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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**

The Visual Story of Exodus

Educational Multimedia Bible

by

InWook Choi

October 20, 2005

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Abstract

My project is an educational multi-media tool and is related to the religion: Christianity. It was made for the purpose of learning and teaching Exodus: One of the most important books in the Old Testament.

As a Bible teacher, I have looked for many ways to teach the Bible effectively for more than ten years. I used to teach the Bible with some visual materials like videos, charts, maps, and sometimes I even created my own supplements because there was no way to find any appropriate visual material which showed customs and culture in the biblical time. When I used these visual aids, students could understand what I would like to teach much more than when I taught with just the Bible. Additionally, I found that I could teach much better than without any visual material.

Studying computer graphics, I became to realize there must be a good way to use computer graphics to visualize the Bible effectively, and I studied some programs that were helpful in making the interactive multimedia Bible. I was sure that once a multimedia Bible is available on the web, it was going to be much easier to access than any mediums like video, books, or transparent film. This visual medium will make learning the Bible much more efficient and effective in many areas. This project was made because of these beneficial reasons.

I can say with confidence that this will be a very useful Bible learning tool and a teaching tool for Christians: especially seminary students, theologians, pastors, missionaries in both the Protestant Church and in the Catholic Church.

They will be able to find a better way to be closer to the "Word of God" while they view the movies, animations, charts and maps in my project. And they will realize the Bible is the most precious gift from God, full of amazing miracles and the undeniable truth.

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I Introduction

1 The Bible: The Word of God

Inspired from God, the Bible was written by more than 40 writers during 1600 years and has been translated to 2,300 languages, still being translated to 1,600 languages. Throughout history, as the steady best seller and the most authoritative book in the world, the Bible has inspired innumerable people to make great contributions to the world and also influenced many countries to establish their national foundation and culture. The Bible also has great literary and historical values are rooted in the Bible. Beyond these kinds of values, the Bible is not just a great book to Christians: it is believed that God reveals his universal will through the Bible. It means there is no more important thing than hearing the word of God through the Bible for anyone who believes God.

2 Motivation

As a Bible teacher at protestant churches, I have learned and taught the Bible for over 10 years, and I found that students learning the Bible tend to be bored when they encounter some books in the Old Testament. The books seem to be difficult to imagine what happened in that time, just by reading the Old Testament. Although some may be able to imagine what happened during that time in the Bible, most people are not able to understand by only reading the Bible.

Sometimes I used visual materials like pictures, tables, maps and charts to help them understand, and I found that students understood much more and they were not bored during the study time. They gave their attention to the Bible more than I didn't use any visual supplements. I have always thought of making an interactive and useful tool which can be used in learning and teaching the Bible since I felt the needs of these kinds of supplemental materials, and now I am able to fulfill one of my desires.

During my studies at RIT, I studied in the Computer Graphics program and also took some classes in Computer Animation to find more effective ways to represent contents in the Bible. I believed that modern technology is going to be used as great tools in learning or teaching the Bible like they are used to show other information.

In my project, many kinds of soft wares were used for video editing, 3D modeling, image editing, web publishing and making interactive media. I used all the programs as I needed to make more effective Bible learning tool.

3 Background

Understanding the Bible means much more than just reading the Bible. Until now, numerous methods of learning the Bible have been introduced to help understanding the Bible and many of them have shown great fruits. However, the Old Testament has been veiled to many Christians for the reason that it is hard to understand it without the historical and geographical context. Like daily bread, the Bible has provided spiritual bread to anyone who wants to understand it; nevertheless, it is a really regrettable state that many Christians cannot find precious values in their nearest Bible just because it seems hard to understand.

I chose the Exodus as my first multimedia Bible project because there are many things which are hard to understand: strange names of places, the Tabernacle, and laws of the offerings. Understanding the book of exodus needs patience and a great deal of imagination. Archeological and historical backgrounds are needed to understand the book at many times. Many people have a difficult time reading the Bible and in many cases give up reading the Bible because they lack this sort of semi-professional knowledge.

In my humble opinion, if someone can get through this part of the Old Testament, which is hard to understand and to some extent even boring, they will be able to find the hidden and precious truth in the Bible.

Exodus is one of the most important books in the Old Testament, because the 40-year journey in the wilderness reveals much about God's plan for his own people. Israelites had to take a 40-year journey out of their misery in Egypt to the land flowing with milk and honey, Canaan. This journey was the process in which the Israelites became true people of their Lord God. At first they did not understand exactly why God had brought them out of Egypt; however, after 40 years of suffering they were ready to enter their new land.

Exodus is the history of the God's own people, and Christians can understand God's will to all mankind through the Israelites' suffering.

The most important Christian theological doctrine is also mentioned in the Exodus, which is the salvation of mankind. God chose the Israelites as the representatives of mankind to show how we could be saved, and through the 40-year-journey in the desert Exodus showed how a saved nation should live. The most important law of the Bible, and also the laws that are being passed down and followed by modern Christians were also given during this time.

With this multimedia project the audience can imagine more closely what Israelites the experienced and suffered: how they could survive in the desert during 40 years and how they offered sacrifices to God in the Tabernacle in that time. Plentiful information through historical investigation will guide audiences to what they could not have experienced.

4 Methodology

My project was first made to run on a CD ROM due to its large file size, however, I thought it would be better if my project was available on the web so that more audiences can easily access it. In finding the way to make my project easily accessible on the web, I chose Flash 2004 MX as the main editing program.

With Flash MX 2004, I could import most kinds of files which are needed in my project and I could edit them easily. Different types of images, Quick time movies, sounds, and illustrator files were easily edited with Flash 2004 MX.

I could even reduce Quick time movie sizes very effectively with the program.

There are more than sixty Flash shockwave movies in my project, and each movie contains at least 5 Mega bytes of video. To load each movie fast, audiences may need high-speed internet connection and at least 128 mega bytes RAM. It is certain that the project is going to run faster with better CPU. To run the project, audiences simply need a web browser with a Flash player in the windows or Mac OS platforms.

This project can be viewed through the monitors with laptops or desktops, or could be projected in the class room. I set the resolution of the project fit to the most commonly used screen resolution.

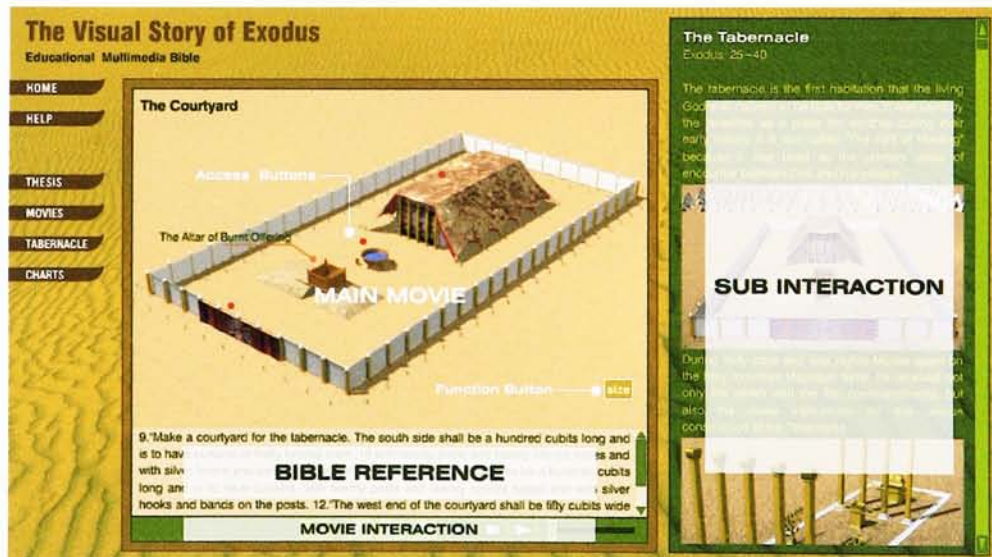


Figure 1_ The Layout of the Interaction

II Interactions in the Project

My project was created for the purpose of reaching a wide range of ages. This is why I avoided using unnecessary Flash animation or a trendy animation and interaction style.

