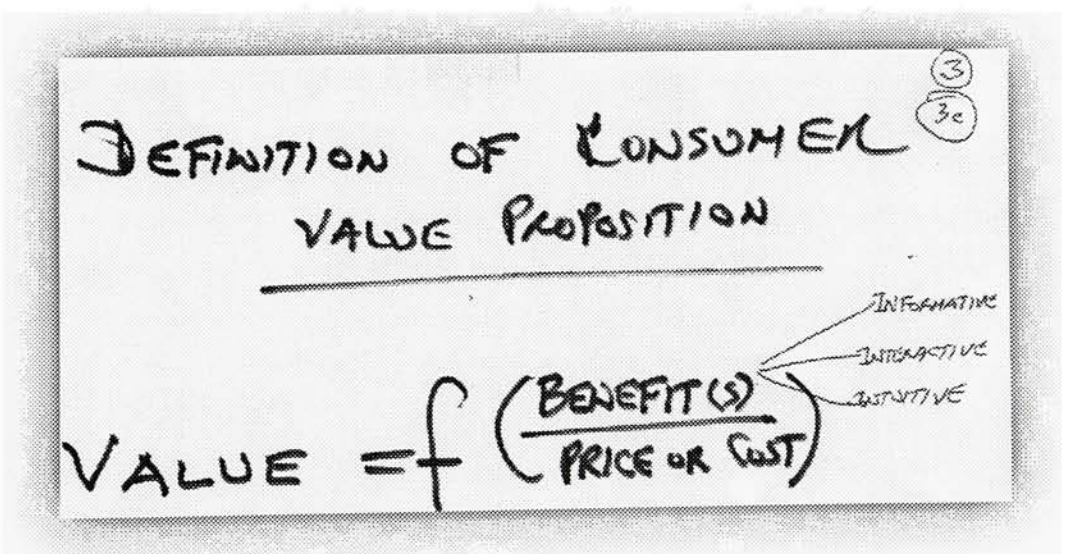
Design Sketch - Figure 3

In conceptualizing my idea of the **I-enter Act** model, I had to think through the end users benefits and how I would ultimately deliver them at a price they would be willing to pay. Figure 4(on next page) illustrates what elements must be considered when developing a value proposition to the end user, the consumer. The definition of value proposition from a consumer's point of view is the end users benefits discounted by cost or price.



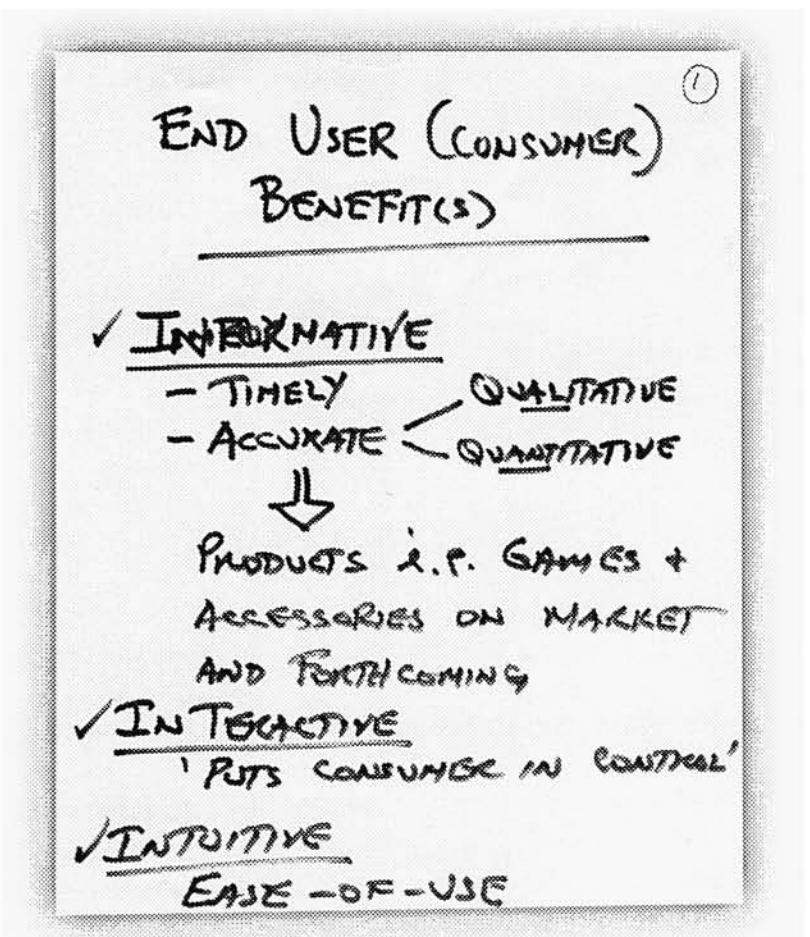
Design Sketch - Figure 4

Refer to Figure 5 for the consumer mathematical value propostion model.



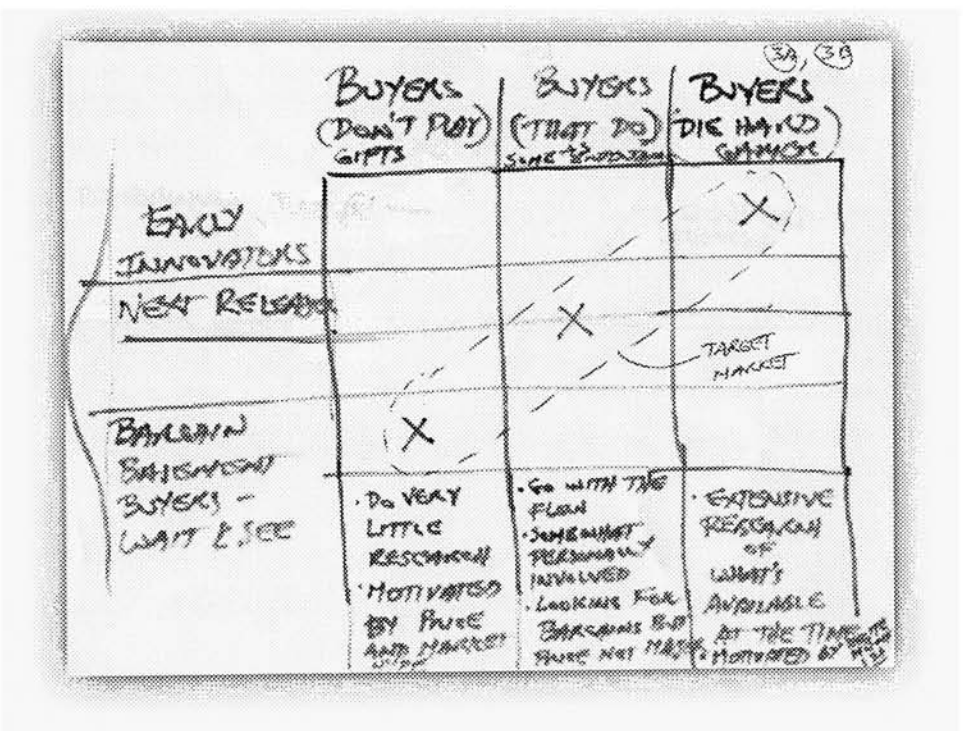
Design Sketch - Figure 5

It can be readily seen that as price or cost goes up, the value to the consumer goes down. So from a marketing sense, it is extremely important to understand the market segment that this product is intended for and the end user benefits in which the consumers are more interested. Refering back to Figure 4, the development of the value proposition requires an analysis of market segmentation and identification of the target market or customer group. Once that has been analyzed the value proposition can be clearly stated. Figure 6 lists the key end user(consumer) benefits.



Design Sketch - Figure 6

They are: 1) It must be **Informative**, 2) **Interactive**, and 3) **Intuitive** from a ease of use perspective. In order to understand the importance of these end user(consumer) benefits better requires one to understand the market segmentation and target customer.



Design Sketch - Figure 7

Figure 7 illustrates how the market is segmented. It identifies the reason why consumers buy games and the degree to which they are involved as game players. In analyzing the market I felt that the **I-enter Act** product is suitable for all segments. In order to understand my reasoning, it is first important to understand definitions of each of these market segments and profiles.

Definitions:

1) **Buyers** of Interactive Computer/Video games.

A. Those that don't play.
B. Those that do play for casual enjoyment.
C. Die-Hard Gamers A major source of entertainment.

2) **Players** of Interactive Computer/Video games.

A. **Early Innovators** - motivated by new technology and willing to pay a premium to be first.

B. **Average Player** - excited about new games, but willing to wait for a bargain.

C. **Bargain Basement Hunters** - motivated by price and go for what is popular.

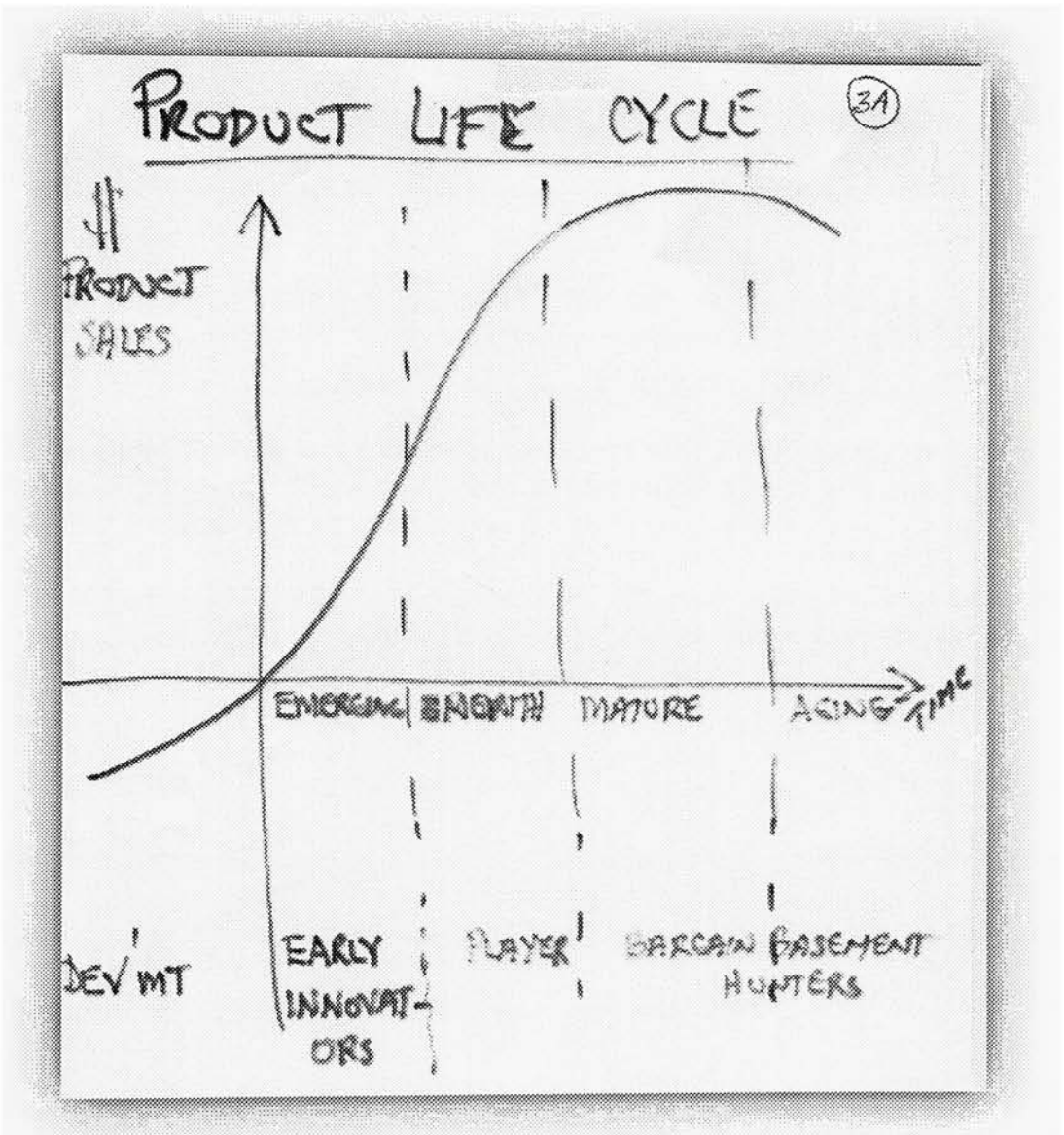
3) Buying Behaviors of the three market segments

A. Those that don't play, typically do very little research and are generally motivated by market hype and are price sensitive.

B. Those that do play, go with the market flow, get somewhat personally involved in game play and tend to look for bargains, but are less price sensitive.

C. The die -hard gamers are motivated by being there first, tend to do extensive research on emerging technology advancements and what's new in games, systems and accessories.

Figure 8 illustrates the degree of purchase influence for the three buyer groups on the classical product life cycle curve.



Design Sketch - Figure 8

The vertical axis depicts the amount of revenue dollars of product sales as a function of time. The market segmentation, i.e., early innovators, players and bargain basement hunters, cleary shows the impact each of the buyer groups has on revenue. The early innovators have the least impact, but their acceptance of the product has a major influence on the other two buyer groups.

