5-22-1991

The Beauty of multimedia

M. Shan Yeung

Rochester Institute of Technology

A Thesis Submitted to the Faculty of
The College of Fine and Applied Arts
in Candidacy for the Degree of
MASTER OF FINE ARTS

The Beauty of Multimedia

by
M. Shan Yeung
May 22, 1991

Advisor: James VerHague

Date: 6.7.91

Advisor: Robert Keough

Date: 6-10-91

Advisor: Jack Slutzky

Date: 6/10/91

Special Assistant to the Dean for Graduate Affairs: Philip Bornarth

Date: 6/13/91

Acting Dean, College of Fine and Applied Arts: Peter Giopulos Ph.D.

Date: 6/18/91

I, M. Shan Yeung, prefer to be contacted each time a request for reproduction is made. I can be reached at the following address:

35, Tristan Crescent,
Willowdale, Ontario
M2H 1X2 Canada

Date: 6/10/91

Trademarks

Macintosh, Macintosh IIfx, Macintoh IIci, and Apple are registered trademarks of Apple Computer Inc.

ColorSpace IIi and ColorSpace FX are registered trademarks of MASS Microsystems.

MacroMind Director and MacroMind are registered trademarks of MacroMind, Inc.

PhotoShop is a registered trademark of Adobe Systems Inc.

HyperCard is a registered trademark of Apple Computer Inc.

35 Tristan Crescent
Willowdale Ontario
Canada M2H 1X2

Contents

The Background

From Hypertext to Multimedia

It is almost fifty years ago since the theory of "hypertext" was introduced in the Atlantic Monthly in 1945 by an American scientist, Vannevar Bush, in his paper, "As We May Think." In his paper he suggested a hypertext system, "Memex" (memory extender)[1], which was able to let a user retrieve information from pre-inserted microfilm through a very sophisticated mechanism. He described his system as "a sort of mechanized private file and library". [2] The idea of this machine was to provide an environment for a user to access specific information by "association" and "relation" in a non-linear fashion, just like the way that the human mind works.[3] However, the "Memex" was never implemented and only remains as a theory.

Bush's dream, however, has given rise to a lot of people who further developed this idea during the past five decades. The word "hypertext" was first coined in the sixties, gradually nourished in the seventies when computer technology was growing, and finally matured in the eighties and became a popular topic in the computer arena after 1985.[4]

The functionality of hypertext was no longer stuck with "text" or written information after it set off from a workstation kind of computer (Sun, Symbolics, and Xerox Lisp machine) to a personal computer platform (IBM PC and Apple Macintosh).[5] Ironically, the flexibility and power of association with other media on the new platform is much greater than its predecessors. And the term "hypermedia" has emerged from the word "hypertext" as various media, such as video, audio, graphics and animation, are able to be integrated and controlled under a computer-based environment.

It is believed that the first "hypermedia" system was the Aspen Movie Map developed by Andrew Lippman and colleagues at the MIT Architecture Machine Group in 1978.[6] The program used a computer controlled videodisk player to playback motion images which simulated a drive through experience in the city of Aspen.

As personal computers became more powerful and user-friendly, the horizon of "hypermedia" was extended dramatically, especially when Apple Computer Inc. introduced HyperCard® in 1987 and gave it away for free. The major improvement is that the power of interaction among different media is more versatile and faster. With proper hardware and software setup, a user can wander from one medium to another back and forth, or to have them all show up on a single machine within a fraction of a second. The pathways are entirely flexible and controllable by the user.

Within the broad functionality of hypermedia, the term "multimedia" is derived from it for specific applications. "Multimedia", in fact, is not a brand new term to those people who deal with slide presentations. The Association for Multi-Image International, Inc. defined "Multimedia" as "the coordinated use of more than one medium for the presentation of information."[7] The term has existed long before the invention of the personal computer. The media usually involved are slide, film, video, laserbeam, live speakers and even live performance. When the term 'multimedia" is applied within the area of "hypermedia", it generally implied hypermedia-based activity using a computer as a controlling platform of various types of hardware, including videodisc players, videotape machines, CD-ROM drives, cameras, audio equipment and scanners in any combination. However, the purpose of using multimedia is slightly different from that of hypermedia. The way that the former handles information is, more or less, based on a pre-constructed pathway which stresses "synchronization" and "harmony" of various types of media. And most of all, multimedia needs less self-initiative than the hypertext does. Therefore, multimedia can be functionally described as a presentation-like information model. This type of communication is usually

used by a communicator who wants to have more control on the content, sequence and timing of messages for his captive audience.

The Contribution of the Personal Computer

The invention of the personal computer in the 70's marked a milestone of a new electronic era for mankind. Computers no longer needed to be stored in a special air-conditioned environment, and only accessible to special personnel. They went everywhere from home to office, as long as there were needs and an electrical power supply. It helped solve daily problems like accounting, scheduling, designing, typing, etc. for all walks of life. This renaissance was, in fact, just the dawn of the electronic information era. As the user-interface in computers matured in the middle of the Eighties, metaphors were being used in computers to bridge the gap between machine and human being. For instance, Apple Computer Inc. introduced the desktop metaphor, which made the front end of a personal computer work like an office environment. And this metaphor became a new standard in the operation system of personal computers over time. The success of the user-interface has literally enhanced and simplified the working procedures on computers. As a result, the personal computer has become an ideal platform for controlling and handling various types of information of different media.

For the time being, multimedia on personal computers is still at its infancy. Storage of most of the media still rely on external equipment due to the limited computer memory and different standards. However, it doesn't mean the computer is deficient in masterminding multimedia activities. In fact, the personal computer is a late comer compared with its partners video and audio. Diversity is the name of this game, and the art of being a quality multimedia model is in coordinating and expressing various types of media and information in its best form.

From a technical point of view, the basic nature of information data in multimedia can be divided into two types: analog and digital. They are two contradictory information signals to a certain extent. Text and graphics generated in computers are in digital form, whereas video and sound are basically analog data. A few years ago, information from different types of media were only able to be presented on its own equipment, such as video on a TV monitor, audio on a synthesizer or audio tape, and graphics and animation on a computer screen. In order to choreograph and integrate these data according to the user's activity, computers were used to control external machines, basically in search, play and stop modes, through some specially designed interface hardware. The computer had nothing to do with the analog data at all. Nothing could be changed or manipulated in this circumstance. However, this method of conducting multimedia performances is still very popular nowadays in education, business and museum exhibition arenas.

Recently, a multimedia model was able to be produced by changing all analog data, such as sound, video and photograph, into digital form, so that they can all share the same language and can be processed in one single system -- the computer. The first step to achieve this goal is to sample the analog data into digital representations, which is either 1 or 0 in nature. Then they can be stored in the computer like text and graphics. This significant step enables the computer to become a global control platform for all kinds of media. For instance, volume and pitch of sound can be adjusted, and spatial resolution of image can be enhanced on the same computer and transferred onto a magnetic medium. The other major advantage of this type of multimedia model is less playback equipment is involved. All media can be synchronized, edited and performed on one single machine, resulting in less technical and hardware involvement. In return, the popularity of multimedia communication can be improved and extended.

The Technical Concerns

Despite the ease of control of digital data, the result of sampling analog data to digital representation is not encouraging at the moment this report is being written. The major concern is the enormous amount of converted data, which is usually too large for an ordinary computer to be able to handle. For example, using an Apple Macintosh computer system; a full screen (640x480 pixel), 24 bit picture scanned from a 35mm slide could take up 900 Kilobytes, and a piece of 30 second stereo music (sampled at 22Khz) takes up 1,200 Kilobytes (none of them can be put into a double sided, double density floppy disc). Based on those figures, a one minute multimedia model with full length stereo soundtrack and only 4 full screen pictures has already reached 6 Megabytes of size. Considering most of the Macintosh computers in the market only have 2 to 4 Megabytes of RAM (random access memory), it is impossible for that one minute model to be shown on those computers. Besides, the image quality on the computer monitor is much lower than that on slide. The former has a resolution of 72 dpi, while the latter can display 4,000 lines horisontally. With today's technology in personal computer systems, there is still a long way ahead to reach the high quality multimedia standard that has been set by the classic slide and tape model.