All the buttons were sized appropriately and are very easy to access. Each buttons that are linked to movie clips were made of images from the video to make it much easier to read and expect. Simple shapes such as circles and rectangles were used to crate the buttons so that space would be saved and they would be easy to locate.

To keep the focus on the material that is being presented, I chose not to use any fancy flash animations. The presentation of this project may seem rigid and crowded but I did this purposely so that when projected with a projector there would be minimal space wasted.

The designs and interactive elements were purposely designed with a common theme; this was done so that there would be minimal confusion and give unity to the project. This design also helps when giving a brief presentation without distracting the audience.

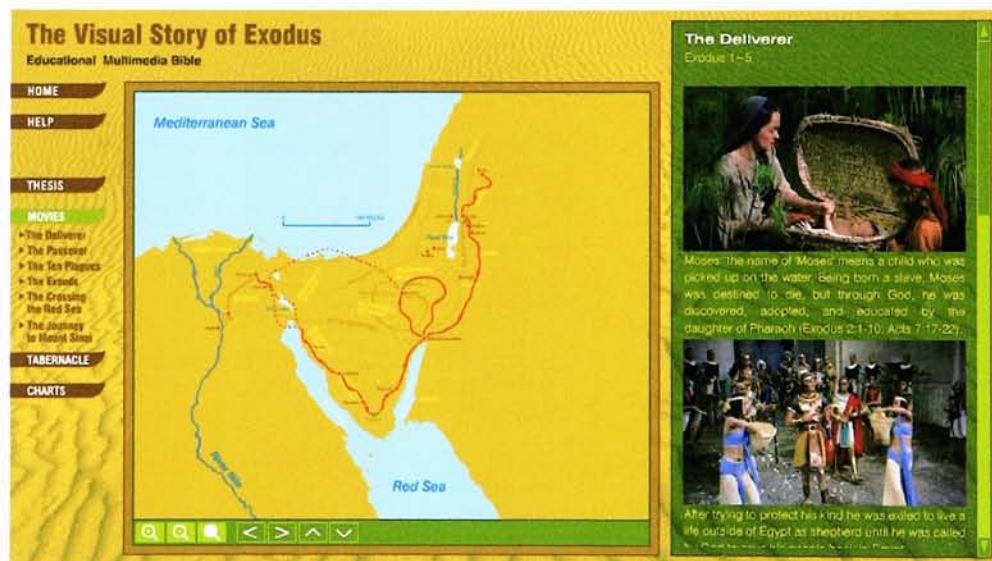


Figure 2_ The Main Interaction

The period of the Exodus is set mostly in the wilderness. The Israelites spent 40 years in the wilderness living tents moving from place to place. From this setting and location I created the color concept for my project. I took colors from natural objects such as the desert, olive tree, sky, clouds etc, all things that were easily seen in the wilderness.

III Whole Architecture of the Project

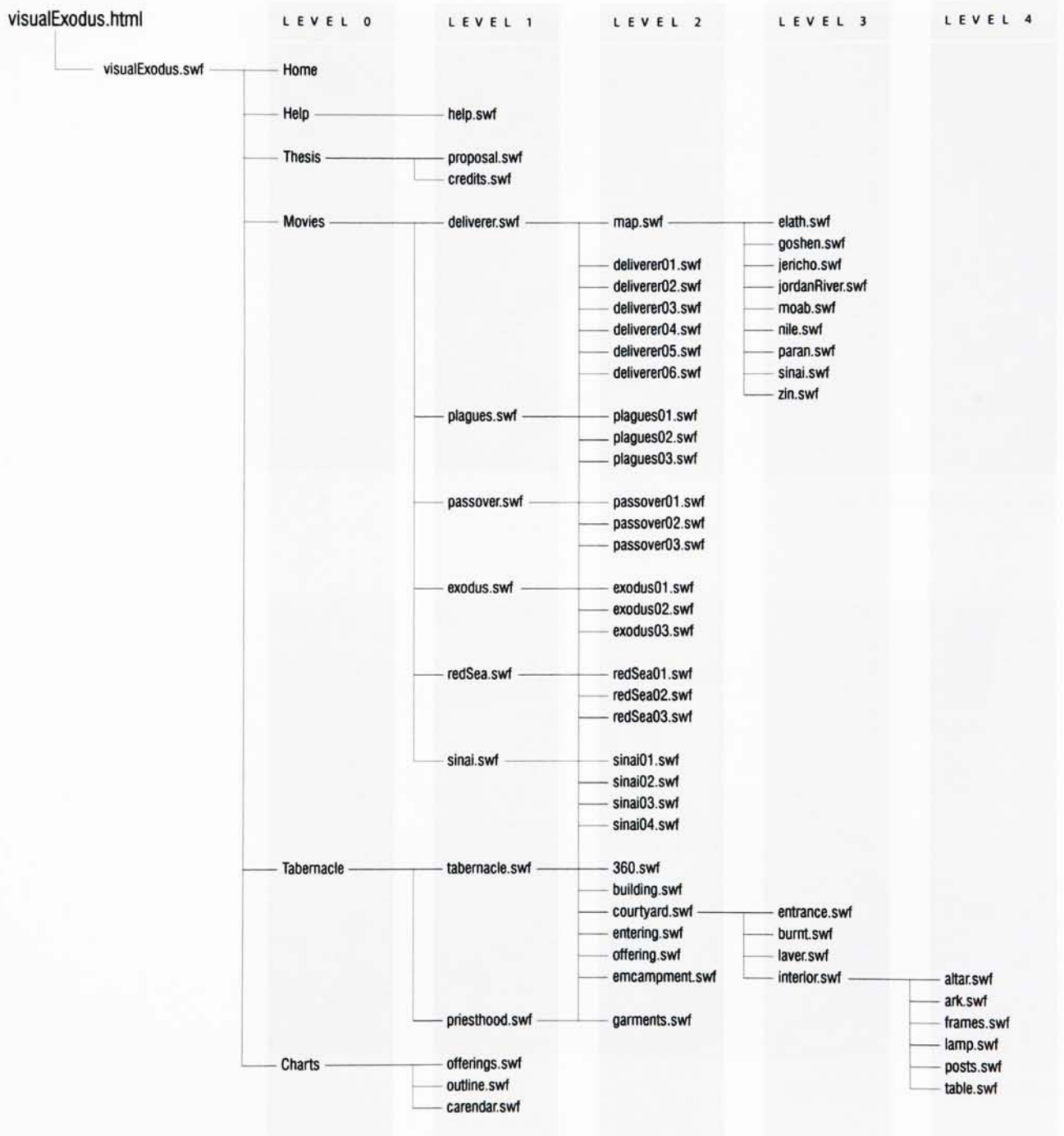


Figure 3_ The Whole Architecture of the Project

To make the project easily accessible on the web, I had to make the project consist of 63 small files. My project consists of a lot of smaller movie files that are linked to the main movie file. Using [loadMovieNum](#) method the presentation doesn't have to load all at one time and people can choose and view only pieces that interest them.