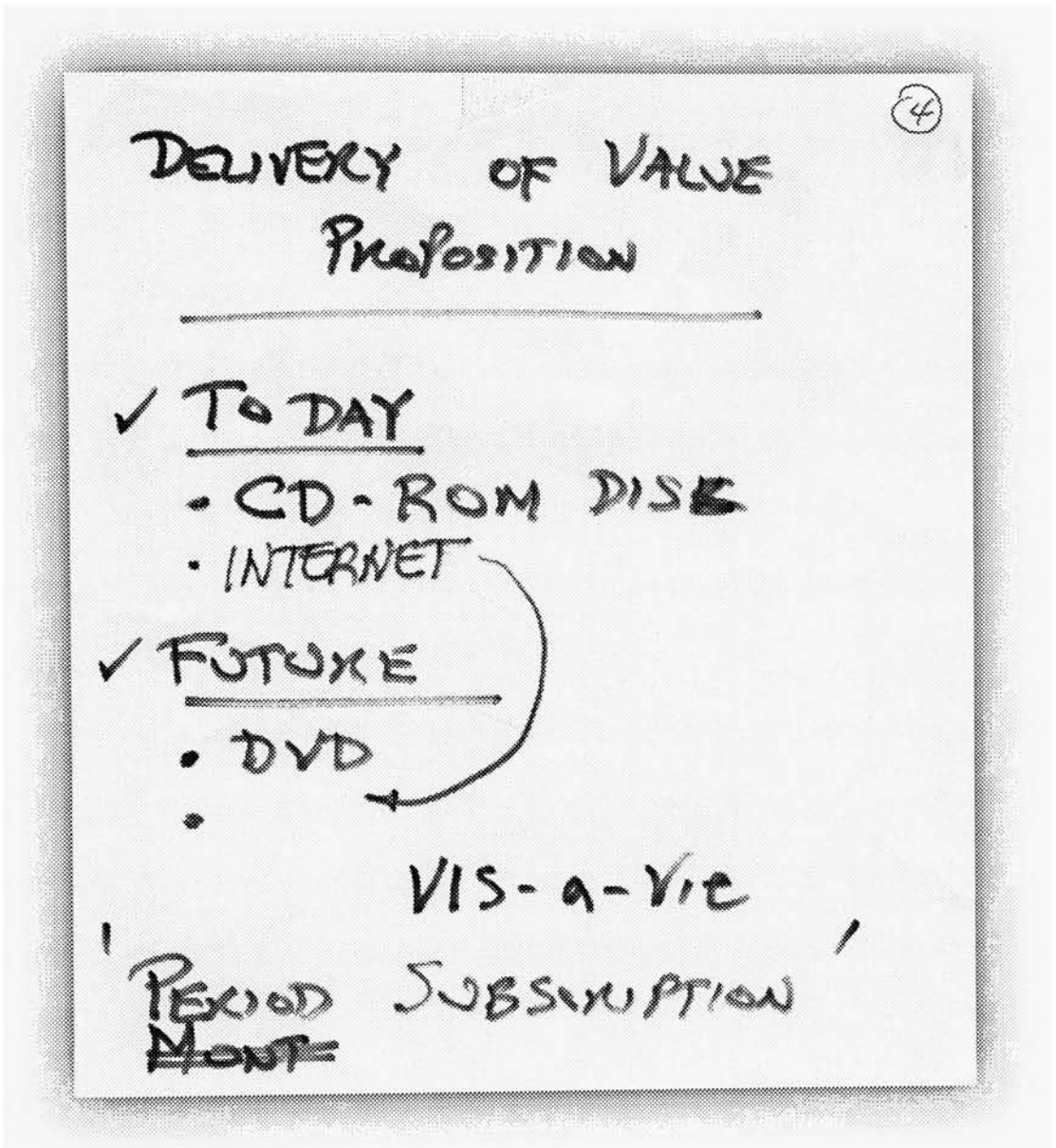
The game media, i.e., magazines and user groups, use feedback from the early innovators to report performance and acceptablity of the new release. The players generally read magazines,i.e, PC Gamer, Computer Gaming World, GameFan,etc... to make their buying decisions. The bargain basement hunters use the home newspaper sales section and word of mouth on what is popular to make their buying decisions. The player and bargain basement groups drive about 80%+ of the revenues. In the final analysis I believe the **I-enter Act** product is suitable for all three groups because:

1. Early innovators, while they do most of their own research, will invest in the **I-enter Act** product because it will give them information they may not have access to.

2. The players don't have the time nor the desire to spend an inordinate amount of time doing research. The **I-enter Act** product will be timely and easy to use to make an intelligent buying decision.

3. The bargain basement hunters need a quick reference upon which to make their buying decision. The **I-enter Act** product will meet this need by providing a quick and easy means of getting to the recommended products.

Up to now, we have developed the value proposition for the target markets. Now we must develop the means by which we are to deliver this value to the end consumer. The major component of the value delivery system for the present is the CD-ROM on a paid-for-periodic subscription basis. The reason why the CD-ROM was selected is because it is an accepted standard of communicating on the computer; it is capable of storing 650 megabytes or more of information, i.e., text, animation, graphics and sound, is portable and is easy to produce at an economical cost. Figure 9, illustrates my thinking of the near and long term delivery medium.



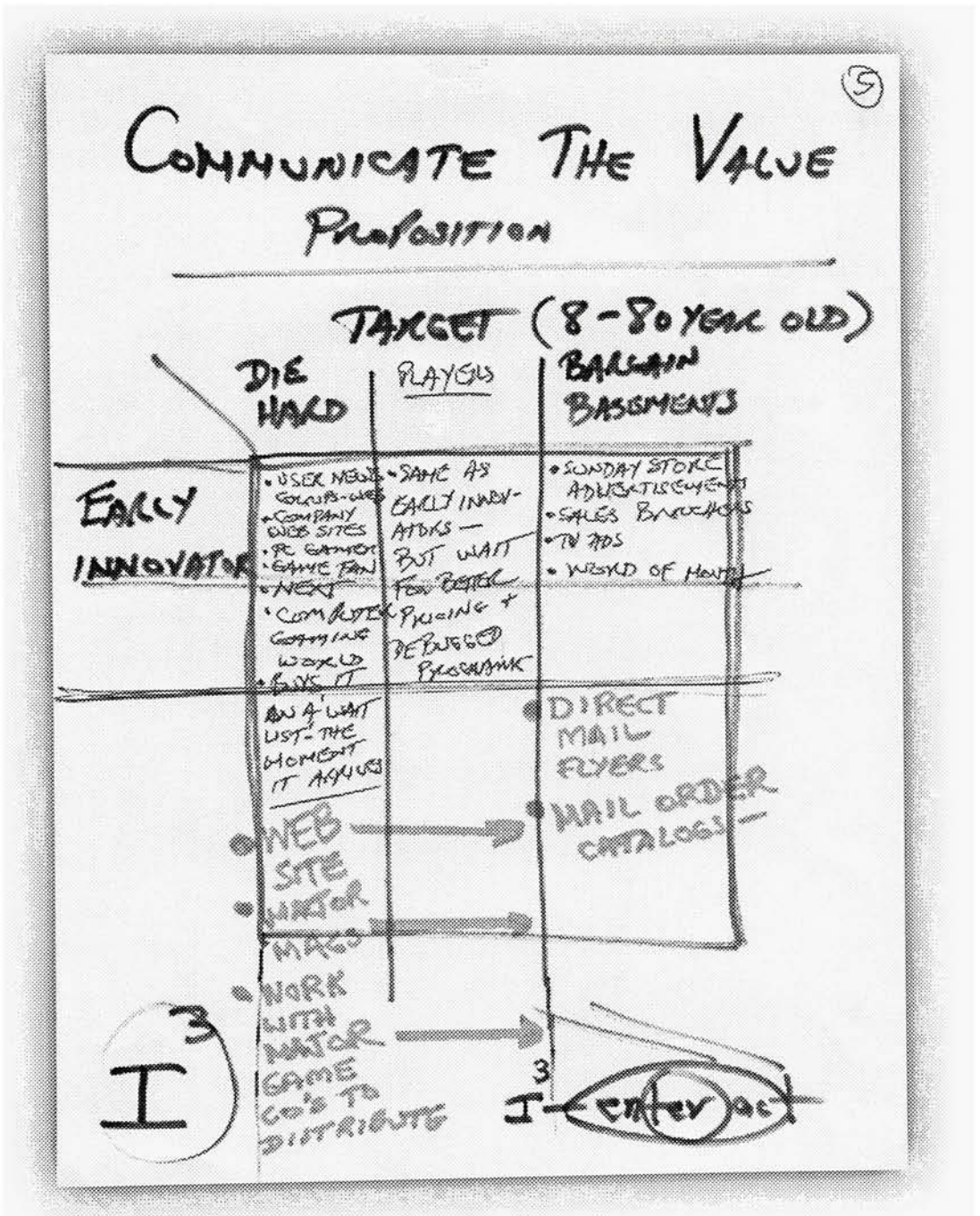
Design Sketch - Figure 9

Once the delivery system for the **I-enter Act** product is understood, we can direct our attention to the final phase of the concept design; that is, communicating the value proposition to the market groups. Figure 10, illustrates the means by which each target group will be approached. For the die hard gamers, user groups will be approached to advertise the **I-enter Act** product. The major product developers will be approached to include the **I-enter Act** product in their product brochures and magazines. The **I-enter Act** product will be advertised in all the major game magazines, i.e., PC Gamer, Computer Gaming World, Boot Magazine, Next, Game Fan. In addition, a web

site will be established for **I-enter Act** which will provide web surfers with a sampling of the **I-enter Act** product. The same approach applies to the players group since they use the same channels for information, except they delay their buying decision. For the bargain basement hunters they will not generally pay for the **I-enter Act** product. Therefore, we will approach the computer and game stores to buy the **I-enter Act** product and provide it on a promotion basis, for example, during Christmas and other seasonal purchase times with the hope of luring them to their store. In addition the direct mail and mail order companies will be approached also.

The pricing of the **I-enter Act** product has to be competitive with the price of the game magazines and other sampler CD-ROMs on the market today. Since the magazines range from $5-$6 without a sampler CD-ROM and $7-$8 with, the **I-enter Act** product falls in a price range of $4-$5. If typical monthly circulation volumes for each of the magazines noted above is in the range of $25,000-$100,000 and **I-enter Act** captures 10% of this volume initially, this would generate $10,000-$40,000 a month in revenues. While the intent of this thesis is to focus on the development of the idea, I will not go into the business case aspects in this publication.

In developing the concept design, I have addressed the major components, which are: the development, the delivery and the communication of the value proposition. Figure 4, illustrates the model used in processing my idea for my thesis. By understanding the target market groups and their needs, I was able to create the **I-enter Act** product.



Design Sketch - Figure 10

Chapter 2 Design Process

Processing the Idea to the Computer

Before I go into the programs used for this thesis, I would like to talk about the research I did before I actually started creating my thesis on the computer. Being already a classified Die-Hard Gamer, myself I knew pretty much, what I needed to know already. But I still needed more resources to call upon for my thesis. The major resource I used and only resource was the Internet. The Internet had everything I needed to research for this thesis. Figure 11 illustrates my product in action with 5 major sections.

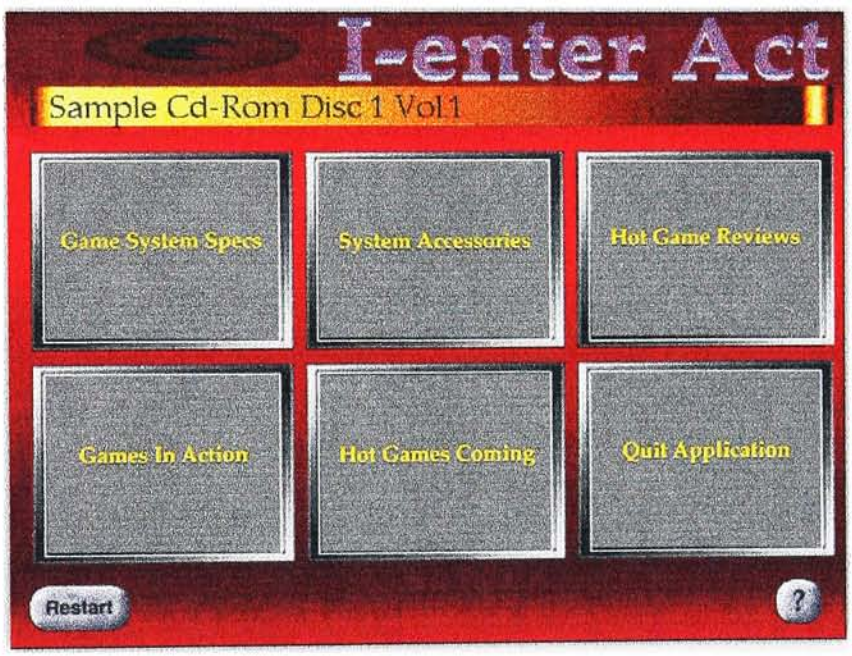


Figure 11

Figure 11 illustrates the 5 sections. Game System Specs, System Accessories, Hot Game Reviews, Games In Action and Hot Games Coming. The Game System Specs Section reveals the four major game systems on the market, i.e., Nintendo 64 by Nintendo, Sega Saturn by Sega, Sony Playstation by Sony and the Personal Computer. This section informs the consumer the technical spec sheets for each of these systems quickly with the click of the mouse button.

In order for me to get the specs for each system, I used the internet to get information. on each company's web page. The addresses are as follows: 1)http://www.Nintendo.com (Nintendo of America), 2) http://www.SOA.com(Sega of America, 3) http://www.Sony.com or http://www.Playstation.com(Sony Corporation).
The personal computer system is based on custom building your computer to play games faster and better. I build computers for people for games and heavy graphics work; so my knowledge in computers was very helpful. The major components that make up a computer are as follows, 1)Motherboard, 2)CPU(Central Processing Unit), 3) Ram(Random Access Memory), 4) Video Card and 5) Hard Drive. In the Personal Computer Spec Section, I recommend the best parts to use for these major components for better game play on the computer. By using the term "personnal computer" I am not referring to Macintosh computers, I am referring to the Intel based computers; because a year ago when I began this thesis the Macintosh computer was not a powerful enough computer to play games and it did not have the support of game companies making games. Now this has all changed. Technology in the computer industry accelerates very rapidly and changes about every 6 months. The research I did for the personal computer consisted of studying what the best components were for gameplay on the computer, then went to those companies web pages to understand the price/performance benefit to the consumer over the other brand.