However, we can say for sure that the memory blockade in computers will soon be overcome. For the time being, the only viable solution, available to me for my thesis project, is to use comparatively low resolution images and sound in the computer. A 8 bit image takes up only one third of the memory of a 24 bit one. Also, truncated documents were used instead of a big continuous one.

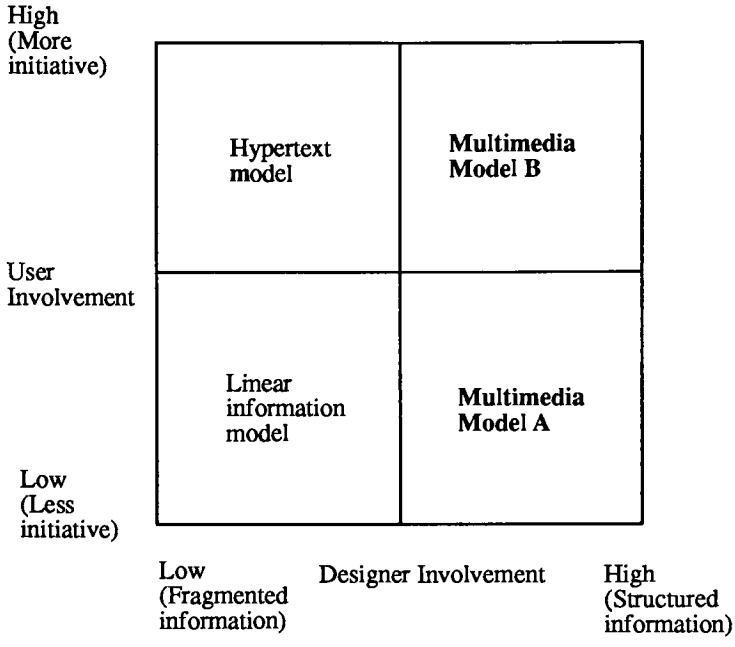
Designer vs. User

The beauty of multimedia is that events were pre-constructed in a hypermedia-based manner by presenter, or designer, such that it can avoid the danger of getting lost during the navigation within the document. It is essential

when a large amount of information needs to be presented in a limited amount of time. This becomes a great tool in the "persuasion" business. The relationship between the user and the designer is slightly different from that of hypermedia. The designer and the user of a multimedia model can sometimes be the same person (figure 1: model A), hence a third person such as audience is usually involved in this situation. The strategy of setting up the information base very much depends on the background of the target audience. The designer needs to work out the model from both ends; the audience side as well as the designer side. Information contained is usually organized in hierarchical or procedural structures. Hence the model looks more structural and less interaction is needed. Therefore, the role of the designer/user is least important, and works more or less like an operator during the presentation.

The other approach is completely user oriented (figure 1: model B). The user is the final audience, and the designer has no control on the user's activity at all. The concept of navigation is similar to that of hypertext, the functionality of the multimedia model heavily relies on user interface design. Information is broken down into small structures (figure 2), compare with model A, so as to facilitate a highly interactive environment. But they are not as fragmented as in hypertext or hypermedia. The pathway of information retrieval is flexible but, somehow predictable. This can be a great tool for self-training models and information retrieval. The designer has comparatively less control on the outcome and tempo on this model, which passes the controls to the users according to their initiative and interest. The combination of pre-constructed events and random media components result in a rich interlinking of information variety. This model has been tested and is the most effective communication tool in a highly self-initiative based environment. The more input the user makes, the more information the user will get from it.

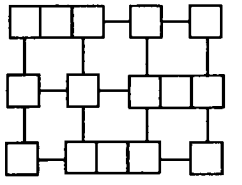
Figure 1



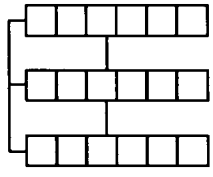
Matrix of Designer and User involvement in multimedia

Figure 2

Information Structures in Multimedia model



Information structure of model B



Information structure of model A

Basic information unit

The Classical Problems in a Conventional Multimedia Model

The conventional multimedia (or regarded as audio-visual in Europe) model mentioned here is referring to those classic presentations of information using various media, such as overhead transparencies, slides, musical and narrative soundtracks, movies, video, etc., not choreographed by a personal computer.

Technical Problems

Despite the effectiveness of a conventional multimedia presentation, the production and presentation process is not as glamourous as what the audience sees in front of the scene. The major hassle comes from the discrepancy among various formats of different media.

Every medium has its own type of standard as well as operation routine. None of them can be integrated with one another. Slide projectors cannot work with overhead transparencies, video projectors cannot play motion pictures, American VCR's do not take European tapes, and so on. As a result, a considerable amount of time is needed in advance for preparation and rehearsal. Also very special professionals are required to run the presentation, and most of all, human error is inevitable most of the time.

Production of each individual medium can also be time consuming and laborious. For instance, the conventional graphics slide production involves a tremendous number of procedures from design to mechanical to photography. Turn around time usually takes a couple of days, and the result can be unpredictable before the whole production comes together. That means it is very difficult and expensive to get things changed at the final stage. Therefore, a multimedia presentation has long been regarded as an expensive and time consuming communication model.

Interaction Problems

A conventional multimedia model can be an exciting, dramatic experience to an audience. It stimulates audience senses by all means, and surrounds them with pre-constructed patterns of information. However, it is based on the assumption that audiences are having the same desire, the same past experience, and the same cultural background. It does not offer any options for variation of information patterns. The message is passed down from one way to another in a single direction. The structure of the presentation format is usually linear.

The above statement does not try to deny the effectiveness of multimedia as an information transmission tool. Nevertheless the challenges for this conventional model are giving the opportunity for the model to invite participation from the audience, react to the audience, or to allow for the model to be easily customized to respond to the desires and interests of various kinds of audiences. These are the concerns that the communicator should really work hard on to overcome in the future.

The Project

The initial idea of the thesis project, "The beauty of multimedia," was to study the aesthetic standard as well as the communication concept of a multimedia model in the personal computer platform through a general, descriptive approach. This would involve very broad, extensive research and study of various combinations of different types of media. And based on the findings of each individual combination, I would evaluate the interactions, strengths and weaknesses of the respective combination. However, my thesis committee had foreseen the problem of this being too extensive. They suggested that I should focus more on specifics, and limit the body of my thesis work. They also realized that there would be too many variations and possibilities and that I may not be able to handle all of them within the required time frame. Also, the result would be nothing more interesting than a technical report.

As a result, they suggested developing a real-life problem, and use it as an anchor point to start with my research. This was a very sensible solution as I was able to customize the project to include what I thought to be the best multimedia model. This result oriented approach eventually gave me a lot of invaluable examples to demonstrate what I meant to achieve.

Objective of the project

The finalized thesis project is a computer-based multimedia presentation incorporating interactive functionality. The idea was to create a presentation model, using various types of media, based on the information of a Chinese

theme park project – "Dynasty" (which was proposed to be built in the Niagara Falls region at the Canadian border). The purpose of my model is two fold: The first one is serving as visual material for a one-to-one based presentation for potential customers. For instance, a trained presenter/sales person would use it in the office while attempting to sell the project to his client. The advantage is, unlike using a traditional filing system, the user does not need to go through piles of information to prepare specific material for his potential client, because they are all available on one computer screen, such as location map, highlights of each pavilion, etc. The interactive function also enables him to customize the presentation for an individual client, which eventually adds a personal touch to each presentation. The second purpose of my model is aimed at a large scale presentation. In this case the computer replaces conventional clumsy multimedia hardware set-up. Since the computer has stored all the images and sound elements in its system, only a video projector and an audio system is required for the event. The operation chore can also be passed to technical support people behind the scene so that the presenter can have more freedom to respond to the audience.

The proposed target audience of this presentation is very exclusive due to the nature of the project. People who attend this presentation are potential clients who may be involved in the theme park project through sponsoring or investing. They may come from senior executive ranks, board of directors and chairperson levels. They all are able to make decisions for their corporations. The background of the audience is a major concern to the outcome of the model. For this instance, the audience is assumed to be highly educated, successful in business, and used to attending high quality, grand scale presentations. This made the project comparatively more difficult because of the target audience's demanding and well-informed backgrounds.