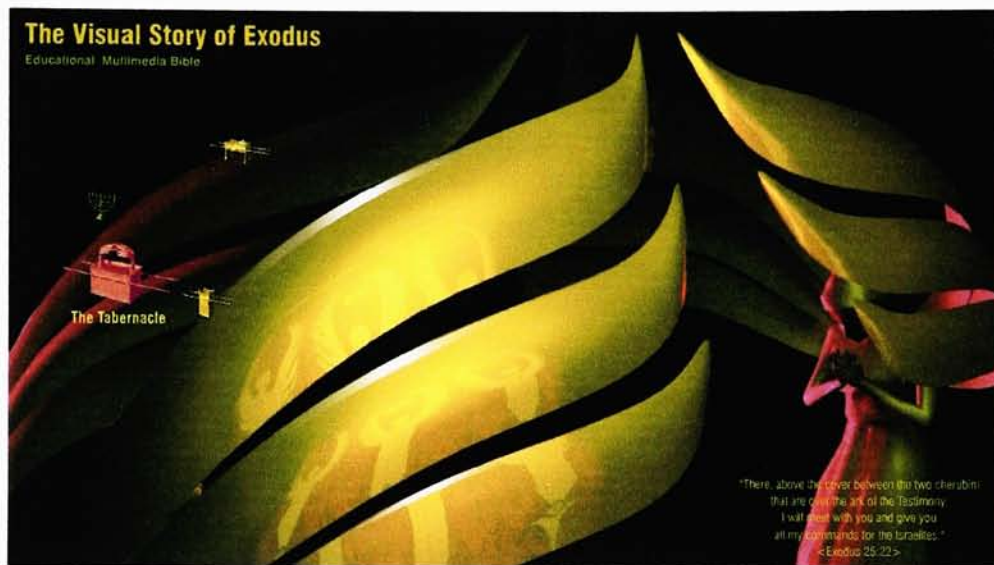


Figure 4_ The main Scene of the Project

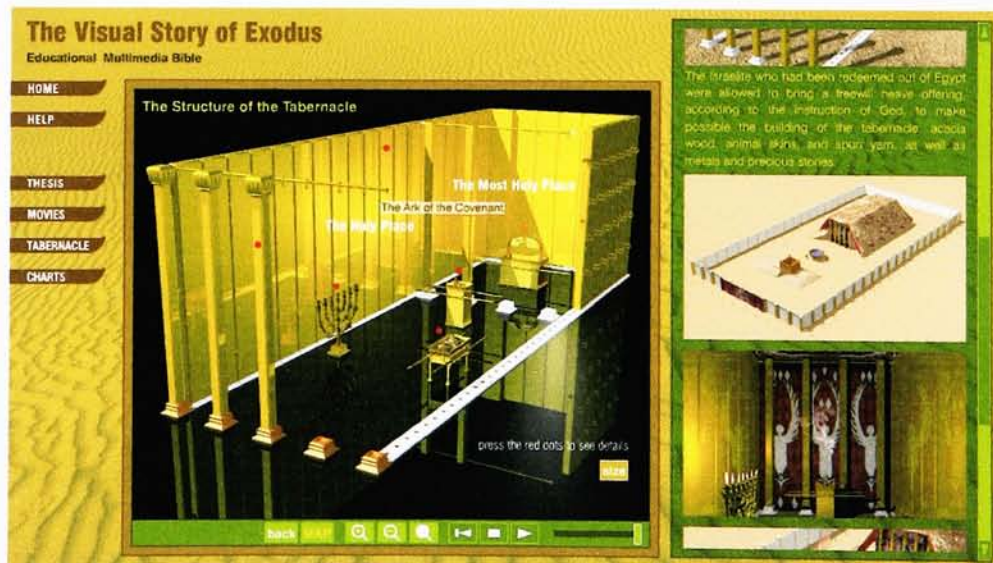


Figure 5_ The hidden Interactions in the Project

IV Components of the Project

Once audiences start the project with a web browser, they see a strange scene with many icons represented in the home page. The scene is showing the most important and meaningful part of the Tabernacle: The house of God. Two Cherubim are facing each other with their wings lifted high.

I have four components to my project and have four icons made with a 3D image, which are also the furniture pieces in the Tabernacle. Audiences can access each part directly from the main page, and all the Flash movies in the project are woven so that they can be reached at any part of the presentation from anywhere.

First, in the "About my Thesis" section, I am showing the brief description of my project including the thesis proposal and credits. The credits include 3D texture, images of biblical places, and other special photos.

Second, in the "Short interactive Movies", I am showing more than twenty short interactive movies from the masterpiece "The Ten Commandments". I got the permission from the Paramount Pictures; they allowed me to use video clips from their DVD "The Ten Commandments" released in 1999 for my Thesis.

I have "The Tabernacle" as the third part in my project. There are many 3D images and animations to illustrate the prototype church architecture which was designed by God Himself.

Finally, I have "Useful Charts and Map" part in my project, they help to take a look at the book "Exodus" at a glance. Also, in the movies part, the interactive map showing 40-years journey of Israelites is accessible.

1 About Thesis

Here I put my thesis proposal, problem statement, methodology and credits. Most of them, I made it clear the important reference was the Holy Bible.

2 The Interactive Movies from the Ten Commandments

In this part, I have more than twenty short interactive movies showing how the Israelites were saved from the hands of the Egyptians in that time and how God lead them to the land of Canaan. Each page has 4 to 5 short interactive movies, I only selected segments from the DVD that were directly from the Bible, and arranged them chronologically. Audiences are allowed to search for specific clips that match their individual needs while they study or teach the exodus. I feel this will pique the interest and imagination of the viewer and allow them to be more interested in the full story of the Exodus.

Each movie has the same interactive design to decrease confusion; audiences are able to search for the scene they want to see in a quick and easy manner. There are basic movie controls such as play, stop, rewind

buttons and there is also a slide bar showing the leftover playing time. Zoom in and zoom out buttons are helpful to enlarge the movie size for who prefer bigger screen size.

During playing the movie, audiences can skip the movie or jump to other movies just with a simple click.

They can go to a home page, help page, and any other components whenever they want.