The System Accessories section gives the consumer what accessories or peripherals are availible at that time for the game systems available, i.e., joysticks, memory cards, and any other devices that are compatible with that game system. For this section I also used the game company web pages and any other company that was making accessories for those systems in my sampler cd-rom disc. The next section, Hot Game Reviews informs the consumer about the newest games on the market, a review of the game and my test results of the game in terms of gameplay, graphics, music and sound effects. I rated the games on a letter basis. For example, A+ is the best and F is don't buy this game whatever you do. So for each game reviewed I give a final grade for the game. The review gives a background for each game, who created the game, the story of the game, what genre this game fits into, the features this game has and finally my grading on playing this game. Figure 12, illustrates this.

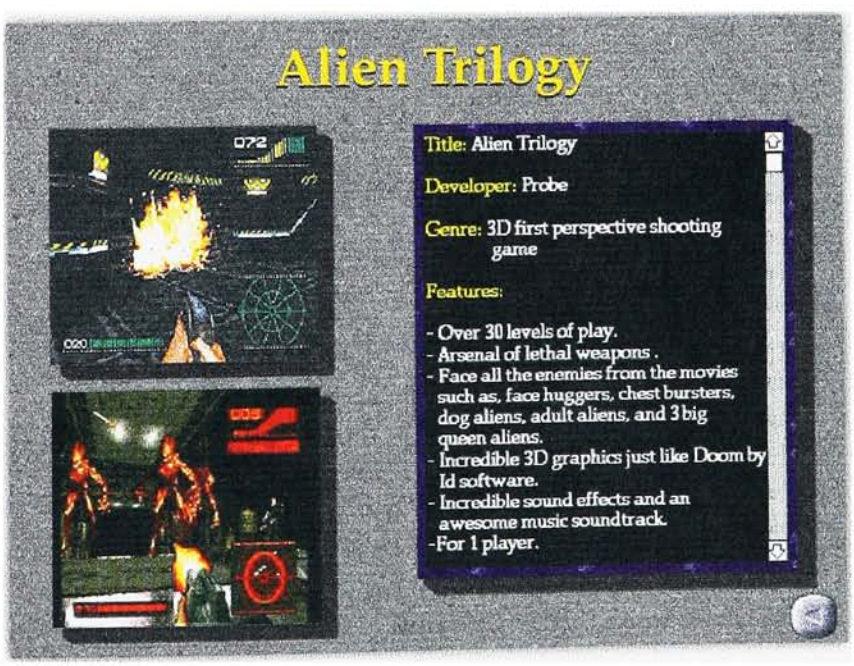


Figure 12

In this section the research was based on my playing the game and the game company web pages who made the game. The next section, Games in Action actually shows the game being played. Think of this section as a VCR deck. Each game was recorded and saved in a Quicktime format which I will discuss later. This section was my own idea and no research was done here. The last section, Hot Games Coming, is the same as the Hot Game Reviews, the only difference is that these games were not released yet, they were only previews of the games. The research here was based on pre-released sheets and insider information of the web to bring hot details about these games. At the time that I conceived the **I-enter Act** product in 1995, it was very unique. Since then, products have come to the market which come close to the feature/functionality, but not entirely in that the **I-enter Act** is the only product that I know of that offers realtime Quicktime movies of actual scenes of games being played. The research for this thesis was based primarily on my own experience; been playing games since I was 8. I am a die-hard gamer and early innovator in that getting this information was quick and easy off the internet and from my own knowledge. Being an early innovator I already knew about these games and played and seen most of them, so I used them for my thesis. My thesis was just a point in time in what I do everyday, that is playing games, living games, mak ing games and reading constantly and listening to live user groups etc...

Creating I-enter Act

In creating my thesis I used many applications to create the graphics, animations, intuitive interactive interface and music . The first step I took was to create a storyboard for my thesis.

The beginning introduction of my thesis is a spaceship in space on its way to exploring the universe. On this journey the ship stops and a smaller ship is sent to an unexplored planet where the commander instructs the user to find an ancient artifact of great power. Next, the scene opens up on the planet and it is up to the user to find this artifact. Once the user finds this artifact he/she is then transported to my program. This is the story-board I used for my thesis so the first thing I had to do was to create a 3d animation for the opening sequence all the way up to the planet scene. The program I used for the 3D animations is called 3d Studio Max by Autodesk. This program is only avaliable on PC and not on Macintosh computers by Apple. It took me around two months to complete. Figure 13 illustrates the spaceship in the opening scene.

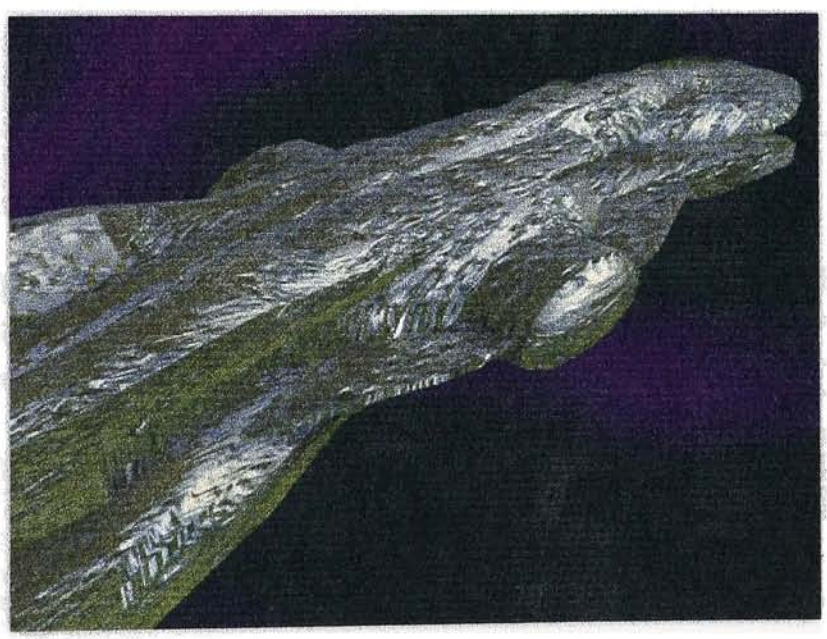


Figure 13

In this rendered image the ship is very big. I made it that way because motherships in sciencefiction are gigantic in size. The first scene opens up with a fairly big ship flying in space as the camera pans over the ship. This ship was constructed from regular primitive shapes, i. e., cubes, spheres etc... The ship is a wireframe model; the frame structure of an object made up of connecting dots. Figure 14 illustrates this below.

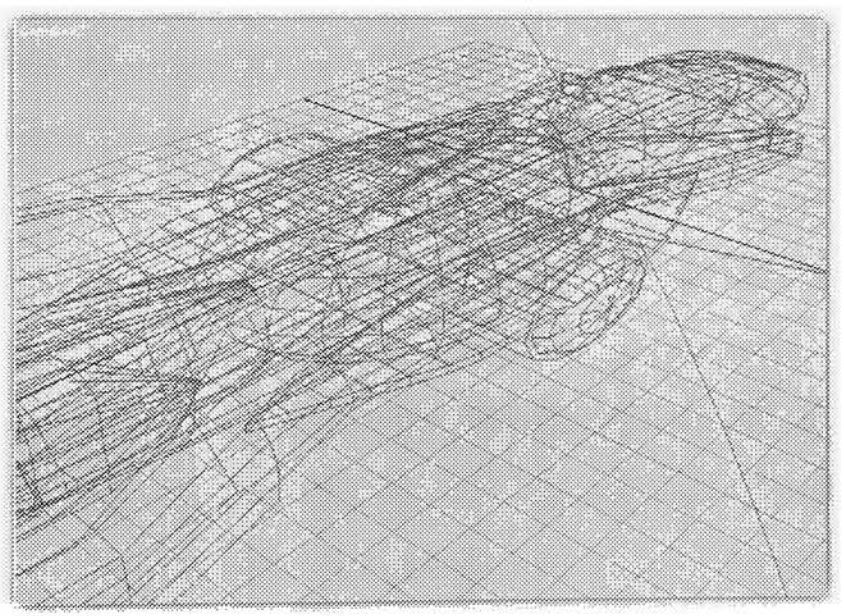


Figure 14

This picture is a shot from the camera position in 3d Studio Max showing the ship as a wireframe model. Next was choosing the textures for the ship. Textures are bit-mapped images of materials and their properties. I used a method called "Texture Mapping," a process by which you select the wireframe model that you create and apply a texture to it. This process takes that texture and wraps it around the wireframe model. This process gives your model a realistic appearance to whatever you imagined. The negative side to texture mapping is that sometimes when the texture wraps around the model or wireframe, it doesn't wrap all the way because the size of the texture is too small for the model. In that case you must make the texture bigger to fit your model. Throughout my animation and planet scenes this is what I did. The next four pages are more illustrations of this process shown above from various scenes from my thesis.

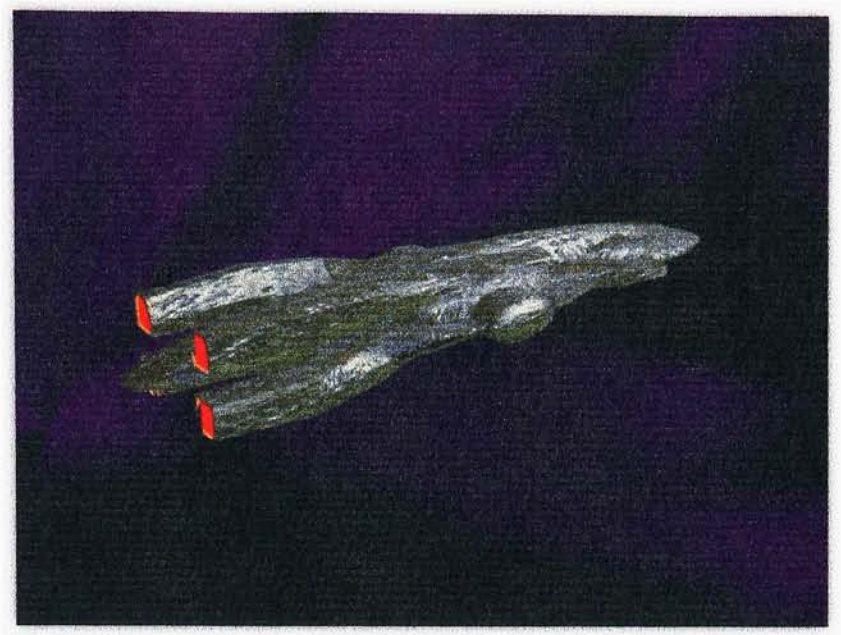


Figure 15

Figure 15 illustrates the second rendered scene where the mothership stops in space in a nebula and prepares for the smaller crusier ship to take off from the mothership.

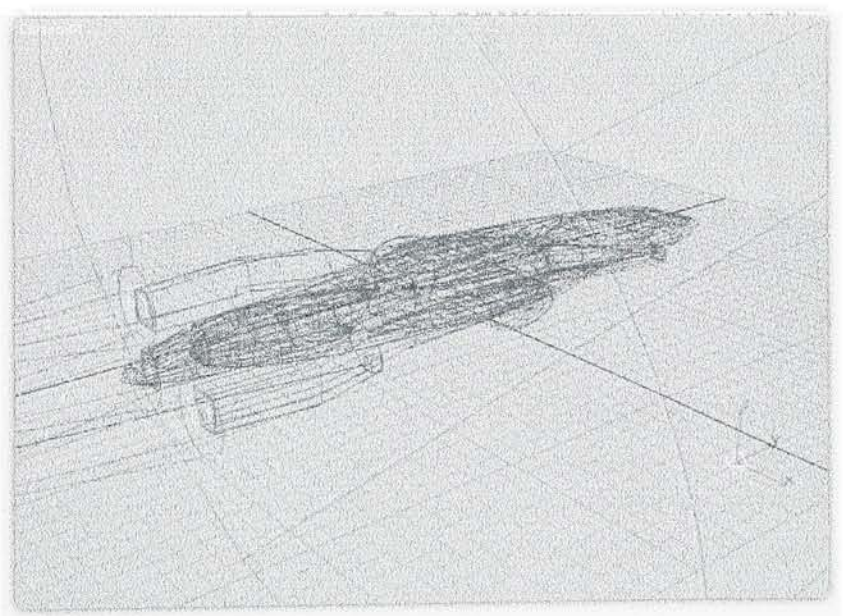


Figure 16

Figure 16 illustrates the wireframe model of Figure 15.