The information for my presentation was based on a preliminary proposal developed by a consultant agency in Canada. The details and figures cited for my project may not reflect the truth of the final theme park project. However,

this data is sufficient for me to design and develop the entire presentation model. After analyzing and sorting out relevant information from that proposal, a storyboard was created which became the backbone of my entire model (Appendix 1). The storyboard is an invaluable component in the development of a multimedia production. It not only helps in laying out all visual elements in sequence, but also allows the producer to assign appropriate plot points along the story line, which can make the story more interesting and dramatic. Besides, it is a guide line for a production team to follow and keep track of the whole project.

The whole model of the "Dynasty" presentation was divided into 8 separate files. This was due to the memory limitations of the machine available to me. The eight files are: "Introduction", "Location", "Tourism", "Site Plan", "The Project", "Future", "Sponsorship" and" Finale". Although they are separate from each other physically, navigation from one file to another is possible once the controlling application is launched. Files are hierarchically structured according to the sequence of information. (Appendix 2)

Software and Hardware concerns

Most of the graphic elements in the presentation model were produced in PhotoShop (an image enhancement software), and then choreographed in an animation and authoring software–MacroMind Director. The capabilities of MacroMind Director to support all Macintosh-compatible video input and output devices had enabled the interactivities among various media used in this presentation. Although both of the applications support 24 bit true color images, the huge file size was too big to be handled by the computer system available to me, and hence crippled most of the functionality of the two software. Therefore, all images were converted to 8-bit before being brought into Director.

The hardware involved in this project are: Macintosh IIfx computer, OMDR

(optical memory disc recorder), Mass Microsystem ColorSpace IIi and FX videographic boards, and Farallon MacRecorder. The IIfx computer is the most ideal control platform for multimedia production because of its high speed processing power. The OMDR provided me the opportunity to interact with a 30 second video sequence during the presentation. The video segment was pre-recorded and coded with a frame number which enabled the software to retrieve it quickly. The two videographic boards were used as an interface between the computer and the video equipment. The ColorSpace FX board is able to convert ordinary analog video signals into digital RGB signals to be displayed on the computer screen. The ColorSpace IIi board has the potential to export both digital and analog signals for external display equipments such as color video projector, large monitors, and LCD Adapters for overhead projectors. Last of all, the MacRecorder, is a sound digitizer that can modify analog music into digital signals so that it can be edited and played back on the computer.

The Front End

The graphic design

The graphic design concept of this project was inspired by rubbing prints taken from wall carvings in ancient Chinese tombs. The images are robust, dynamic, and chaotic; strong textures, bold in profile, and drawn in an Eastern perspective (figure 3). In order to capture the design essence, I borrowed the idea of chaotic, strong contrast of size, and textural design from examples of ancient tomb prints. For instance, the design of the sub-menu of each category has the strong influence of the dynamic spatial arrangement found in such prints (figure 4). However, some of the visual elements, especially the text, has to be orderly aligned in order to include all the necessary points for easy reading to occur.

The color schemes used in the project are bold, with primary colors such as red, blue, and green, which are commonly used in folk arts and crafts all over China.

Figure 3

Figure 4

The "Dynasty" logo is an ancient dragon motif adapted from a roof tile which was made 2,000 years ago (figure 5). In order to accentuate the historical, robust, and occult feeling of the subject matter, red color was imposed on the logo. A texture background was created behind the logo to imitate the rough, coarse feeling of the wall of an ancient architecture. The title was specially derived from a serif typeface, Garamond light, to imply a classical, imperial look. All and all, the graphic theme successfully suggested a touch of solemn, robust, and oriental nature (figure 6).

The user interface

Since the model is meant for a large scale, formal presentation with a large audience group, the user interface design is very crucial for the front end appearance. The major concern was the design of the navigation control buttons, which would enable the user to navigate freely among categories. Considering the integrity of the graphic appearance, it was important that all control buttons on the screen not be obtrusive and look out of place. Sometimes even the slightest cursor movement can be irritating. As a result, transparent buttons were created and intentionally located along the edges of the screen (figure 7), so that navigation could be performed quietly, and cursor movement reduced to a minimum. On the contrary, the treatment of selection buttons to sub-categories is totally different (figure 8). They are large, color coded, and topped with pictures for easier selection. Also they are equipped with an auto-highlight function for visual response, which means they can respond to the user visually when clicked to execute certain procedures.

Color coding, as a visual interface, is an invaluable tool in handling complex information models like the "Dynasty" presentation. Menu buttons are coded with the same color as their respective destination screens. This creates a color identity for other branches of information in the same category. Also with the help of color coding, the user can associate information easier than just with text.