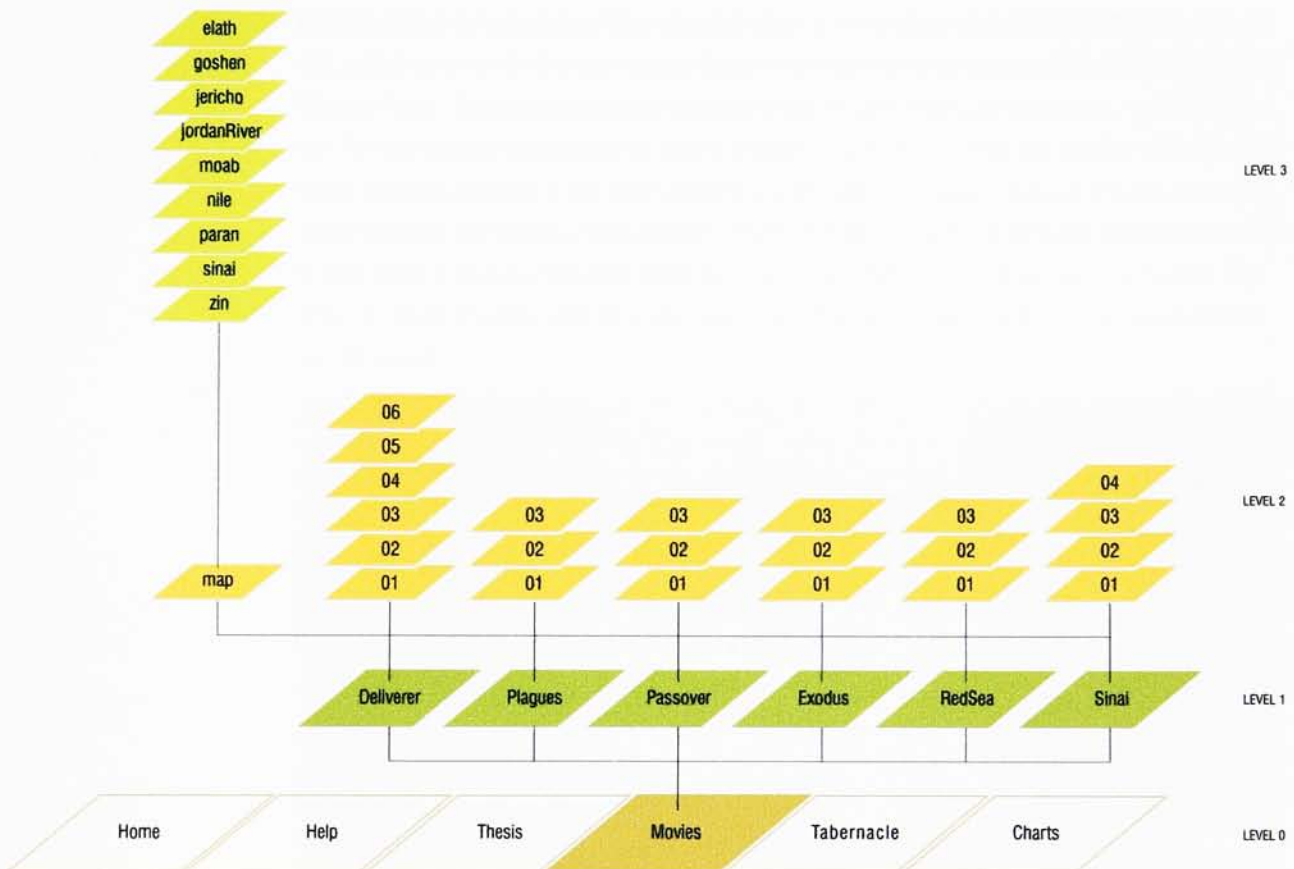


Figure 6_ The Architecture of the Movies Part

2-1 The Ten Commandments

I thought there is nothing better than the movies to show what happened in the past, I did not hesitate to use the movie "The Ten Commandments" DVD which was released in 1999 by Paramount Pictures.

I already saw "The Ten Commandments" when I was very young, I remember being very impressed by the most of the scenes in the movie and I know that the movie drew me closer to the Bible.

To get the permission to use the DVD from Paramount Pictures, I sent the public request letter asking for permission to use clips from the DVD, and they kindly allowed me to use their DVD in the condition of not using it in any commercial way.

"The Ten Commandments" shows in detail the historical background and context of the Israelites around the time of Exodus, including clothing, furniture, and construction skills. In addition, it provides valuable details

about how the Israelites lived as slaves in Egypt, what events led to the exodus, and how they wandered in the wilderness. Obviously, not all the details of the movie are historically-based or accurate, but were partially filled in based on imagination or estimations by the movie producers or script writers. The movie may not be hundred percent accurate and many parts are influenced by the film makers; however, the movie is based on a lot of researched history.

I feel it is enough to represent the living style and culture of the Israelites living in Egypt at this time. Not only this, a good portion of the film was actually filmed in the locations mentioned in the Bible, for example Mount Sinai and Egypt. The special effects that were used in the film were especially impressive when it first came out. The miracles such as changing the stick to a snake, water turning to blood, the crossing of the red sea is a sight to behold. Although it may seem simple now in the history of cinema, these scenes were considered ground breaking, especially in a time without computer animation. The total running time of the movie is close to three hours. It would be best if the whole movie was viewed but because not everyone has the time and patience I chose what I felt were the most important and informative clips from this film and included them into my project.

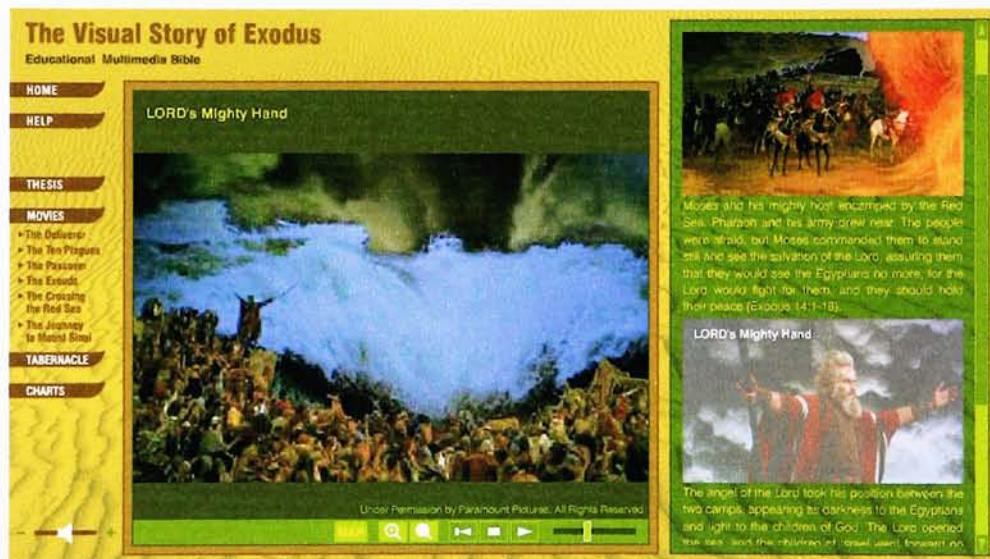


Figure 7_The Red Sea Crossing Scene from "The Ten Commandments"

2-2 The Process of making interactive Movies

To get proper video clips which were to be used in my project, I had to perform several processes. I extracted scenes I needed from the DVD. The extracted scenes were then edited with Adobe Premiere and exported to the Quicktime movie format. Finally they were compressed again while being imported to the Flash 2004 MX, and after some interactions added, they are exported to the Shockwave Flash movie file. Once a movie file is imported to the Flash 2004 MX, they can be edited just like normal Flash movie files, interactions such as play, stop, rewind, and zoom can be easily added to the imported movies.