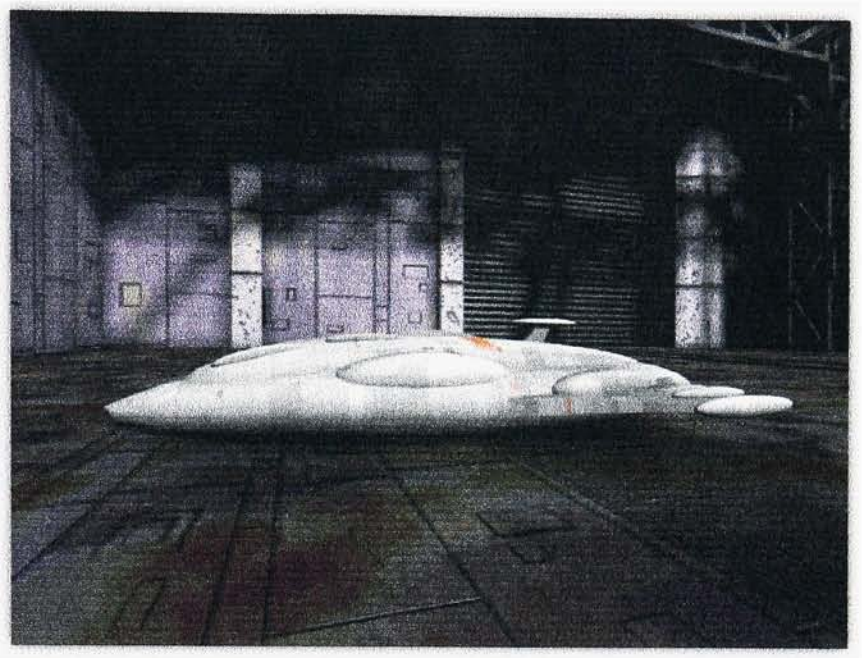


Figure 17

Figure 17 illustrates the scene inside the mothership with the cruiser ready to take off in flight to its destination. This is known as the hanger deck.

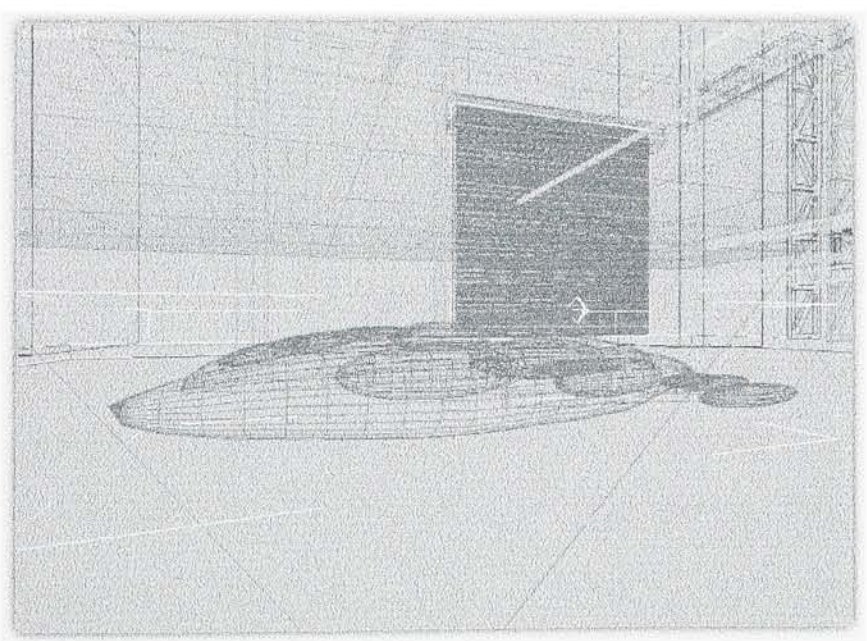


Figure 18

Figure 18 illustrates the wireframe model of Figure 17.

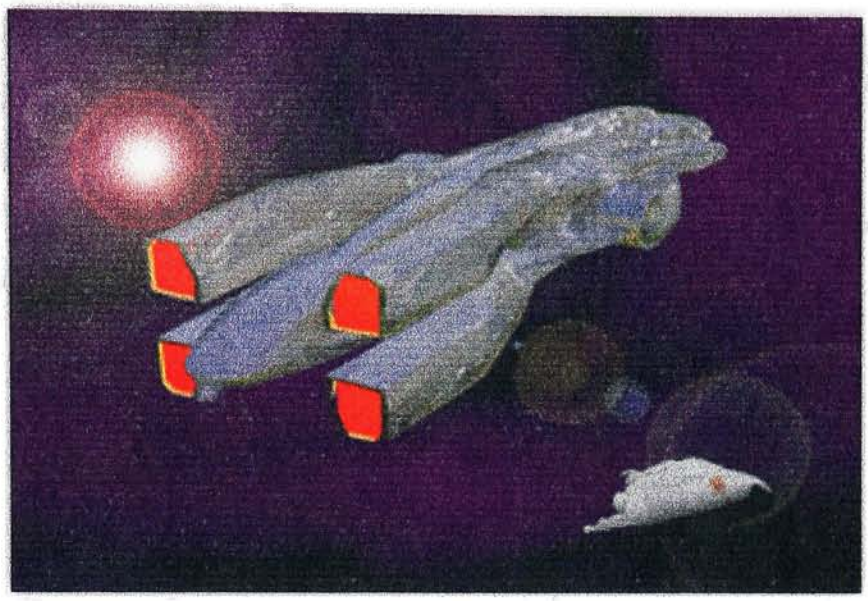


Figure 19

Figure 19 illustrates the cruiser ship leaving the mothership and going to its destination.

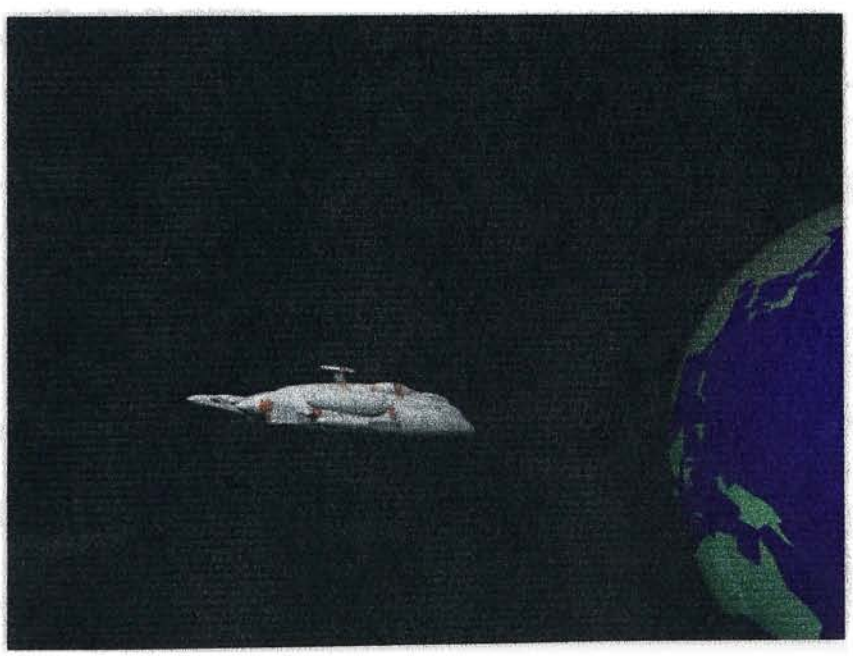


Figure 20

In Figure 20, the cruiser ship is going to the planet on the right hand side of the scene.

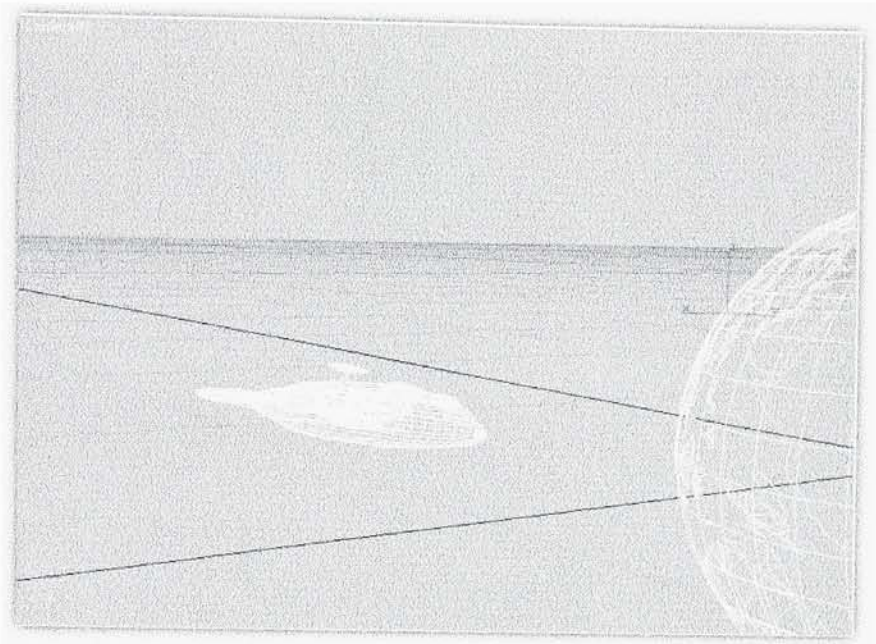


Figure 21

Figure 21 illustrates the wireframe model of Figure 20.

Figure 22

Figure 22 illustrates the commander of the mothership. He instructs the user to find an ancient artifact on the planet surface.

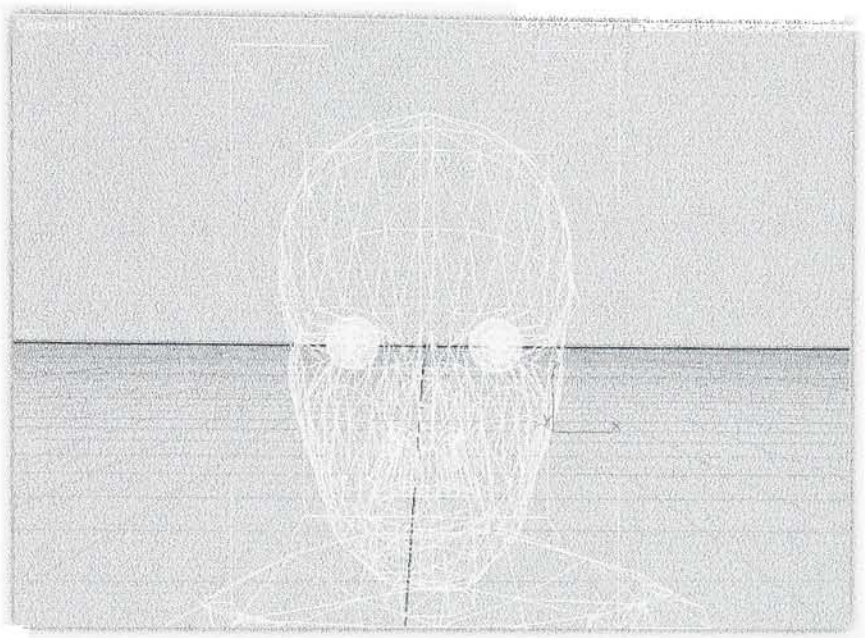


Figure 23

Figure 23 illustrates the wireframe model of Figure 22.

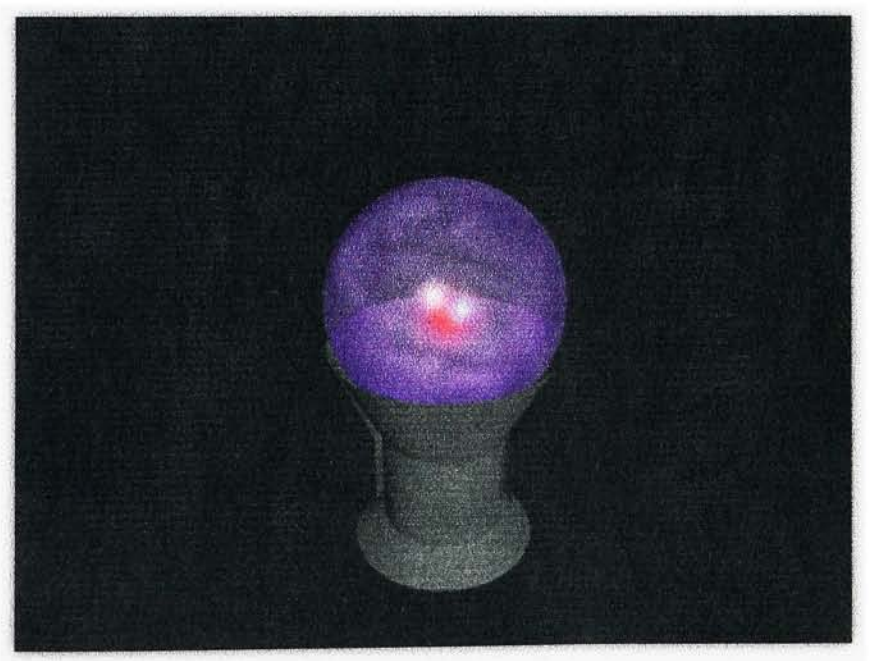


Figure 24

Figure 24 illustrates the ancient artifact the commander refers to. This artifact is the connection between the story part and my program.

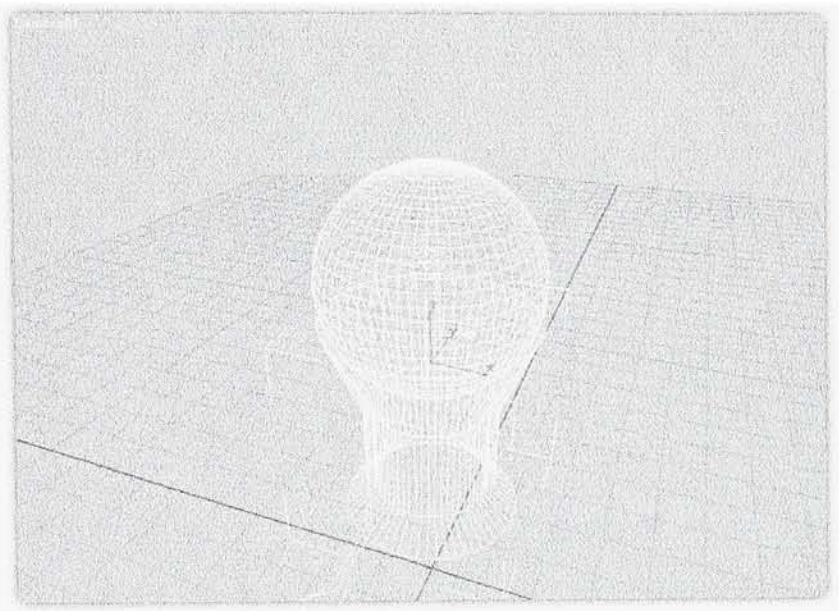


Figure 25

Figure 25 illustrates the wireframe model of Figure 24.