figure 5

Figure 6

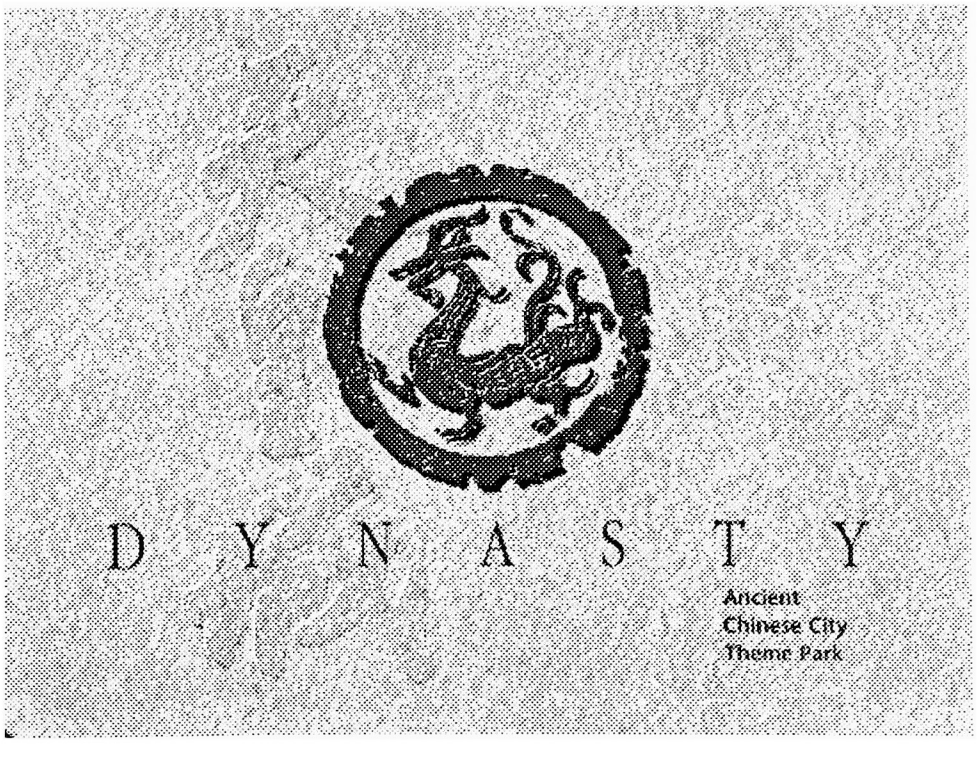


Figure 7

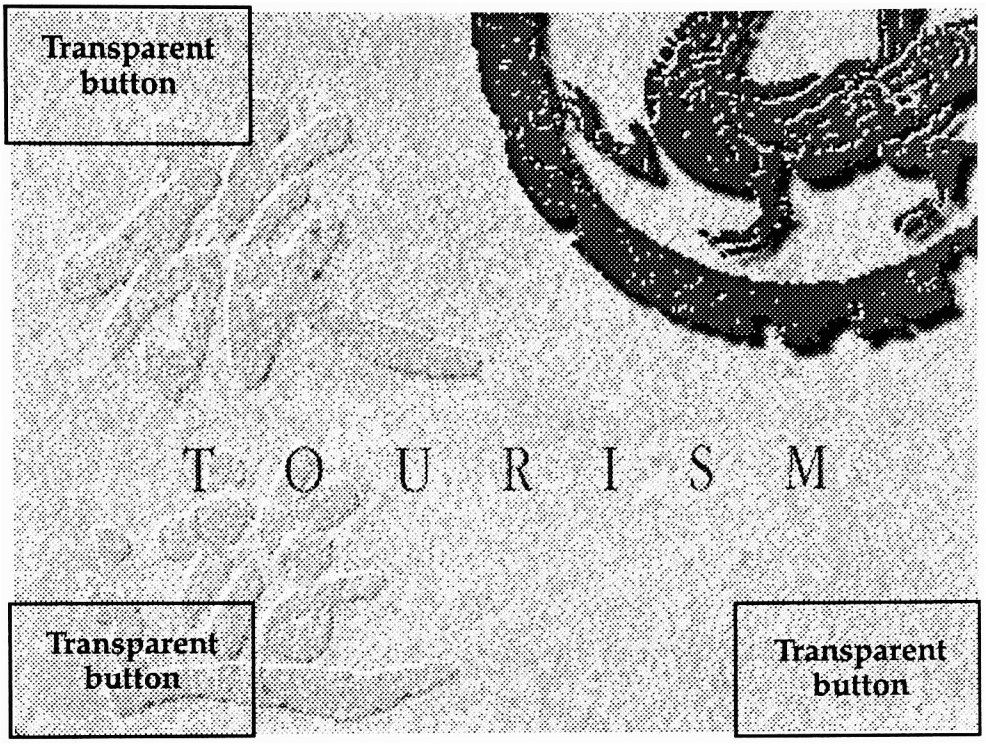
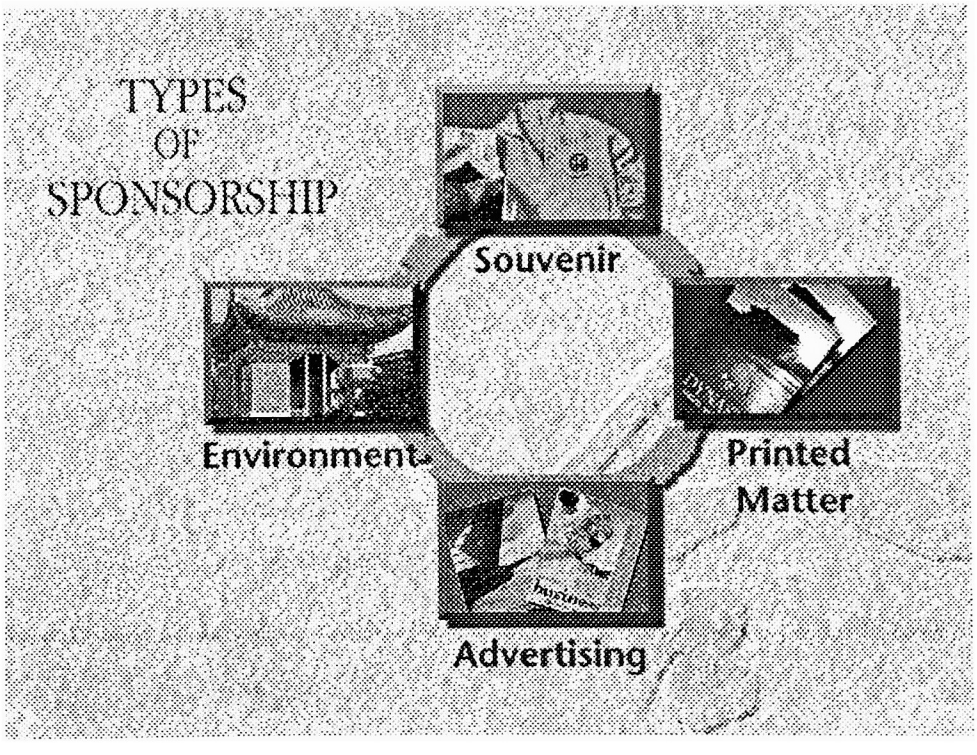


Figure 8



In addition to the functional purpose, variation of color helps strengthen the visual design, add consistency and give vitality to what could be monotonous content of the presentation.

The sound response is another major contribution in the "Dynasty" model. Sound plays an important role in multimedia production. However, its application usually requires careful and critical planning, especially when sound is used in the user interface design. In this theme park program, since the musical introduction and finale sequence are designated to be uninterrupted, sound did not take part in the interface design issue. Other than that, sound effects were used in major graphic transitions to reinforce responses to user's activities. For instance, a "gong" sound was used in every transition from the main menu to each submenu to signal the start of a new section. Some sequences, such as the logo sequence in the location category, deserved a longer sound segment for a stronger emphasis and impact. The use of a sound element is fun, yet critical, because overuse of sound effects and music may turn an elegant design into an irritating one.

The Introduction

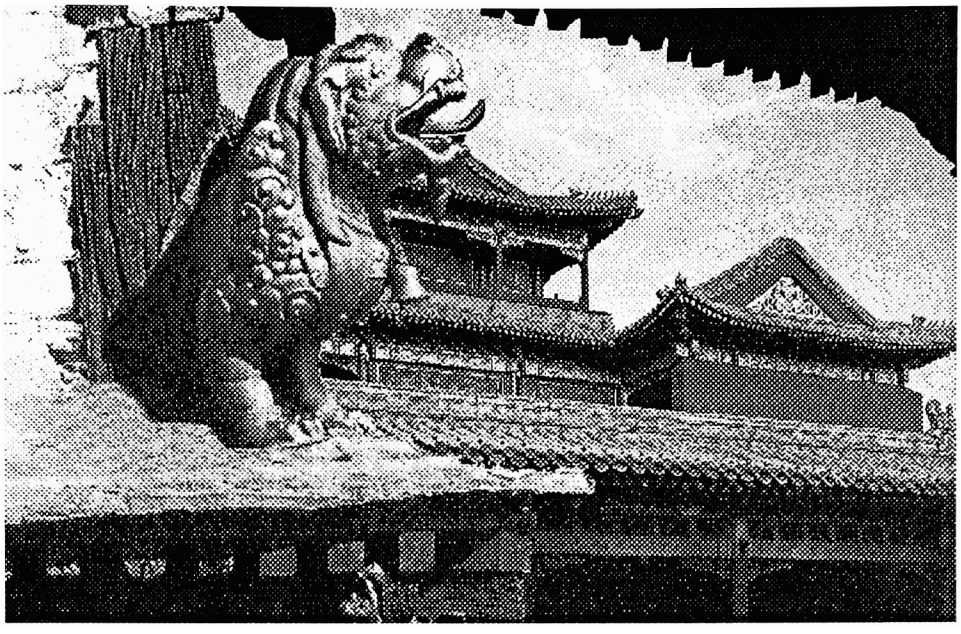
The introduction is basically a musical sequence which helps set the tone of the presentation. During this 45 second musical sequence, the audience is taken on a short tour of Chinese history and culture. This tour is synchronized with a background soundtrack, while scenes, mystery motifs, architecture, etc. fade in and out on the computer screen. Those visual images were scanned from photography and travel books for this instance. Although the computer screen resolution is just 72 dpi, images were scanned in 240 dpi and 24-bit color mode. The high resolution setting was necessary for eliminating the moire pattern, which is usually generated from a half-tone original such as a photograph printed in a book and/or magazine.

As a matter of fact, the first generation scanned images were not good enough for the final usage. They had to be enhanced by changing the color balance, level, contrast, and cropping in order to obtain a better result. Besides, the resolution and color depth of the images were required to be scaled down to 72 dpi and 8-bit respectively so that they could be managed by the animation software.

The impression given by the introduction sequence was very important to my presentation. It not only reflects the nature and the spirit of the subject matter, but also helps evoke the interest of the audience to the content of the presentation. In order to create the strongest impact on the audience, images with dramatic characteristics, strong colors and distinctive profiles were selected for the introduction (figure 9). The order of the images appearing on screen is also a major issue in this kind of non-narrative sequence. They are carefully arranged according to their size, color, and facing direction so as to create a visual momentum on the screen while being synchronized to the rhythm of the background music.

The relationship between visual images and the music is the most difficult thing to describe among all. The feeling for music is very subjective and situational from person to person. In this instance, the beginning part of the soundtrack is slow and mild. So I selected some modest scenery pictures which have fewer implications and is easily digested by the general audience. As the melody builds up and becomes stronger towards the end, I use more sophisticated images like sculpture, antique, and architecture to create a richer content for the ending. It is then concluded by revealing the theme graphic which contains the title and logo of the project. The result triggers the imagination and the curiosity of the audience, and also implants an idea that mystery and the essence of Chinese history and culture is a major aspect of this theme park project.