I thought audiences would become bored if a movie clip ran for more than 2 minutes. There was also the problem of file size; this is why I reduced all movies' playing times.

3 The Tabernacle

The Tabernacle is the first habitation that the living God ever caused to be built for Him. It was used by the Israelites as a place for worship during their journey in the wilderness. It is also called "The Tent of Meeting" because it was used as the primary place of meeting between God and His people.

During the forty days and forty nights Moses spent on the holy mountain: Mount Sinai. He received not only the tablets with the Ten Commandments, but also the divine instructions for this unique construction of the Tabernacle. The structure and design of the modern churches came from the designs that God gave to the Israelites during that time. Each part of the Tabernacle has religious significance, and these ideas are known to be deeply related to Jesus in the New Testament.

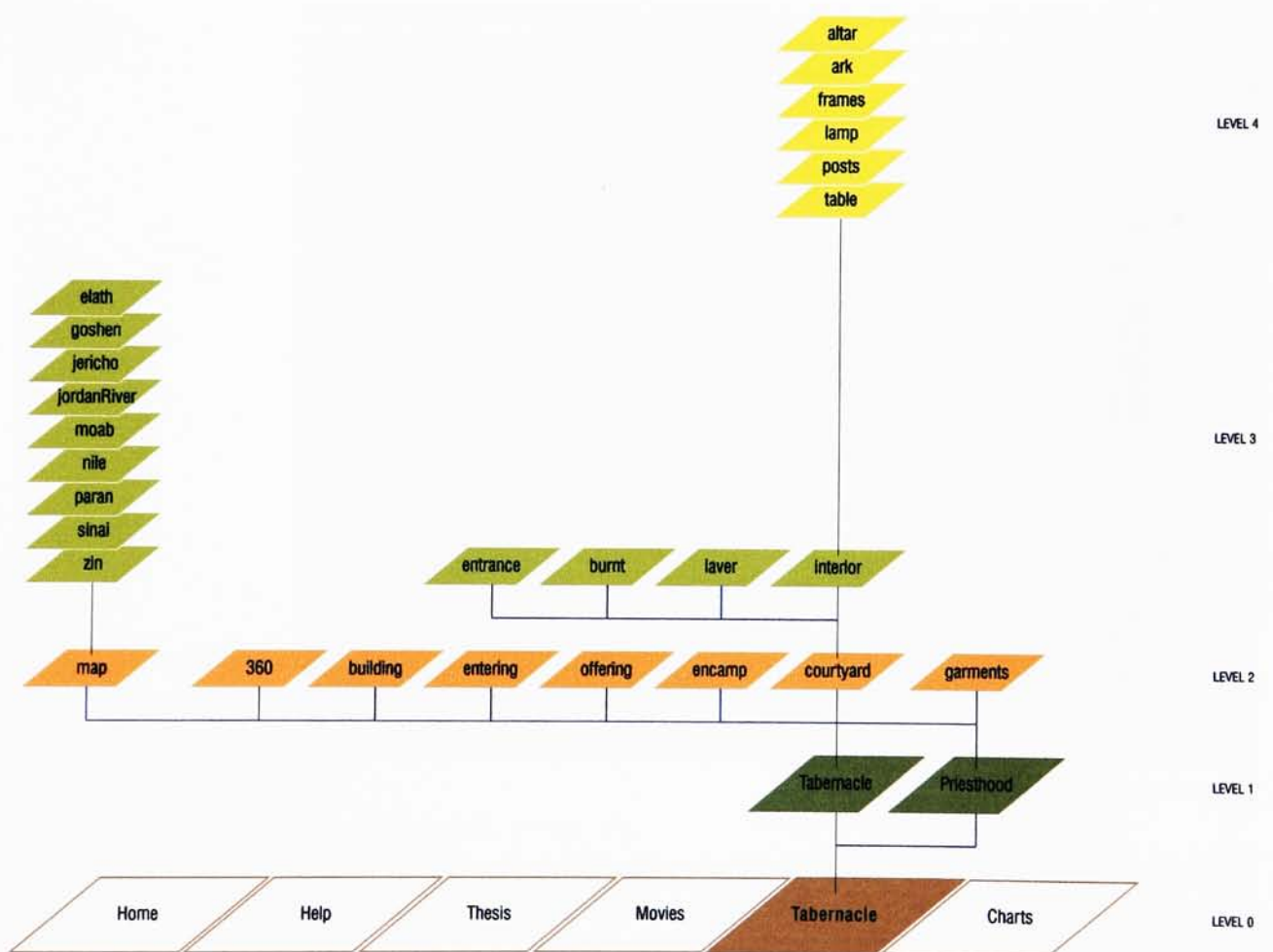


Figure 8 _The Architecture of the Tabernacle Part

The 3D version of the Tabernacle represented in my project was created in order to show the functionality and design of the Tabernacle. By observing the design learning of the uses of the Tabernacle I hope the viewer will find and see the religious significance embedded into each part by the living God. The audience can view the Tabernacle from multiples views, ranging from a birds eye view to a closer view in and out of the Tabernacle itself. Each object in the Tabernacle has also been shown with a great degree of detail. The Bible was appropriately quoted with the pictures to help compare.

3-1 Modeling and Texturing with Alias Maya 6.0 Unlimited

I made most of the models with polygon modeling tool in Maya. Polygon modeling was the easiest way for me to make, modify, combine and separate any shapes of the Tabernacle project.

These 3D models then can be modified and changed during any time of the progress. There aren't that many complex shapes in the Tabernacle so I was able to create most of the objects with relative ease.