Figure 26

Figure 26 illustrates the last scene of the animation when the planet forms into the eye and the text comes out of the screen to form my logo.

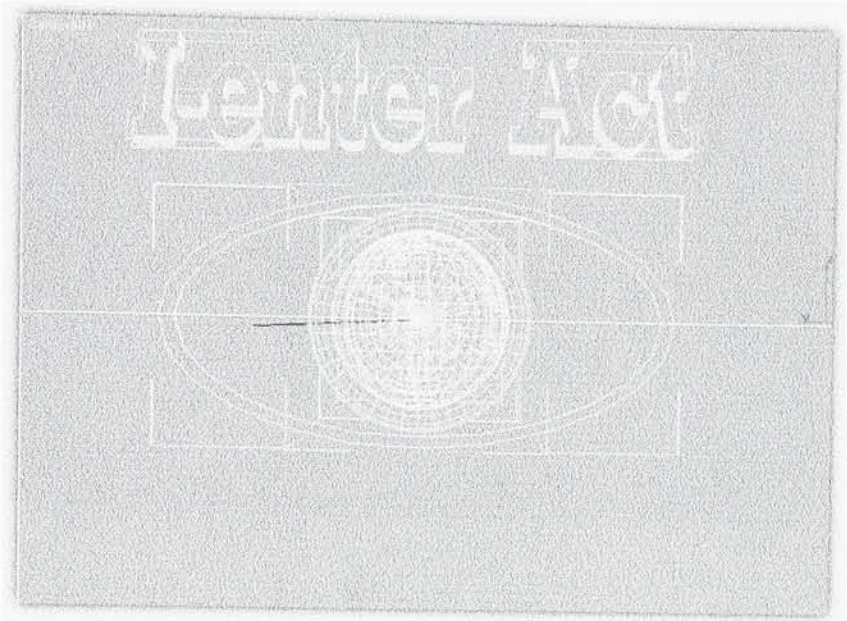


Figure 27

Figure 27 illustrates the wireframe model of Figure 26.

The program now loads and goes to the planet scene. The next screen shots are not taken from 3d animations, but from actually rendered scenes I created in 3d Studio Max. The brief storyboard above illustrates the actual scenes from the moving animation from my thesis. I basically did a brief overview of this storyboard to show my idea, and how I thought the process through. Figure 28 illustrates the first scene on the planet when you leave your cruiser ship.

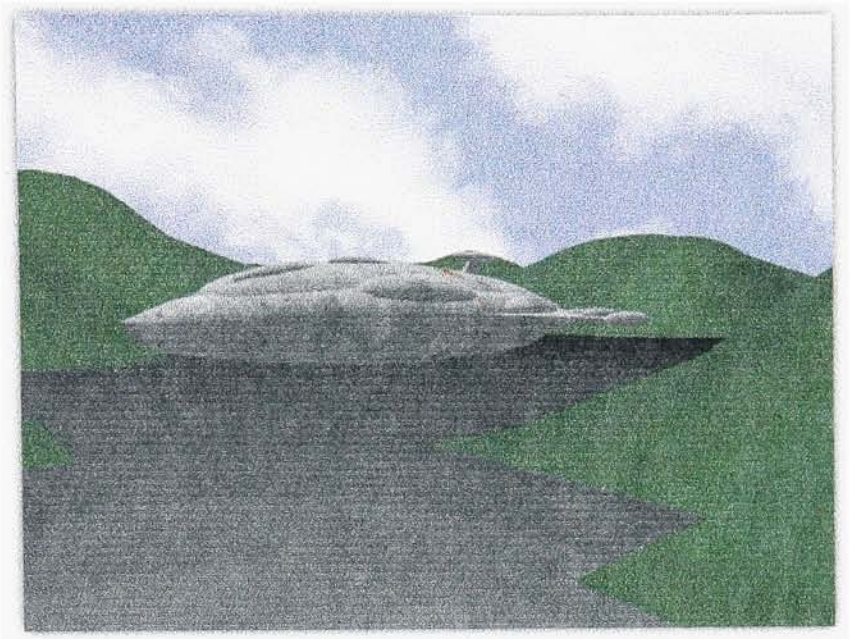


Figure 28

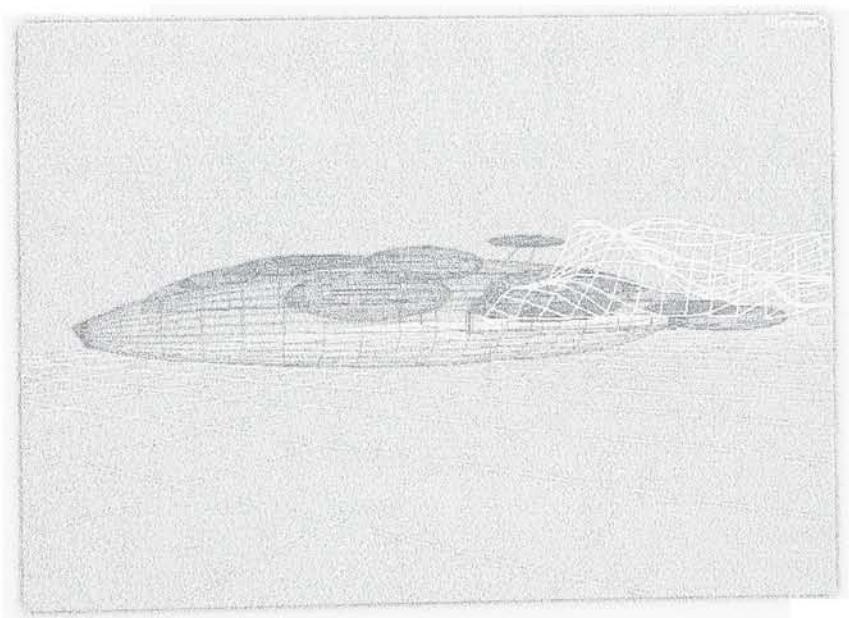


Figure 29

Figure 29 illustrates the wireframe model for this scene.

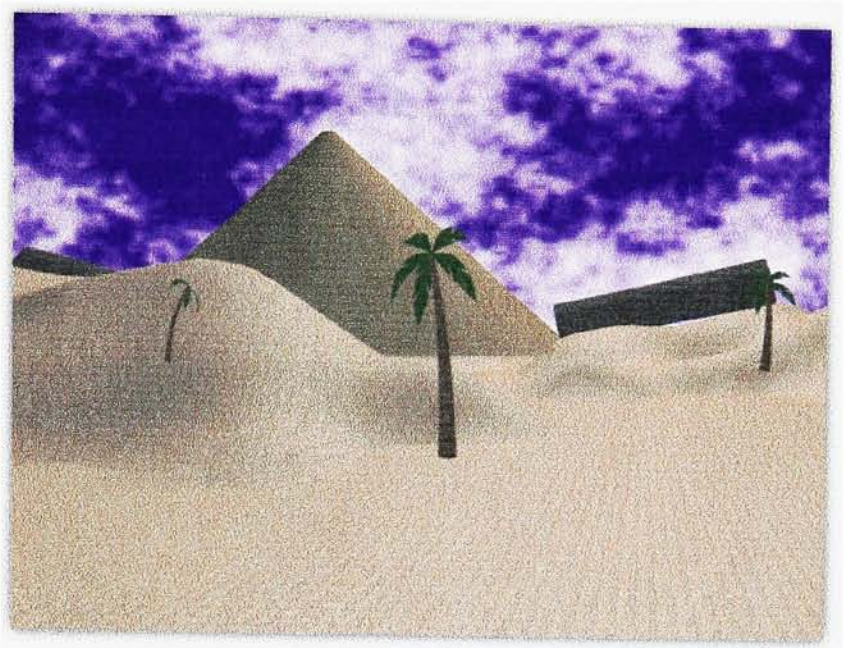


Figure 30

Figure 30 illustrates the second scene on the planet where the user must travel forward to the entrance of the pyramid in the distance.

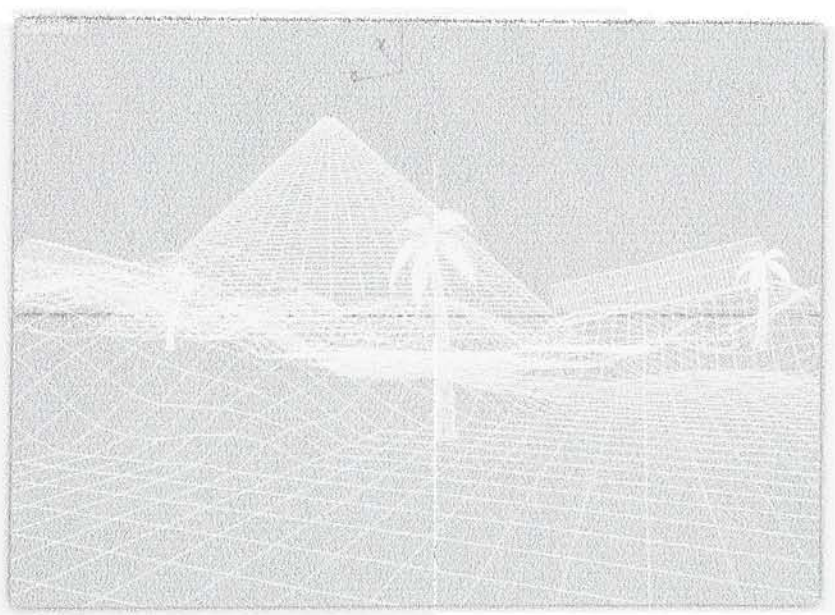


Figure 31

Figure 31 illustrates the wireframe model for Figure 30.

Figure 32

Figure 32 illustrates the last scene where the user must make his/her way up to the altar and get the artifact.

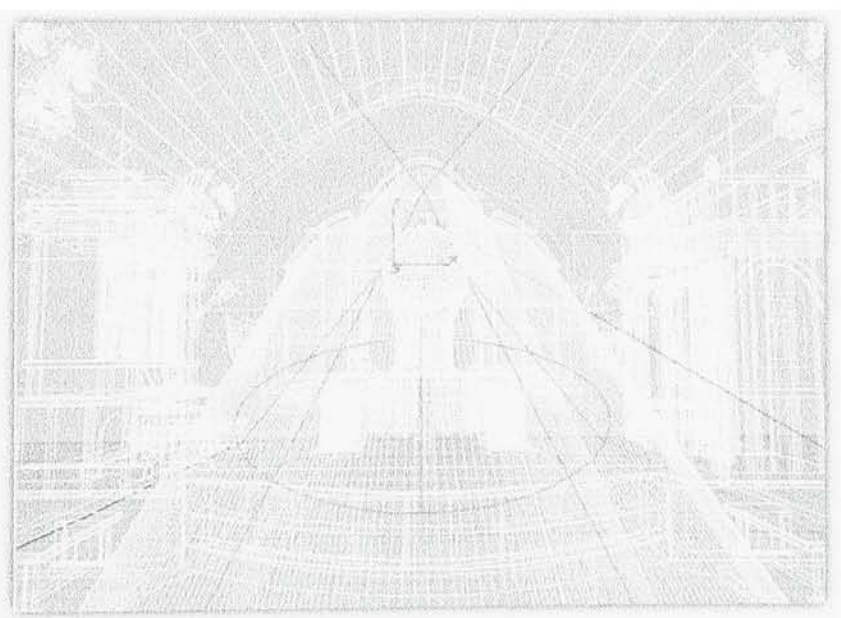


Figure 33

Figure 33 illustrates the wireframe model for Figure 32.

Figure 34

Figure 34 illustrates the small 3d animation showing the user. He/she has finally found the artifact of great power. In this scene the arms grap the artifact and pick it up, looking at it. The small red light in the orb or globe pulsates and finally transports the user from the small little game related story to my program, **I-enter Act**.

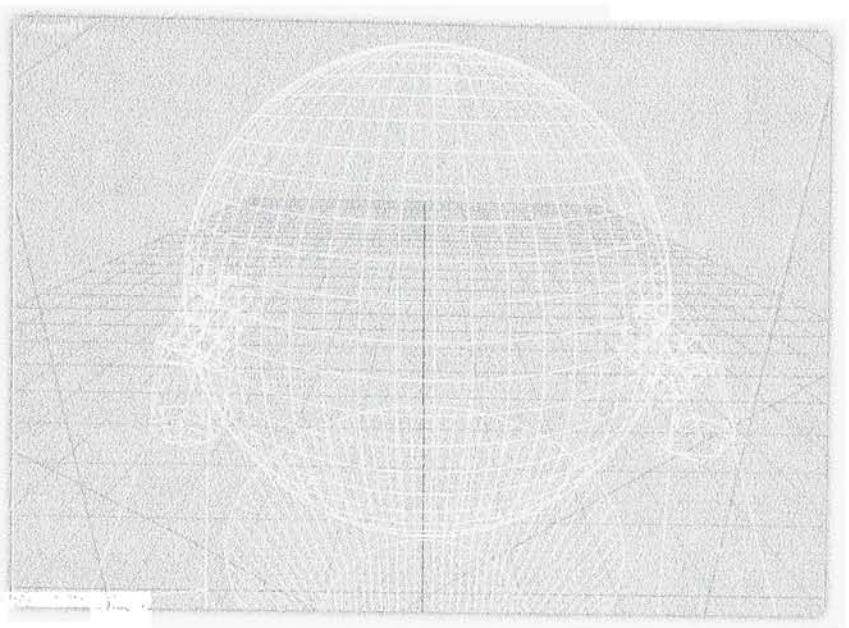


Figure 35

Figure 35 illustrates the wireframe model for Figure 34.