Figure 9



The Content

After the theme graphic was shown, a main menu appears which acts as a map for navigation within the model. On the main menu, there are five subtitles which link directly to corresponding categories. They are "Location", "Tourism", "The Project", "Future" and "Sponsorship". In order to utilize the whole screen area for design purpose, navigation buttons were all set to transparent throughout the model (figure 10). As a result, distraction to the audience is reduced to the minimum.

The "Location" category is basically a sequence of maps which introduce the future location of the theme park project. By clicking at those transparent buttons on the map, the audience is gradually brought into the Niagara Falls region from the beginning of a North America map. Instead of covering up the old maps, each consecutive map was smaller in size and overlaps on the top of the previous one, so that the user will never lose track of where he came from and is also able to go back by clicking at the background map, where actually transparent buttons are located. (figure 11) This overlapping technique of presenting hierarchical information proved to be a success in this instance.

According to the hierarchical order, the presenter moves to the "Tourism" category after the "Location". The first thing the audience sees in "Tourism" is a 30 second video sequence of Niagara Falls which was pre-recorded onto the optical disc. With light-hearted music in the background, the beauty and grandeur of the Falls is revealed on the computer screen. The ability to show moving images on computer has definitely added a new dimension to the communication power of the personal computer. The effects from a video camera was never paralleled by an ordinary camera, which was only able to capture a single moment of specific time.

Following that is a sequence of graphic animation showing locations of current attractions in the city of Niagara Falls at the Canadian border. The reason to

Figure 10

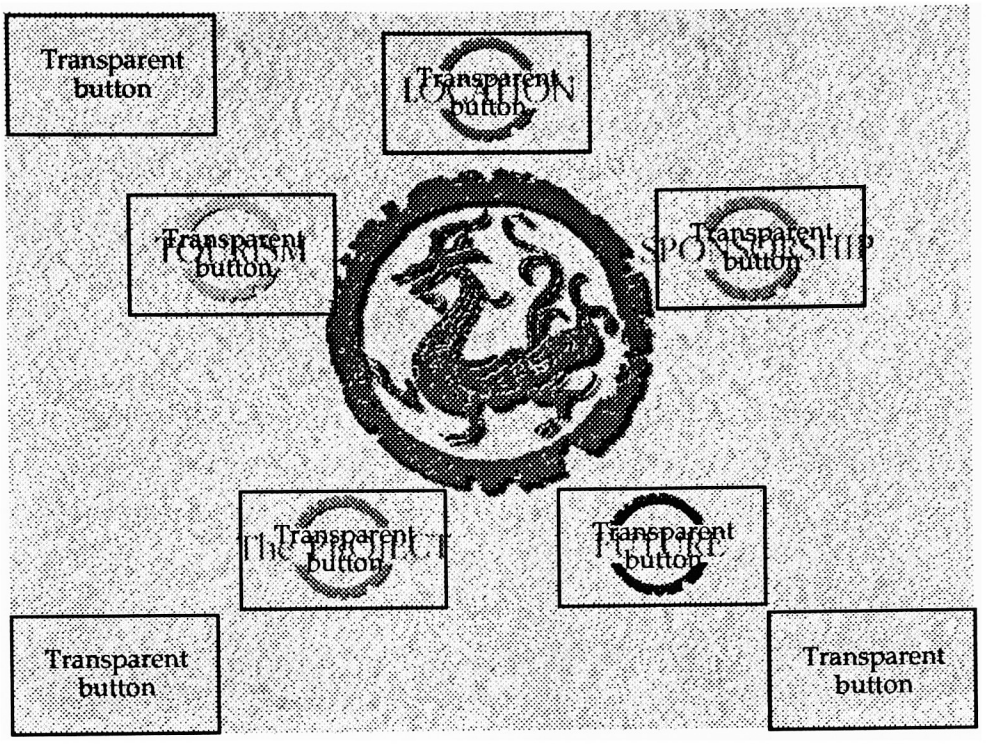
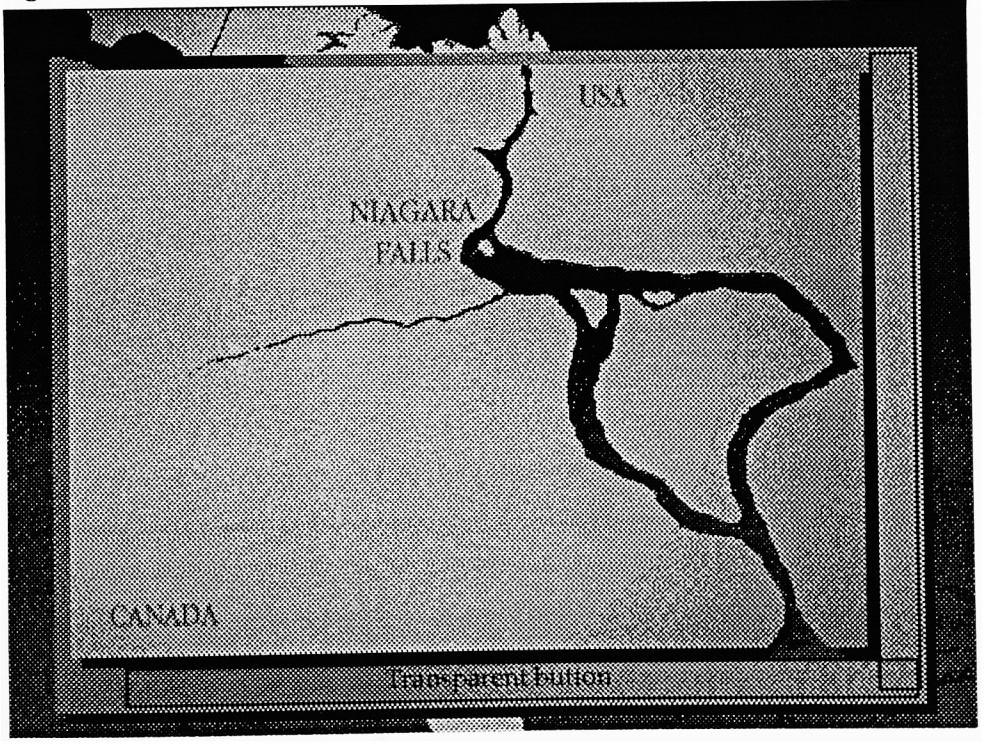


Figure 11



mention these attractions is to let the audience understand the current scenario of the tourism industry in that area, from which statistics such as tourist numbers and financial expenditures were obtained. This then provides a foundation for the profit return information in the "Future" category. The two sub-categories, "Tourist Flow" and "Man Made Attractions", are further in-depth information which is available when clicked on with the cursor (figure 12). Again, the overlapping technique was applied here to make the navigation routine consistent throughout the model.

The next category to follow is "The Project" category, which is the most important section in this whole presentation. In this category, information about the theme park is reviewed, which will disclose to the audience background details about the project, such as the site plan of the park, theme idea of each pavilion, exhibits and displays, and the scale and quality of the park. In order to make the project sound more exciting, an animation sequence of a Chinese fortress gate opening was specially created at the beginning. During the opening gate sequence, a wire-frame site plan of the "Dynasty" theme park is revealed to be approaching from a distance. This kind of visual momentum is a crucial element in a long presentation model. It functions as a climax during the monotonous, lengthy communication process. Its presence brightens up the atmosphere, and draws the attention of the audience.