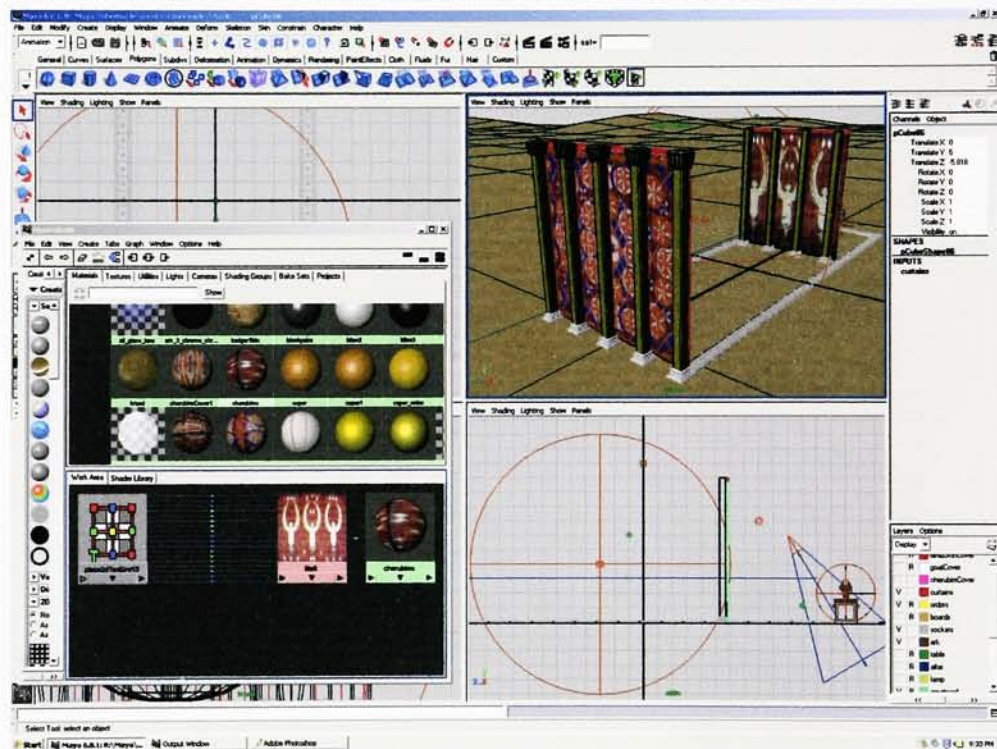


Figure 9 _Modeling and Texturing with Alias Maya 6.0 Unlimited

In Swiss, there is a museum which contains a scaled model of the Tabernacle made by Paul F. Klee. I found there are several models of the Tabernacle in the world, and I chose Klee's model as reference because that was the most sophisticated one among them. Extensive reading and imagination was needed to finish this 3D project. I carefully read the Bible while making sketches of the Tabernacle. Then I used the pre existing models of the Tabernacle, such as Klee's for reference. From the book of *The Tabernacle of God in the Wilderness of Sinai*, I could take some texture images of the Tabernacle, and I transformed them with Adobe Photoshop CS for the purpose of using them as a 3D texture in my Maya project file.

Modeling the Tabernacle required a lot of imagination. There are the exact sizes and materials of the Tabernacle in the Bible, but not with a detailed description of design and structure. For example, when I made the ark of covenant, I had to creatively design it myself because there were no specific details about the shape. Extensive reading and imagination was needed to finish this 3D project. I carefully read the Bible while making sketches of the Tabernacle. Then I used the pre existing models of the Tabernacle, such as Klee's for reference.

Although I looked to this model for inspiration and ideas in the end, I was forced to come up with my own interpretation and vision concerning the Tabernacle. The exact size and architecture is given in the Bible but certain details such as the two cherubim facing each other with spread wings needed more imagination. All the models in the Tabernacles have differences when it comes to these aspects.

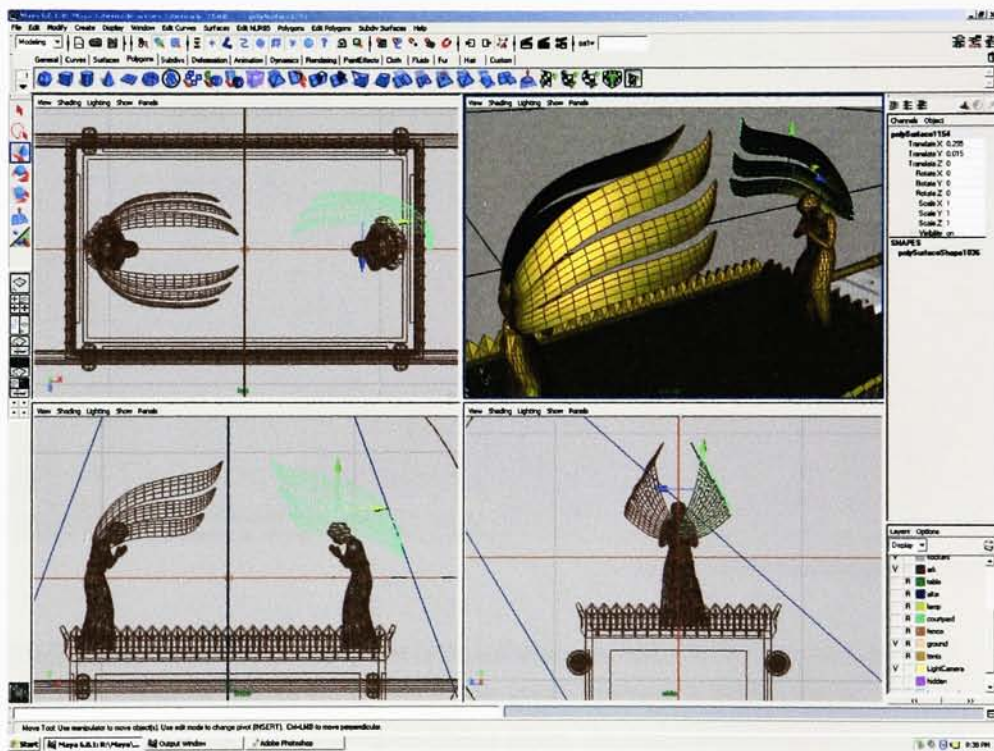


Figure 10_ The Design of the Ark of Covenant

To upload to the web, a small file size is crucial. To decrease the sizes of the each 3D video clips, I had to compress them to an appropriate file type. This inevitably leads to lower resolution of the pictures. After weighing the positives and negatives I brought many of the image files made with Maya into the Flash MX 2004 and created the movies from there. By doing this I was able to keep the higher resolutions and still make a small sized animation.

3-2 Scenes of the Tabernacle

Building the Tabernacle: Israelites always carried the Tabernacle when they moved in the wilderness, so one of the important aspects of the Tabernacle is easy to build up and to break it down. Whenever they arrived at a selected spot in the wilderness, they build up the Tabernacle step by step. There are many parts in the Tabernacle which were made of gold, silver, gold coated acacia wood, bronze and textiles.

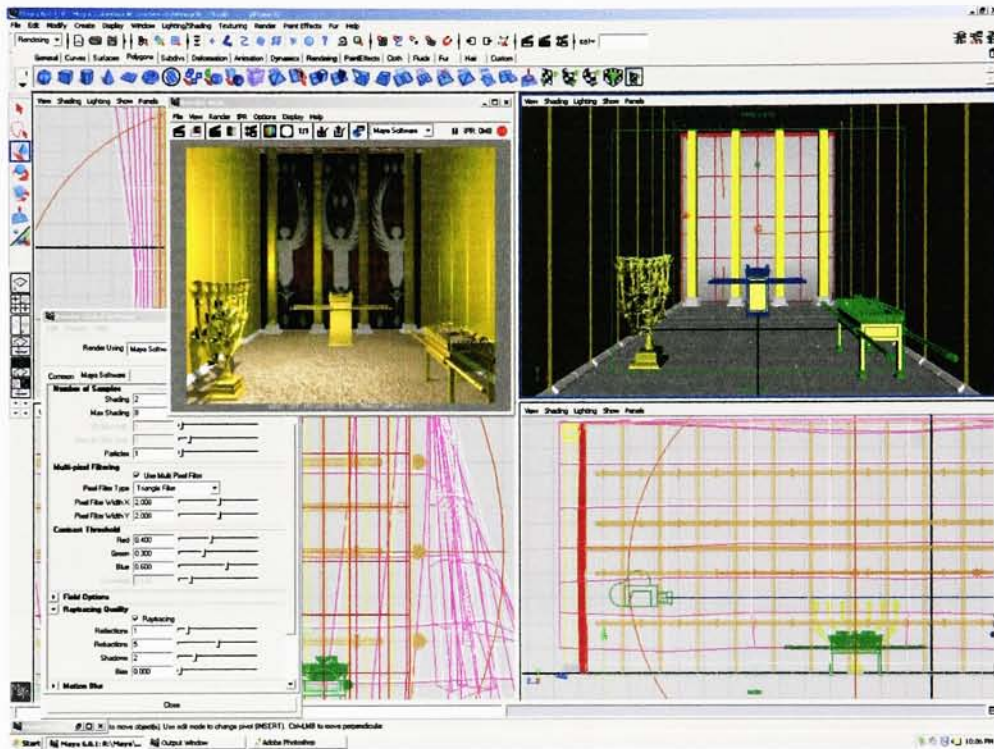


Figure 11 _ Rendering with Alias Maya 6.0 Unlimited

The Courtyard: The courtyard is surrounded by the wall which was made with linen and posts, and in the courtyard there are the laver, the altar of burnt offering, and the Tabernacle. In this part, into the Tabernacle the interior is revealed for all to see during the movie is playing. The Tabernacle is divided into two places; the Holy place and the Most Holy Place. And there are several pieces of furniture in the Tabernacle: the ark of covenant in the most holy place, the Lampstand, the ark of incense and the table of showbread in the holy place.