This ends the 3d animation section of my thesis. The next section will provide a brief overview of the the image manipulation of the rendered scenes from 3d Studio Max and scenes from the interactive user interface, the Quicktime movie section which is the Games in Action section from Figure 11, and finally how the music was created.

In order to design the interactive user interface, I first had to organize where I was going with the 3d animation. I used the animation as a tool to bring the user into my program. I wanted the user to take part in finding this ancient artifact. This was in a way like a game to get the user from point A, that being where he/she is on the

planet, to point B, that being my program. I decided to make the planet scene interactive, so that the user can freely move around the environment and just look around. By pressing in either direction, i.e., Left, Right, and Forward, the user can move giving a sense of realism. The user can now interactively click on the mouse direction he/she wants to go by use of an arrow on the screen. When the icon on the screen is an arrow, the user can move in that direction. Figure 36 illustrates the first scene on the planet. Looking at this illustration, one can see the arrow which has a color code of blue. This is the arrow where the user can go either left or right. In this particular scene when the arrow is moved to the center of the scene, the arrow disappears. This is to tell the user he/she cannot go there. The question mark in Figure 36 (color code of red) is a button, that when clicked, brings the user to the help menu of instructions on how to use this interface. Next, the "skip" button (color code of green) when clicked, brings the user to the actual program and skips the small story game. Figure 37 illustrates the "+" symbol (color code of blue) that allows the user to go forward through the small interactive world I created.

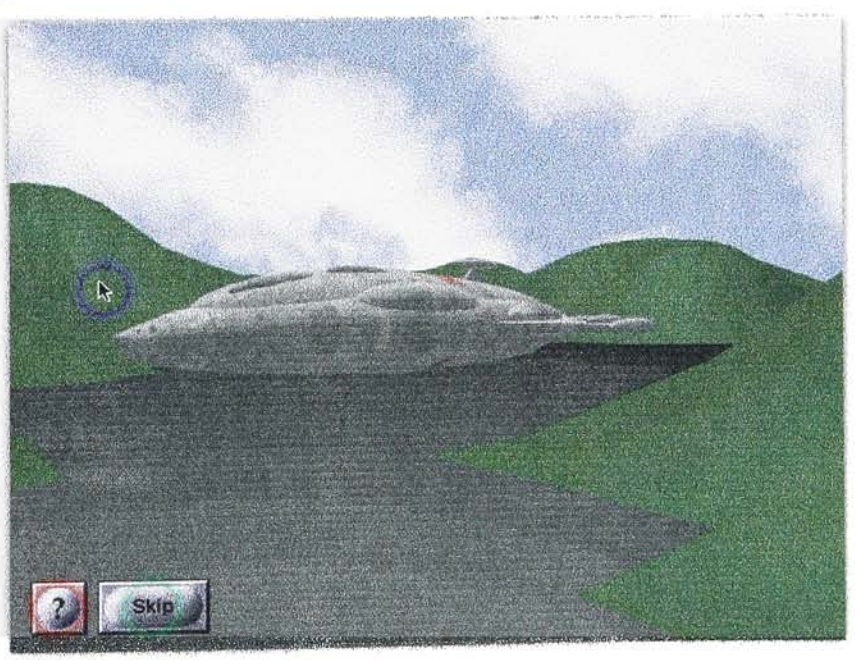


Figure 36

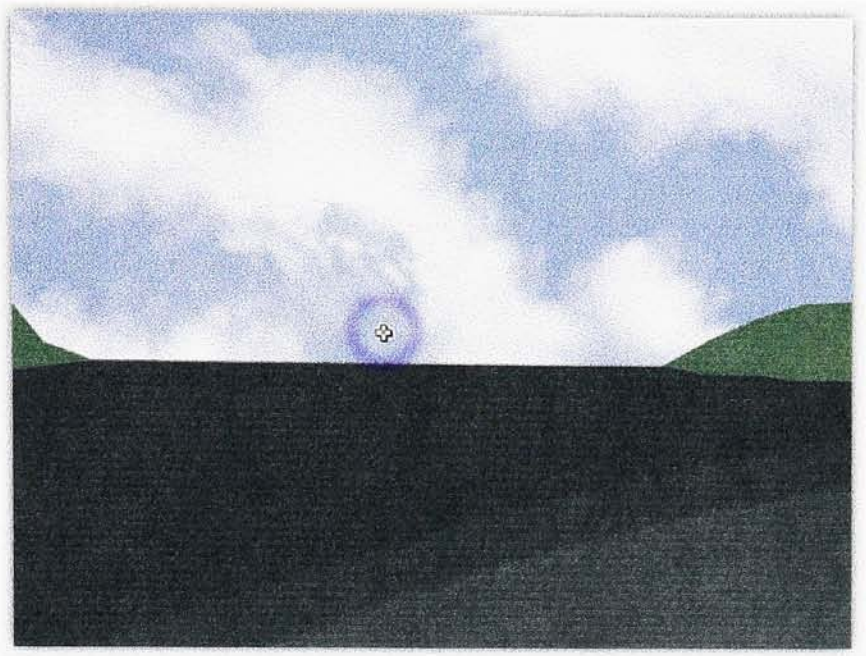


Figure 37

Figure 38 illustrates the planet chart. This is a small chart to show my thought process of my interface design for the first interface.

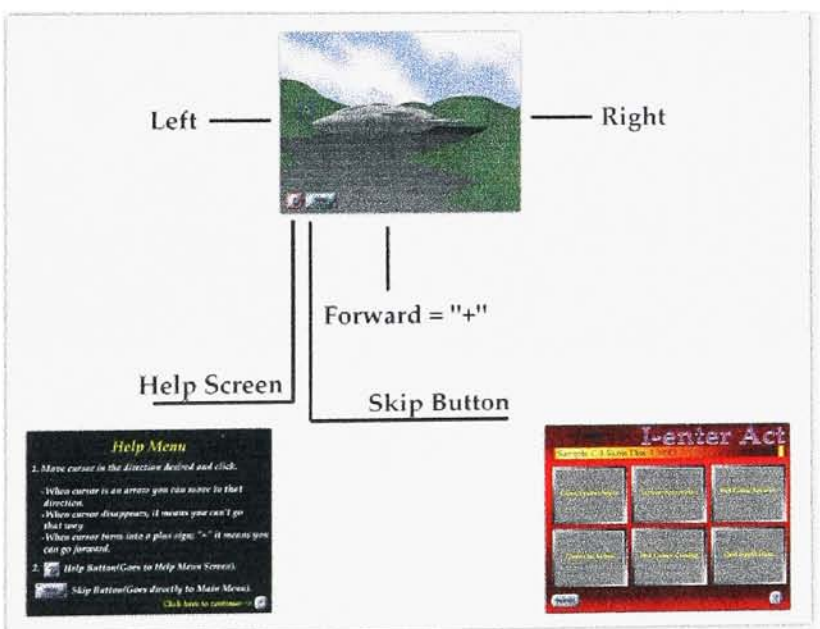


Figure 38

The planet chart is what I used for the whole first interface. Now the second interface is the actual program. This was created in the same way as the planet scene interface, simple but effective. Once the user is brought to the second interface, either through the skip button or finding this artifact and then being transported, the user has a new screen to explore with which is broken down into sections. These sections I talked about in the beginning of this chapter. This being the Game System Section, System Accessories, etc... Figure 39 illustrates this.

Figure 39

Figure 40 illustrates the **I-enter Act** Interface Chart. This chart shows the sections and where they lead the user to. The green line represents that each section has a "menu button" which, when pressed by the user from the mouse, sends the user back to the menu screen or Figure 39.

I-enter Act Interface Chart

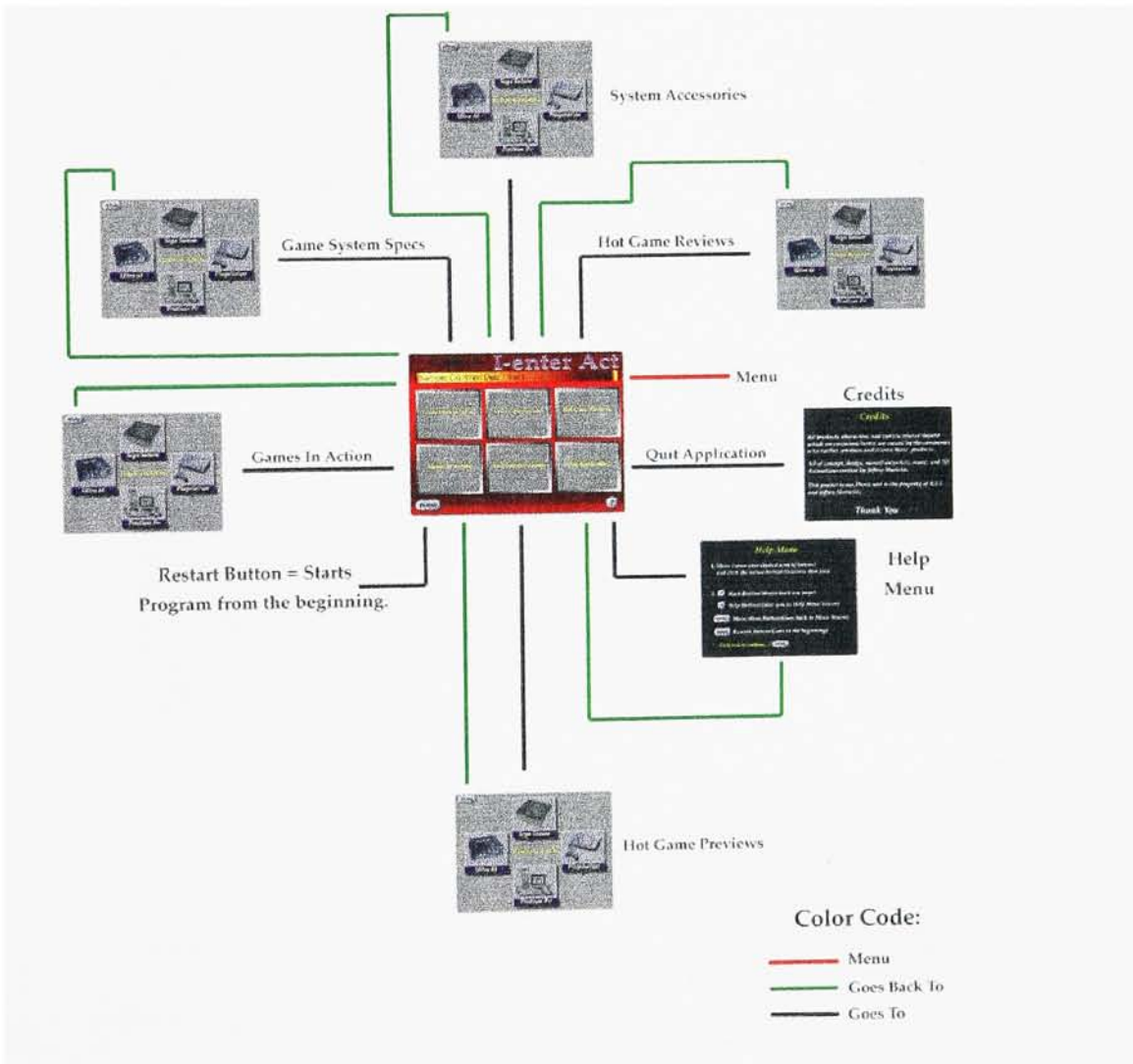


Figure 40

Figure 41 illustrates the functional operation model of my thesis. This chart shows the breakup of a section into its functionality. I used this technique which was repeated for all the sections in my thesis. This model gives an example from the Hot Game Review Section.