The site plan of the theme park is also a menu for navigation within this category. The presenter can make use of this menu to review information of each future attraction individually (figure 13). The navigation routine, again, is the same as the other categories. After selecting a desired pavilion to look at, the computer brings up a corresponding sub-menu which displays the titles of each attraction inside that pavilion(figure 14). Only one of the pavilions, Chin, has been fully equipped with the necessary information to be a demonstration piece at this stage. From the location menu tothe local attractions menu, to the detailed information of attractions, there are distinctive hierarchical, yet interactive, elements specially created for this category, which help to clarify complex

figure 12

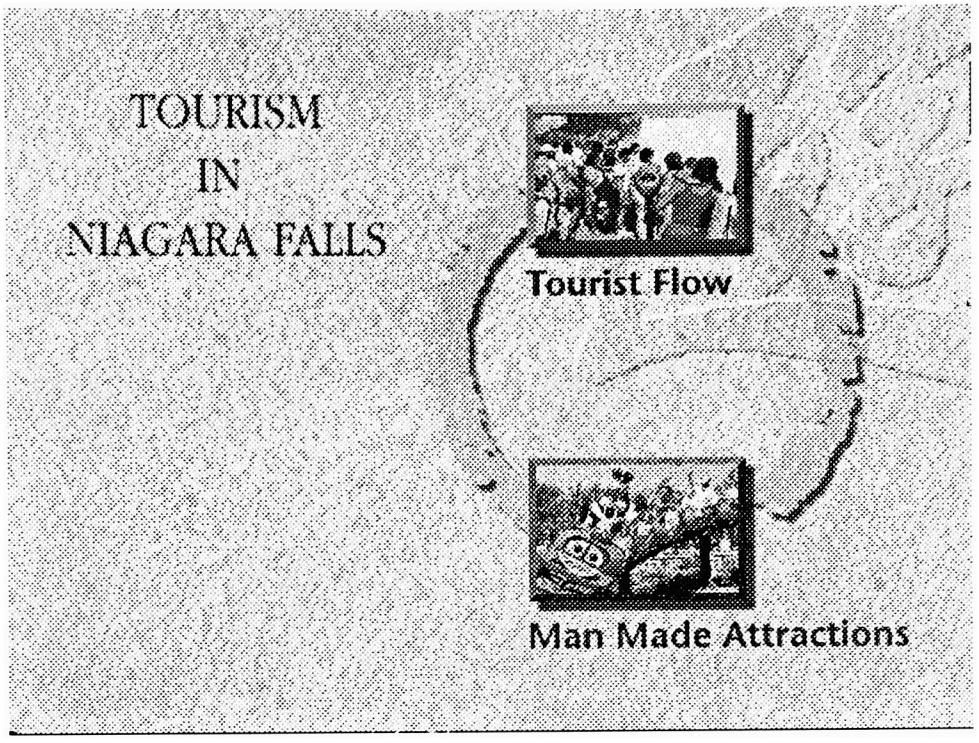


figure 13

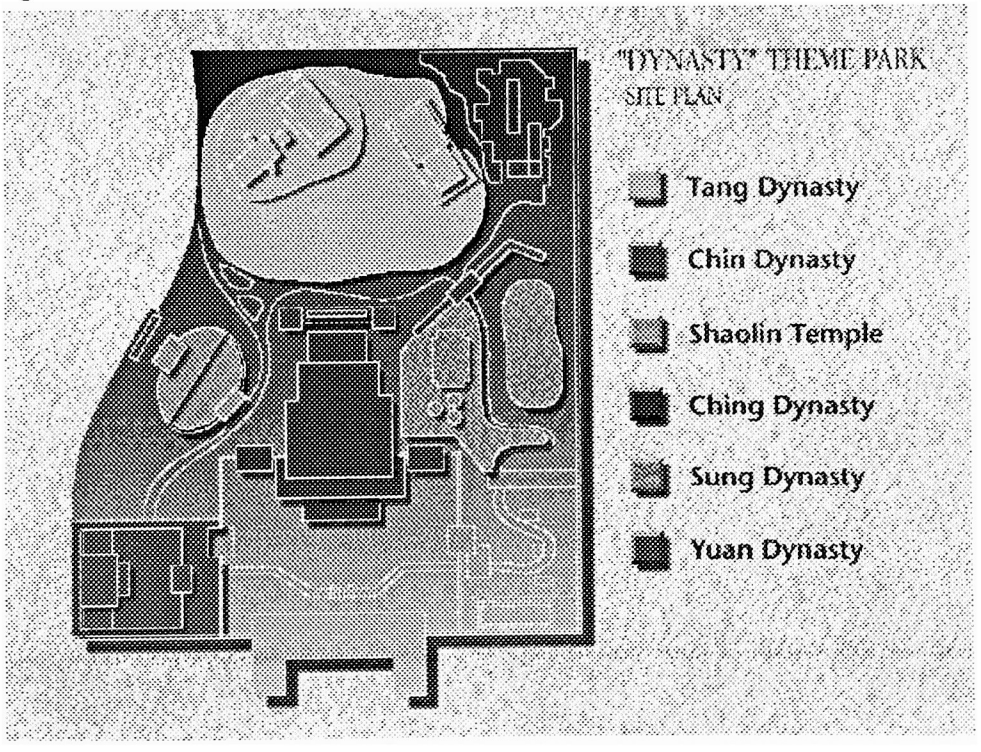
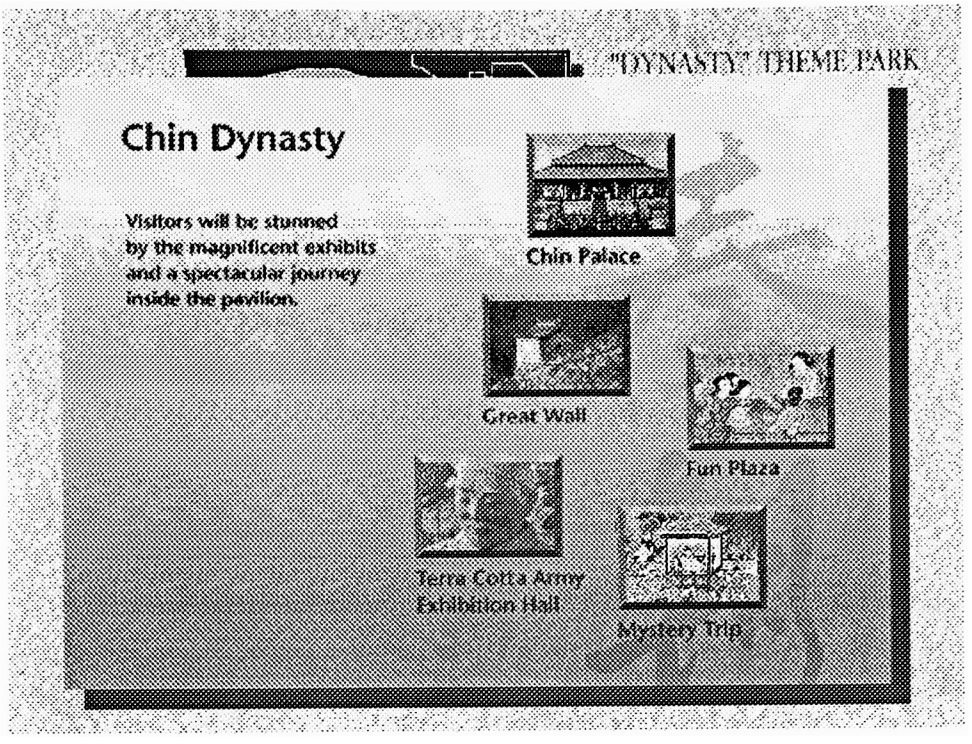


Figure 14


"DYNASTY" THEME PARK
Chin Dynasty
Visitors will be stunned by the magnificent exhibits and a spectacular journey inside the pavilion.
Chin Palace
Great Wall
Fun Plaza
Terra Cotta Army Exhibition Hall
Mystery Trip

information on a single screen display environment. In fact, the interactive solution of displaying hierarchical information has overcome the disadvantages of the traditional slide presentation and wall display methods. Slide presentations usually lack the freedom of navigation within the information, and wall displays take up too much room to layout the entire structure of information. The interactive computer presentation keeps all the information in one display. Together with interactive functionality, it allows last minute changes that are never possible on the other two methods.

The "Future" category is a complementary section of the presentation. It contains projected data and statistical figures about the future tourism scenario after the "Dynasty" theme park is built. Graphs and charts are used to help describe statistical information. Instead of bringing up static charts and graphs, all diagrams are created with simple interactive animation. This means that when a user triggers a proceed command button, the computer will display a short animated sequence accordingly. As a result, the interaction between the user and the visual images are enhanced the effectiveness of the presentation.

Pictures were incorporated with subtitles such as "Tourism" which makes its selection easier. Auto-hilghlight, a default function in the software, was introduced on three subtitle buttons: Market share, Projected income, and Growth of Visitation. This function provides a confirmation notation to the user to reassure him/her that the command has been received and will execute the pre-set sequence as requested.