Entering the Tabernacle : In this part, the audience can experience the Tabernacle from the entrance to the inside of the Tabernacle as if they were actually a priest of this time walking into give offering. From eye level, audiences can enter the entrance and even enter the most holy place which was only allowed for the high priest at this time. Once the easy to assemble Tabernacle is set up the interior is completely separated from the outside world. There is a certain sense of awe in the interior of the Tabernacle. The four layers of cloths block both sound and light from the outside world. This helps to experience the holiness and righteousness of God's presence.

The Offerings: There were several types of offerings in that time. Israelites had to offer sacrifices under the strict law from the LORD. In the courtyard, priests were always busy to prepare and offer burnt offerings. In the courtyard, it was always chaotic and noisy: there were animals waiting to be sacrificed and being slain, priests and other people discussing proper offering methods, and offered animals or objects burning in fire. The courtyard must have been an extremely hectic and busy job. This contrasts with the atmosphere that would have been felt inside the Tabernacle.

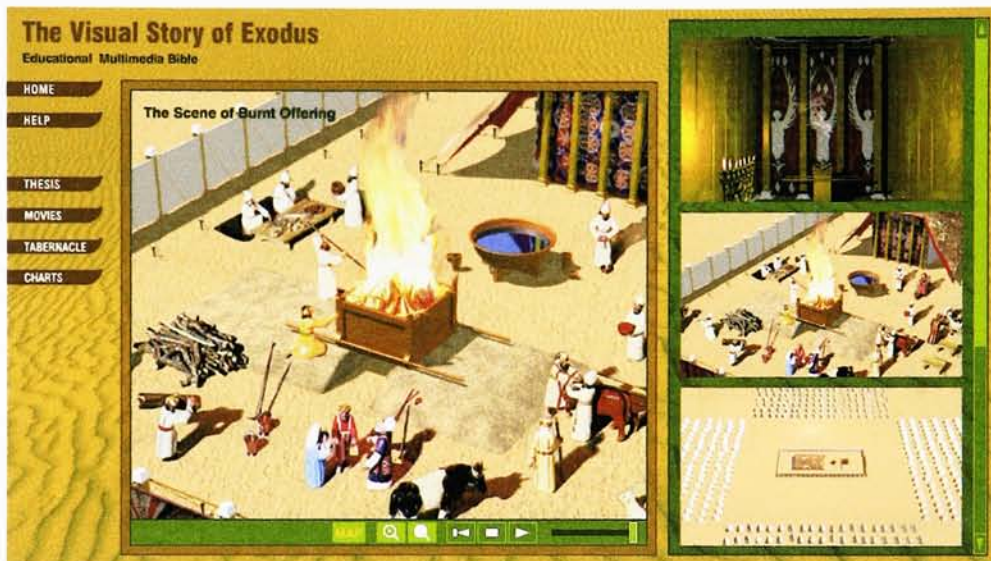


Figure 12_The Scene of Burnt Offering

The Placement of Tribes: Surrounding the Tabernacle is the courtyard and around the courtyard were the 12 tribes of Israelites. 3 tribes were assigned to each direction, North East South and West. According to Numbers, a book from the Bible, there were around 163,500 men in the age of 20 to 50. If they were to include the children, elders and women the number would be more than 600,000. If we were to assume there were people per tent that would be x amount of tents, at least 100,000 tents were surrounding the Tabernacle.

3-3 The High Priest

Aaron was chosen as the first high priest. The high priest was required to wear a special robe, this robe contained a chest piece representing the 12 tribes of Israel and also bells that were attached on the bottom of the robe, this design was also given to Moses at Mount Sinai. The picture below shows all the details and the meanings of the robe that was worn by the high priests.

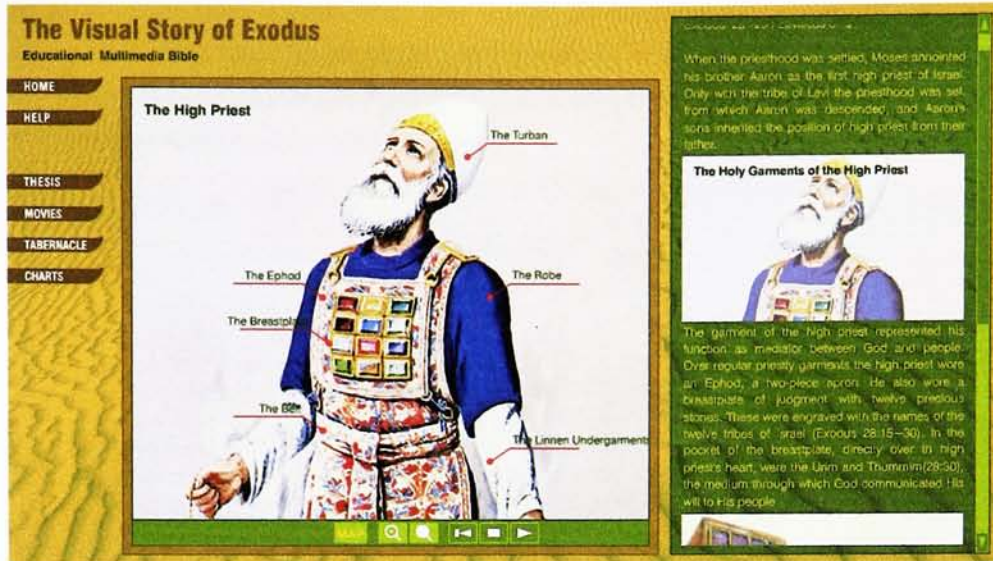


Figure 13_ The Special Garments of the High Priest

4 Useful Maps and Charts

To understand the book of Exodus, it is important to have proper historical overview and to know Israelite's customs during the time of Exodus. For above reasons, I included some useful maps and charts in my project. I have used the book "Nelson's complete Book of Bible Maps & Charts" showing the structure of the Exodus, the Leviticus, and the Numbers. There are also useful charts showing how the Offerings were and a chart about the Hebrew's special calendar in that time.