Functional Operation of the I-enter Act Model

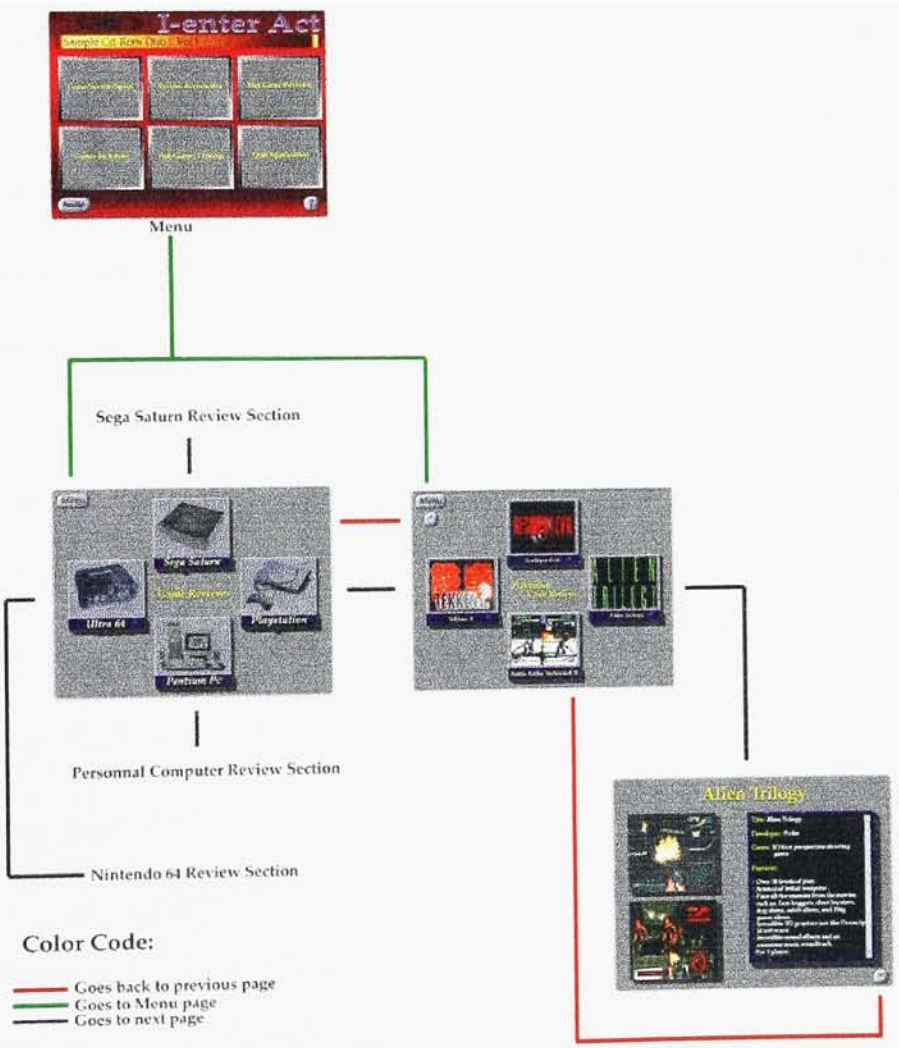
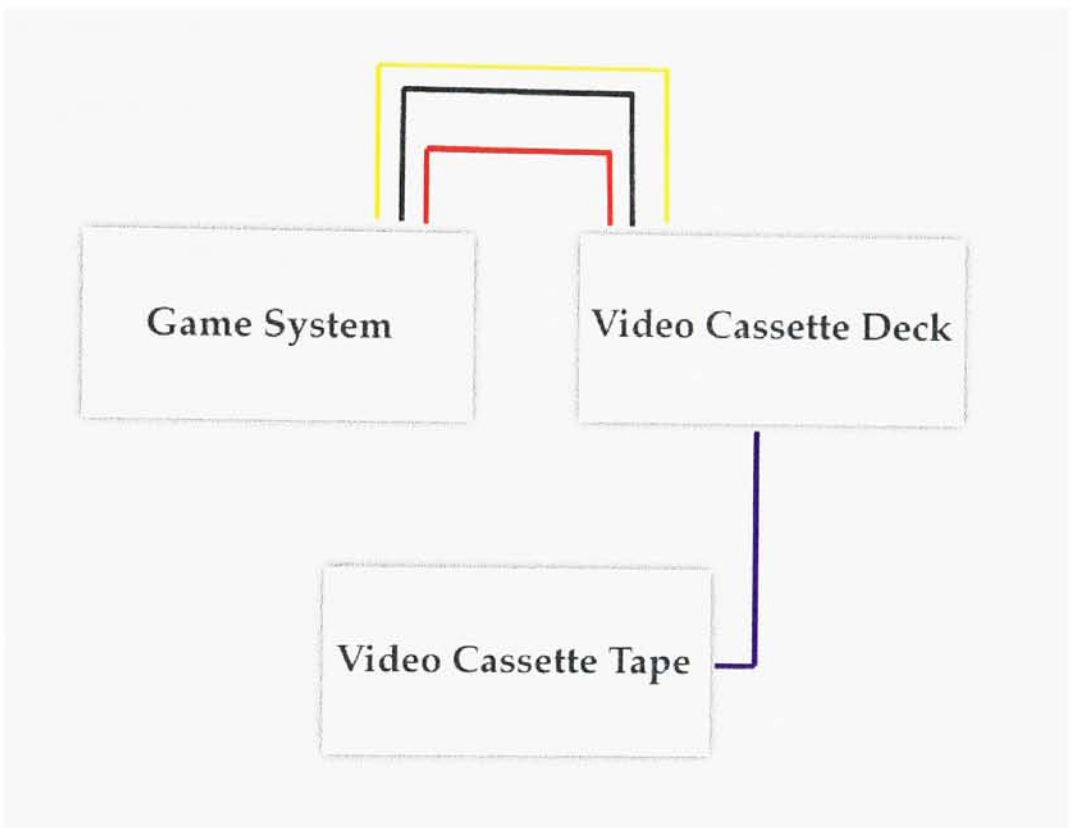


Figure 41

Programming

The programming of this interface was done in Macromedia Director 4.0. Director allows the operator to create a multimedia application or program by bringing in images, animation movies, sounds, music etc. It is the all purpose multimedia package which took my thought process and brought it to life. Director uses a language called Lingo to program how your application will run. With lingo you have to learn the language and practice hard enough to get what you want. This chapter of my thesis covers my thought process and not the technical jargon associated with programming. Another program I used heavily is Adobe Photoshop. This program is an image manipulating software package that allows the operator to take any image format file and change its properties, i.e., color balance, brightness, contrast etc... Adobe Photoshop has Plugin Filters which allows the operator to add effects to the image they created, i.e., ripple effects, wave effects, add lens flare effects etc... I created the interface image and all the screen images in the second interface section of my thesis as represented in Figure 12, Figure 39, etc... in Adobe Photoshop. However, with my thesis I mainly used this program to convert 16-bit images to 8-bit images. 16 bit refers to the amount of color which would be thousands of colors on screen. 8-bit refers to 256 colors on screen. I took all my scenes from my 3d animations and other images I created for the second interface section and converted them from 16-bit to 8-bit color, because for Director to operate optimally these images must be 256 colors. This concludes the thought process of the interface design; next is to show briefly how the game movies were created in the Games In Action Section.

Procedure for Recording the Games



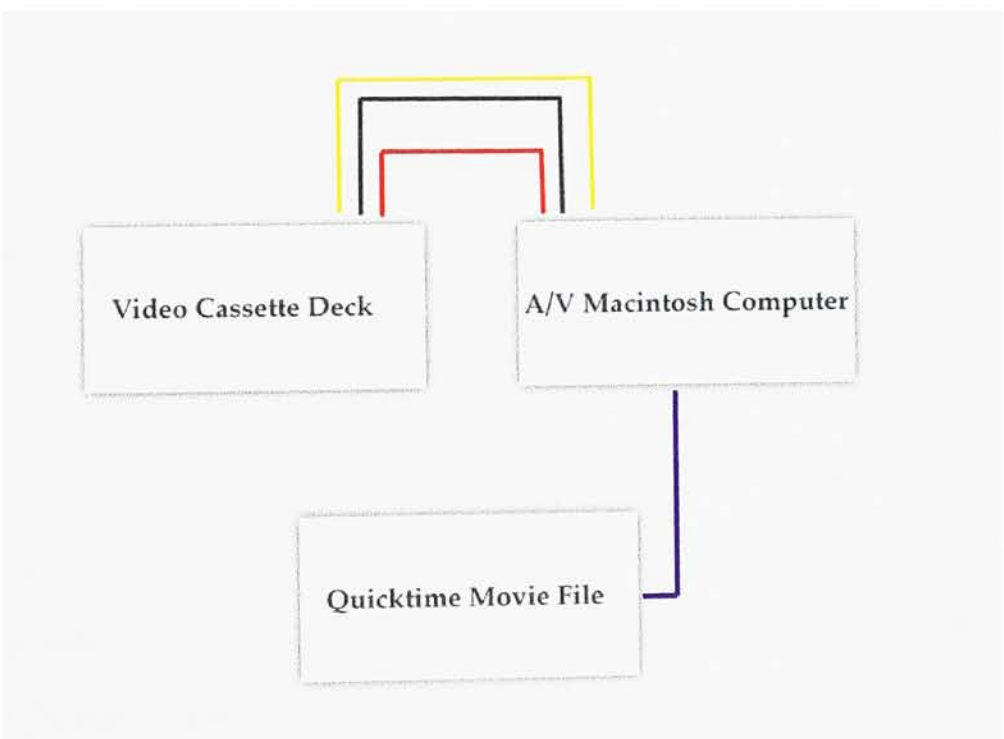
Color Code:

Video out of Game System to Video in of VCR
Audio Right out of Game System to Audio Right in of VCR
Audio Left out of Game System to Audio Left in of VCR
Recorded to a VCR Tape

Figure 42

Figure 42 illustrates the procedure that I used to record the small sample of the game actu ally being played. I first put the game in the system, loaded it up and sent the video and audio signals from the game system to the VCR deck that is connected to my monitor. I used a standard vhs tape high-grade to get a good picture quality. When I was done, I then took my vcr deck with the tape of all the recorded samples of the games I wanted to include in my thesis and sent the video and audio signals to my Macintosh. The computer I used for this is a Macintosh 7100/80mhz cpu with audio and video input support. Figure 43 illustrates how I connected it to the computer.

Procedure for Recording Games to Computer



Color Code:

Video out from VCR Deck to Video in of Computer
Audio Right out from VCR Deck to Audio Right in of Computer
Audio Left out from VCR Deck to Audio Left in of Computer
Quicktime Movie File (.MOV)

Figure 43

On my Macintosh computer I used a very simple program that comes with every Macintosh when purchased called Fushion Recorder. This program allows the operator to capture live video from a video source, i.e, vcr deck, video camera. Therefore, all I did was record the samples off the vcr tape to the computer. What this program does is to digitally record the video from those sources I mentioned. But, there are some draw backs to digital video. The longer one records, the bigger the file size gets. This eats up more of your hardrive space on your computer. This causes slower playback when you play your digital movie. But, on the plus side there is a technique called compression. Compression takes the final movie and cuts out frames that are not needed, and in so doing, makes the file size smaller. But, even with compression, there are drawbacks. Compression causes lesser image quality of the movie. and could cause pixelation of the image when not set to the right compression format. I used a video compression format on my recorded samples giving small file sizes, good image quality and smoother play, and good sound quality. When I finished my movies on Fushion Recorder, I saved them as independent files, meaning that those movie files don't depend on any other files to run properly. I saved them with a video compression of medium quality and saved them as Quicktime movies because I had to bring them into Director. I did the same process with my 3d animations. In 3d Studio Max when I was done with the animation, I had the program render the final animation and save it to Quicktime movie format so I could bring it into Director. Quicktime Movie Format is a standard that was developed by Apple for saving digital captured video to disk and gives the operator total control over certain aspects, such as, the play button, forward, reverse, etc.. just like a vcr deck. Figure 44 illustrates what a quicktime movie looks like with the vcr-like controls.