After reviewing the four categories of information pertaining to the theme park project, the audience is ready for the final section, "Sponsorship". In this section, sponsoring and investment plans proposed by the developer are disclosed to the audience. Four proposals are displayed as buttons in the sub-menu; they are "Souvenir", "Environment", "Advertising" and "Printed matter". Each button brings the user to the corresponding information panel. By clicking at the background area, the user is able to go back to where he/she came from. Again,

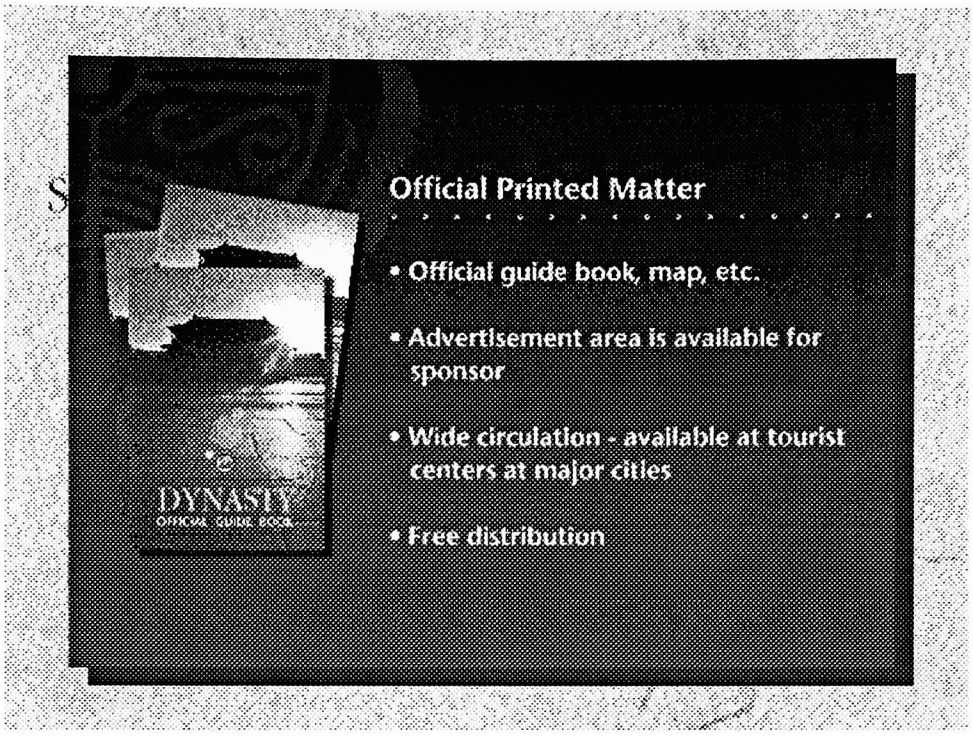
this is a consistent routine all over the presentation model. Inside each sub-category, simple animated image sequences were added to complement the text. It serves as an illustration to visually exemplify a complicated plan. (figure 15) However, the most important job is still with the presenter, since he is the one who will use this presentation model as a media-aid to support and complement his presentation, to draw attention and interest from the captive audience.

The Finale

To conclude the whole presentation, a 45 second musical finale was used to recap some of the highlights from the five categories. For example, Chinese historical motifs, architecture, future displays and exhibits in pavilions. This sequence is a mixture of Chinese historical images and happy faces of tourists. I was trying to convey the idea of the prosperity of the future theme park.

Unlike the introduction sequence, the finale comes with a more characteristic, positive kind of music. Images are more general rather than exotic and dramatic. The mood created is no longer tense and curious as is in the introduction. Instead, a mild, committing and promising feeling is presented. Montages of images fill the screen pictures in the finale. It gives more flexibility in screen composition as well as provides room for more variety of pictures at the same time. Images can easily build up according to the rhythm of music, hence offering a quick, general, and multi-faceted look at the theme park project. It builds to provide a successful and prosperous image for the future theme park.

Figure 15


Official Printed Matter
• Official guide book, map, etc.
• Advertisement area is available for sponsor
• Wide circulation - available at tourist centers at major cities
• Free distribution
DYNASTY
OFFICIAL GUIDE BOOK

The Vision

The unsolved problem

For the time being, producing multimedia programs on a computer is like driving cross country on a Jeep. The way ahead is still bumpy and rough. There are not any industry standards specially designed for multimedia computer presentations. Elements such as file format, time code, data compression, etc. are yet to be confirmed. Also the notion, language and standards of multimedia varies from manufacturer to manufacturer. However, I am quite certain that the situation will be getting better in the near future when more research and development is put into this area.

The major technical problem of using a Macintosh computer inthe "Dynasty" model was the synchronization between the musical soundtrack and the visual images. In a traditional multimedia model, a standard time code, usually recorded on audio tape, is used as an overall guide. Therefore, events could be triggered according to a pre-set time on the time code track. However, Macintosh works in a different manner. There is no time code for synchronization purposes. Events have to be synchronized at the very beginning when the "mouse-click" or "return key" is triggered. That really makes the synchronization job difficult, as changes will not be seen unless the sequence is played back again from the very beginning where the sync point is located. The software manufacturer apparently did not take this point into account when they developed the software - Director. This could be a fatal deficiency to large scale multimedia productions. The introduction and finale sequences in "Dynasty" both encountered the off-sync problem; the speed of image sequence was different from that of the music soundtrack. It is because the speed of image sequence

varies according to the workload as well as the speed of the computer. The more events happening on the screen, the longer the computer takes to bring up the images, hence the slowing down the speed of the visual sequence. For instance, the visual sequence goes faster on the screen when all working windows, such as score and cast windows, are closed. On the other hand, different models of computers also perform differently in speed. The Macintosh IIfx runs almost two times faster than the IIci. That means a program completed on IIfx will run about 50% slower on a IIci model. This is a result of lacking a time standard among various types of media. On the contrary, the sound sequences from the computer are unaffected despite the difference of speed between IIfx and IIci.

The other difficulty in producing multimedia on a computer is the enormous file size. Since the total program of "Dynasty" is about 30 megabytes, the equipment in school, at the present, is not able to handle it at one time. They were broken down into eight individual files in order to be able to run on a 8 megabyte RAM computer. Thus a short, awkward interval was caused when jumping from one file to another. However, this unnecessary nuisance could be overcome if the RAM capacity were expanded to 30 megabytes or more. That means the entire project could be loaded and stored into the the RAM at one time and ready for processing when needed.

The RAM problem could somehow be solved by inserting more chips. The fundamental problem, however, still lies in the design of the computer system. Currently, the Macintosh computer has been designed with a single CPU (central processing unit) configuration. That means no more than one event can be processed simultaneously; therefore, procedures or events have to stand in line for execution. In other words, there is only one event that can happen on the computer screen at one time. In this sense, if a title or graphic overlay is needed on top of a computer animation sequence, the static graphic element has to be put into every individual frame of the animation, hence increasing the size of the file which in return slows down the processing speed of the computer. This drawback sounds similar to a slide show with only one projector. All visual

elements have to be combined into one slide and then the other. It does not allow freedom for individual movement at all. Perhaps in the future, a new computer system with parallel CPUs will help perfect the multi-tasking capability.

The future

Although there are many hindrances along the path to maturity of multimedia communication on the desktop computer, advancement of technology in the future will certainly make the way easier. For instance, Apple Computer Inc. is developing a new compound document format called MIFF(Media Interchange File Format), an application which could link to separate files containing sounds, graphics, video, animations or any other type of data.[8] This file format will definitely aid the popularity of multimedia communication in the future.

With improvement of file format and electronic technology, communication formats in a computer will no longer be limited to only one medium; text, visual or sound, but a mixture of all of them, which is similar to the communication behavior of a human being. We see things and remember them in terms of complex patterns input from various senses like image, sound, and experience (in which time element is needed). Multimedia will be a revolutionary communication tool because you can see it, hear it, and even feel it.

The potential of multimedia communication is yet to be explored. Perhaps someday when communication networks and computers became more intelligent and sophisticated, it would understand user inputs of voice, video, still image and writing. After analysis and editing, information will be compiled as a compound document by the computer, and be ready to transmit to someone or for documentation purposes. Readers could select different forms of playback such as listening, reading or interacting with the whole multimedia document, such that he/she could control the quality and quantity of the incoming information according to his/her desire. In return, the reader could respond to

the sender by just downloading the multimedia message into the computer as the sender did.