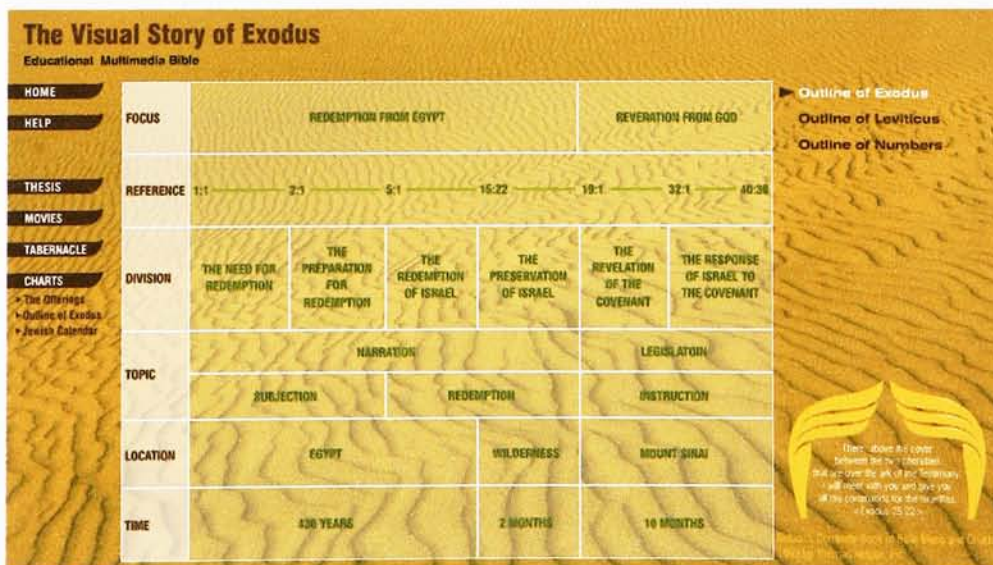


Figure 14_ The Outline of the Exodus

No one conclusive theory is known for the exact locations and the course of Israelite's journey during the time of Exodus from Egypt. For this reason, I have selected the most commonly accepted theory in the evangelical church. I chose "The Bible Atlas" by Yohanan Aharoni and Michael Avi-Yonah, which has authority of ancient Israel history and archaeology.

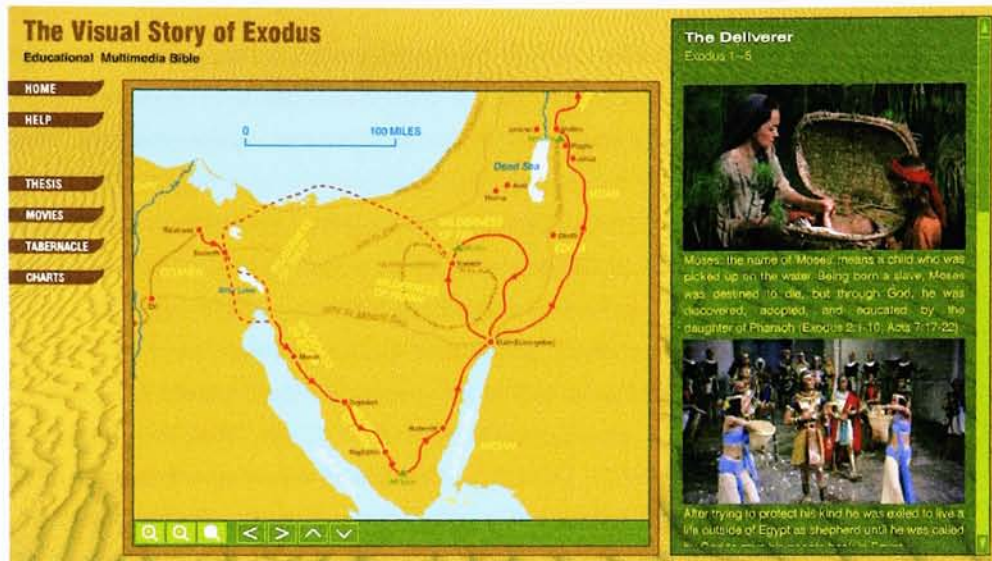
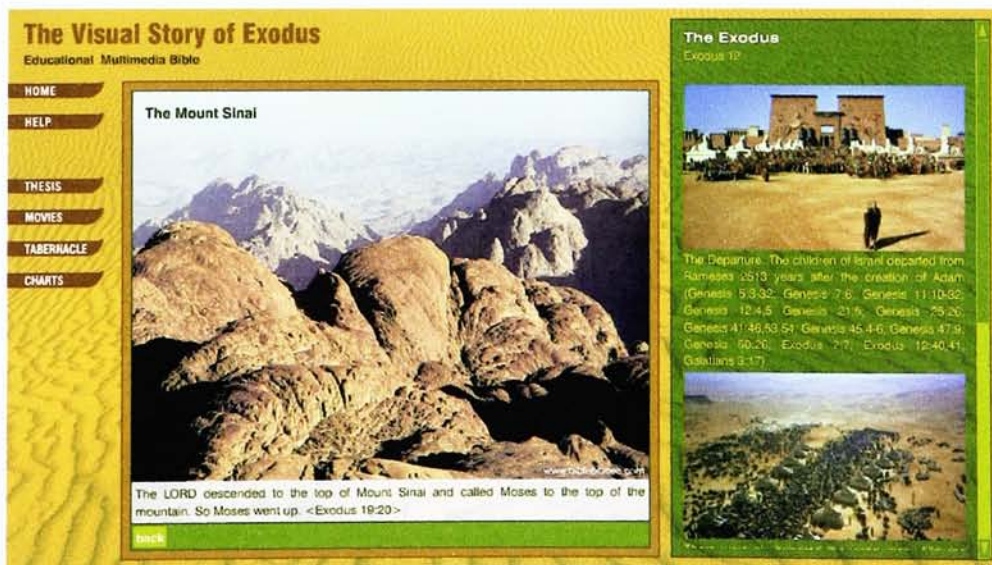


Figure 15_ The Interactive Map

In the map, many images of the popular biblical places (ex: Mount. Sinai) can be shown by easy access; each image helps audiences to guess how the Israelite's journey was and have virtual experience by visiting where the audiences have never been.



Figure_16 Showing Biblical Place: Mount. Sinai

V Conclusion

Today, there are many ways to understand texts in the Bible; the Bible itself, reference books on the Bible, CD or DVD, web, cable TV and other kinds of media. We may see Biblical photos, historical movies or archeological documentaries, and many other visual materials easily. Each Christian has to take consideration “what is the best way?” to learn the Word of God and understand the will of God with in the Bible.

I’m sure that learning the Bible, nothing can be replaced with the Bible itself. And I think there should be a serious consideration when any kinds of Bible reference materials are made because the materials can mislead, alter each audience’s understanding of the bible and inevitably affect their faith directly.

I am mindful of how a reference material can be misleading. Therefore I have tried to make my project very objective by not following one specific theology. It is far from having the audience to understand whole text of Exodus through my project, and it is not my attempt to do so. My objective is to have my project to be one of the one of the good ways to show the biblical stories as plainly, and as truthfully as I can.

I did my best to visualize important parts of the Exodus hoping more Christians would be interested in the Bible so that they may find the precious values hidden in it.

In the age of visual communications, I believe that this project is going to be used many ways—there could be many purposes and places—in the classes, in the bible study meetings, in Sunday school’s Chapels, or any Christian camps. I hope that there would be many great fruits wherever the project is shown, and I thank my Lord Jesus Christ for giving me a good motivation and guiding me to devote this project to the God.

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