Quicktime Movie Example

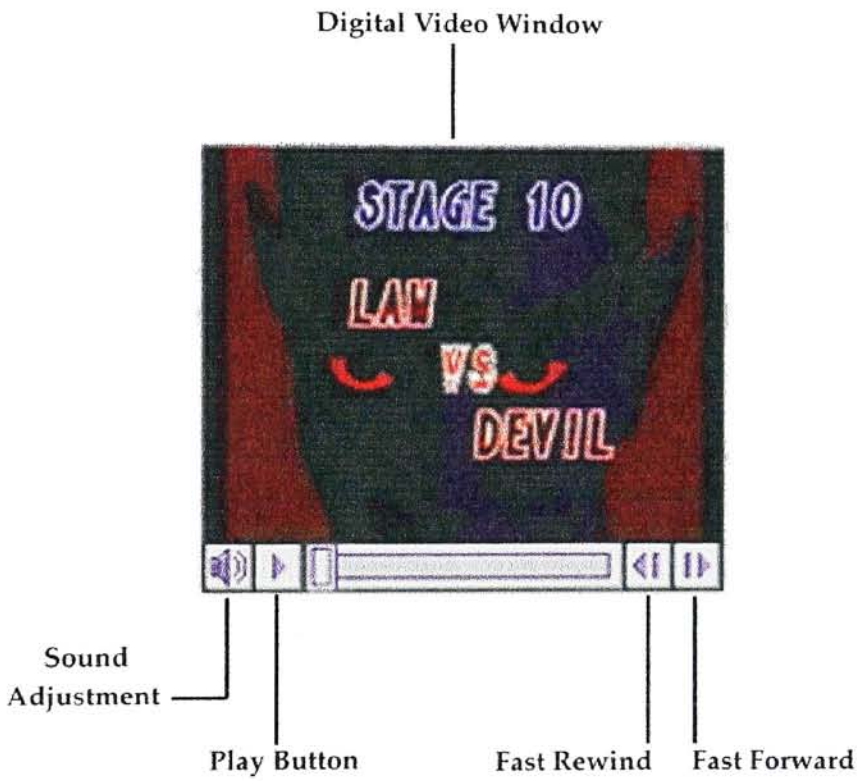


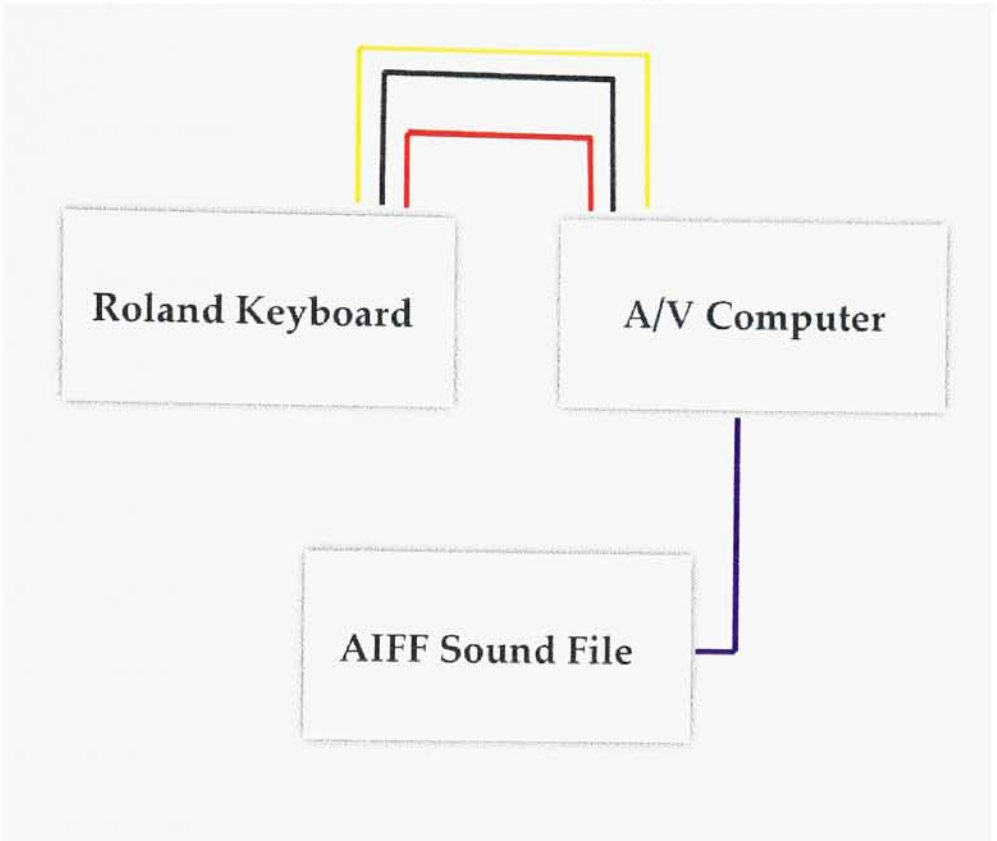
Figure 44

Figure 45

Figure 45 illustrates the Quicktime movies in the Director program of my thesis. The user has the ablity to play the movies in any order or even at the same time. He/she can play, adjust the sound, fast forward and even fast reverse the movies. Very interactive for the user. This concludes the Games in Action section. Finally, the creation of the music and sound effects is next.

For the planet scenes I had to decide which sound effects would help add to the environment. The first scene, Figure 28 looks like it is in a sort of peacful place with mainly green hills and a road. Here, I used a bird sound effect. When the user is looking around he/she can hear the birds chirping. For the second scene, Figure 30, I used a wind sound effect, because in sandy areas it is heavy winds. For the last scene, Figure 32, I used a torch sound effect. It gives the illusion that the flaming torches are crackling. In doing these sound effects I used a CD-ROM entitled "SoundEdit 16" by Macromedia. This CD-ROM contains over 300 sound effects. These sound effects are 16-bit AIFF files which may be imported directly into Soundedit 16 or any other application that supports AIFF sound files, such as Director. The music was created on a Roland MK2 Keyboard with a Korg O5R/W Sound Module. I wrote five songs for my thesis. The first song opens the 3d animation at the beginning and is an atmosphereic tune for space. I get a sense of exploration when I play this tune. The next song is when the commander is talking to the user to find the artifact. Here this song is just a fill-in to keep the user interested. The next song is the first planet scene, which was hard to write because I wanted it to be another exploration theme. In the next scene, the pyramid appears, and this song has an Egyptian sound to it. Finally, for the last scene in the chapel there was no music, until the scene cuts to the small 3d animation. I made this last music very energetic to get the user excited in what was next. Figure 46 illustrates the procedure I followed to record my music from the keyboard to computer.

Procedure for Recording the Music



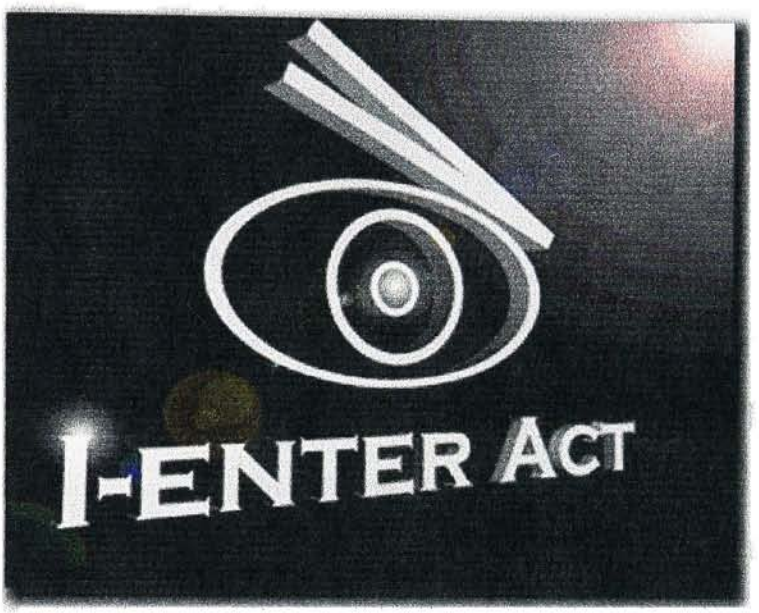
Color Code:

N/A
–Audio Right out of Keyboard to Audio Right in of computer
–Audio Left out of Keyboard to Audio Left in of computer
–Recorded and saved as a AIFF Sound File

Figure 46

The program I used to record the music was SoundEdit 16 by Macromedia. This program is similar to Fushion Recorder in that it allows you to record real time music and sound from any source, i.e., vcr deck, keyboard, microphone etc. It allows you to edit the sounds anyway you want it.

I recorded the sound as 8-bit, stereo, at a 11khz sound quality. This setting is the standard setting for good sound quality. The drawbacks are similar to Fushion Recorder in that the longer you record the sounds or music the bigger the file size. There is compression, but I didn't use it because it degrades the sound quality heavily. I used 8-bit audio also because Director prefers 8-bit audio over 16-bit audio just like the images I talked about earlier. The reason Director prefers 8-bit than 16-bit audio is because, if it is 16-bit audio, there is more audio to process, and Director will need more RAM from your computer to run 16-bit audio files properly. If the computer doesn't have enough RAM the music or sound effects will skip when played and will slow the application down. In my computer I have 32 MB of RAM. It's just not enough. You need about 64 MB of RAM or more. However, the difference between 16-bit and 8-bit audio is not worth it for Director because 8-bit sound will sound good enough without slowing the whole application down. This concludes how the sound effects and music were created and my thought process in getting it to computer.



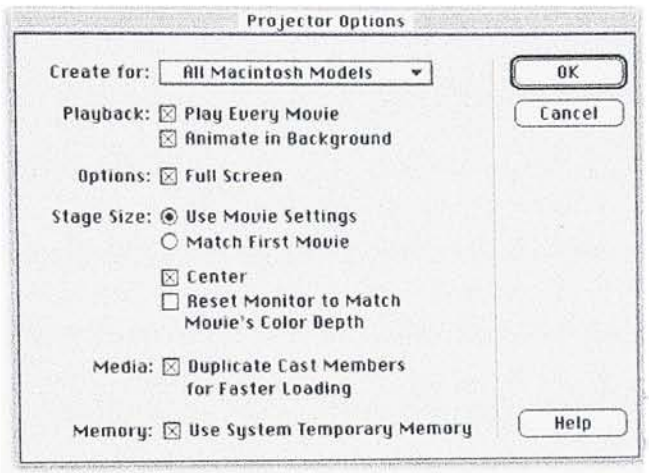
Chapter 4 Final Process

CD-ROM Burning

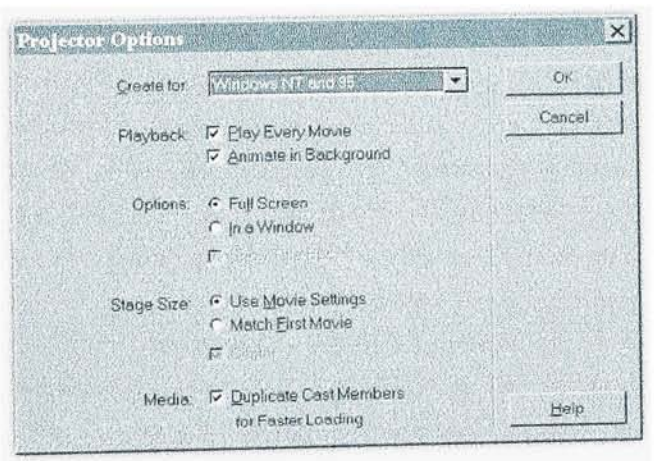
CD-ROM Burning Process

The last and final process was taking my thesis and putting it onto a cd-rom disc. A standard 74 minute cd disc can hold 650 megabytes of information which is alot. My thesis came to about 129 megabytes of information with all the images, Quicktime movies, music and sound effects. The first step was to take my thesis in Director and create a projector file. A projector file is nothing more than a stand alone file of what I created in Director, without the hassle of opening Director and then loading that file you created. This thesis was intended to be a hybrid cd-rom disc in that it works on both PC and Macintosh computers. I had to take the Macintosh director file and create a projector file. For the PC I had to take the PC Director file and also create a projector file. Now I have both the Macintosh projector file created and the PC projector file created. Figure 47, on the next page, illustrates the projector options that Director allows the operator to configure his/her program and how it is going to play. The settings in this figure are what I used to create my projector files from. The projector file must be within a folder that has all the images used, any other Director files, Quicktime movies, sound files etc. Without those the projector file will not work correctly. Director creates links; so if you have a Quicktime movie, everytime that movie is played, Director calls that file from where it is stored, i.e., harddrive, cd-rom, and any type of storage device. This also applies to image files, sound files etc... This is a critical step to get the program created in Director to play optimally on the Macintosh and PC computers. The checked items in the projector options screen show that, for the Macintosh computer, it will play on all Macintosh systems in the market and for the PC also, but must be played on a PC system running Windows 95 or Windows NT. The next step, was to now take the projector

Projector Options for Mac and Pc



Macintosh Director Projector Options



Pc Director Projector Options

Figure 47

files and to test them a number of times before the cd-rom burning process. I tested the Mac projector file and found no problems. The Mac side was done. The PC side also went smoothly in that I tested it also a couple of times with no problems. Now I was ready to take that data and burn it to a cd-rom disc. I used a Kodak cd-writer that is capable of writing up to a 2x speed and reads up to 4x speed. In order to actually burn it to a cd-rom disc I used a program called "Toast" by Miles Software. It allows the operator to customize whatever they want to specify, i.e., Mac only cd-rom, Pc only cd-rom, hybrid cd-rom(both Pc and Mac on one cd-rom disc), cd-audio disc, etc... So I chose a hybrid disk. This application will take both projector files and their contents and burn it to one cd-rom disk capable of being used on either a Macintosh computer or a PC computer. The whole purpose of thesis was to make a quality product and package that can be used on the home Macintosh and PC market computers. The last step now was to create an attractive cd-rom cover for the case. Figure 48 illustrates a scanned image of the actual cd-rom case with the insertions in place to show how it looks.

Figure 48

The front cover of my thesis was taken from the animation at the beginning of my **I-enter-Act** product (Refer to Figure 26). I took that rendered image and brought it into Adobe Photoshop. Here, I used a plugin called the page curl. That is how I created the page-curl in the right corner of the image. I then took that empty space between the page curl to the end of the image and applied another filter effect called rendered clouds to get that grayish heavy cloud look. The back image is the rendered image of the chapel scene from the planet scenes. I used this image because the artifact is the whole connection between the game story part to the actual program. Next, I added four images from the program to show the customer what to expect in this periodic subscription of **I-enter Act**. Lastly, I added the PC requirements and Mac requirements section in the lower right hand corner of the back cover. This lets the customer know which type of required components their computer must have in order to run my program. Such components are, 4x cd-rom drive, 8 megs of ram, 16-bit color etc... This concludes the cd-rom buring process and I had a lot fun doing the actual cd-rom burning of my thesis, because it taught me that in order to have a good product one must go through heavy bug testing of the program before one burns it to a cd-rom disc. Once a cd-rom disc is written to, it cannot be changed in any way, it is permanent.

Chapter 5 Summary

Concluding Remarks

Summary

The **I-enter Act** product described in my thesis was created for the Computer/Video game enthusiast who is interested in timely information on hot new game releases, games forthcoming, new accessories and Quicktime movies of games in action. While I focused on an application geared as the computer/video gamer, the **I-enter Act** engine can be used to convey an interactive message by a vast array of users, i.e., automotive dealerships displaying their vehicle offerings with actual motion picture snip-its of their new vehicle in motion etc, real estate relocation offerings including an actual motion movie tour of the neighborhood and inside the house, new medical and treatment alternatives, advertising of new products or manufacturing advertising capabilities, etc. My goal is to pursue these other applications after applying it to the game world.

The game industry is in a mode of constant change and where there is a change there is a potential need to convey these changes to the intended user. My thesis started with understanding the needs of the end-user(the gamer), their needs being **Informative**, **Intuitive** and **Interactive** information in the game industry. I believe that my thesis has addressed this need by developing the **I-enter Act** product.

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Internet Resources

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6. Nintendo's Web Site - http://www.nintendo.com
7. Usergroups Web Site http://www.yahoo.com
8. Autodesk's Web Site http://www.autodesk.com
9. Adobe's Web Site http://www.adobe.com
10. Macromedia's Web Site - http://www.macromedia.com
11. Apple's Web Site - http://www.apple.com


Kodak
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