My thesis project is just at the ground level. It is an idea. What I have accomplished is just the "tip of the iceberg". The enthusiasm and technology that people are using in working towards this vision is very positive and encouraging. I can tell that the success of this communication leap will not be too far away.

Endnotes

1. Jakob Nielsen, Hypertext & Hypermedia (Academic Press, Inc. 1990), p. 29

2. Ibid., p. 30

3. Vannevar Bush, "As We May Think," The Atlantic Monthly, (June 1945)

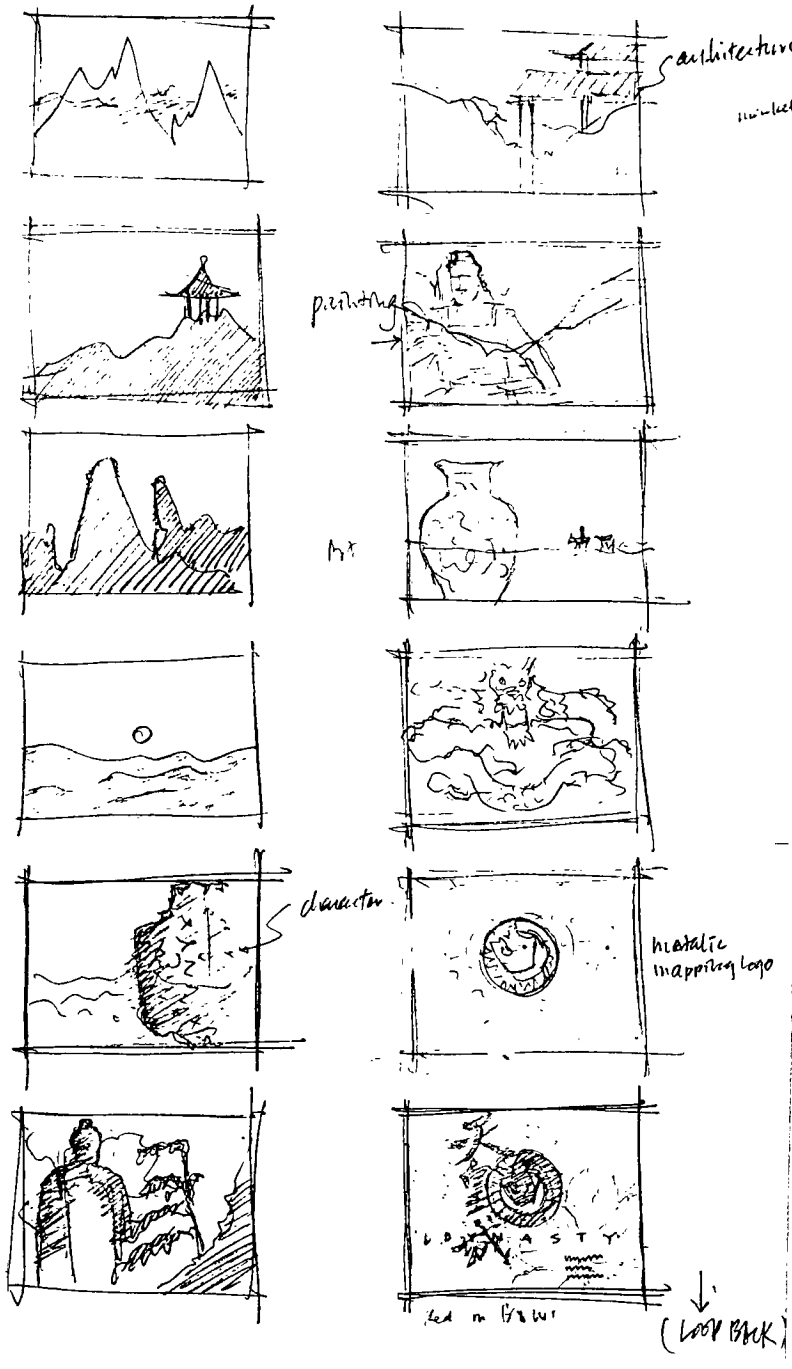
4. Jakob Nielsen, Hypertext & Hypermedia (Academic Press, Inc.1990), p. 41

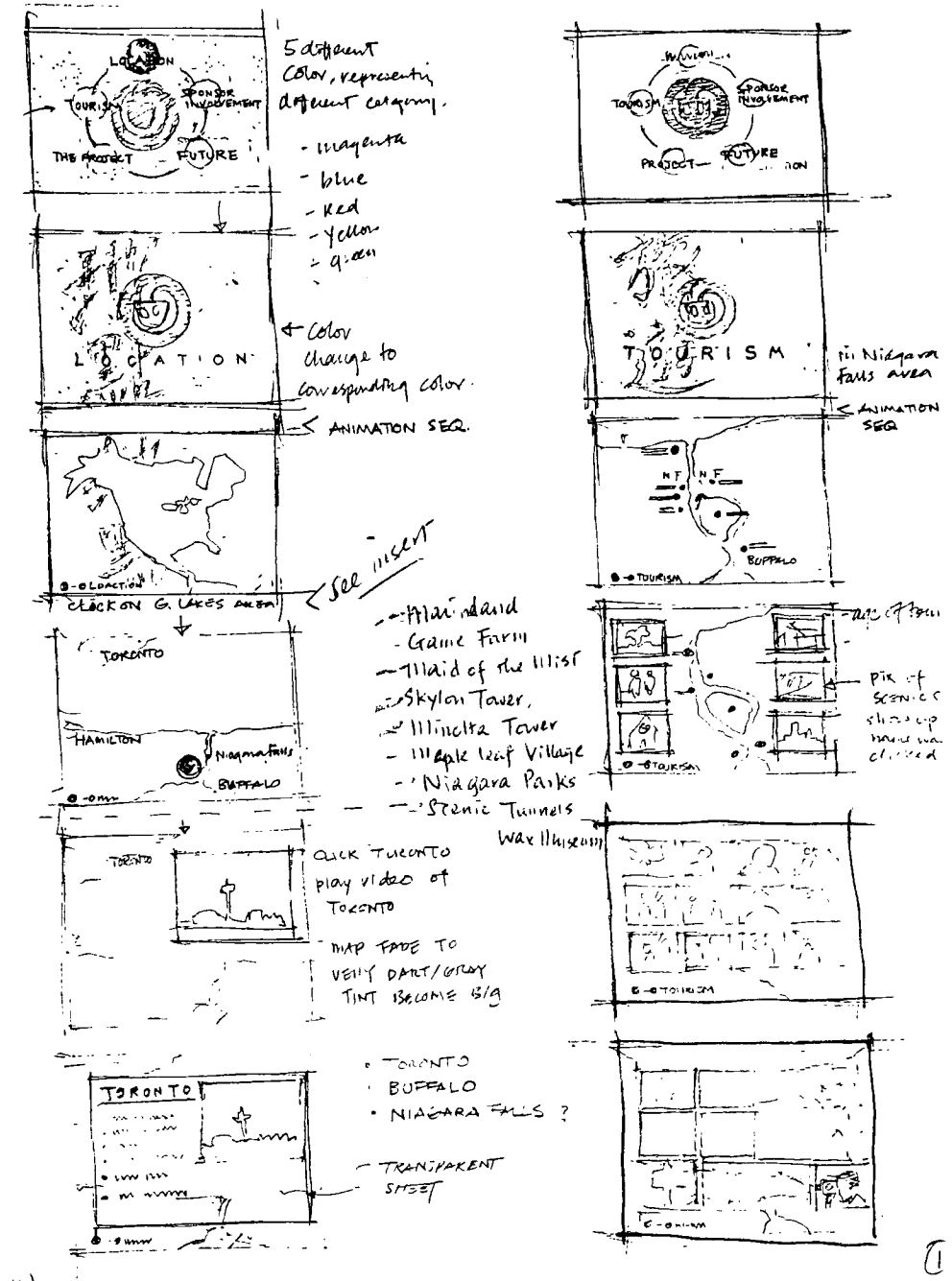
5. Ibid., p. 83

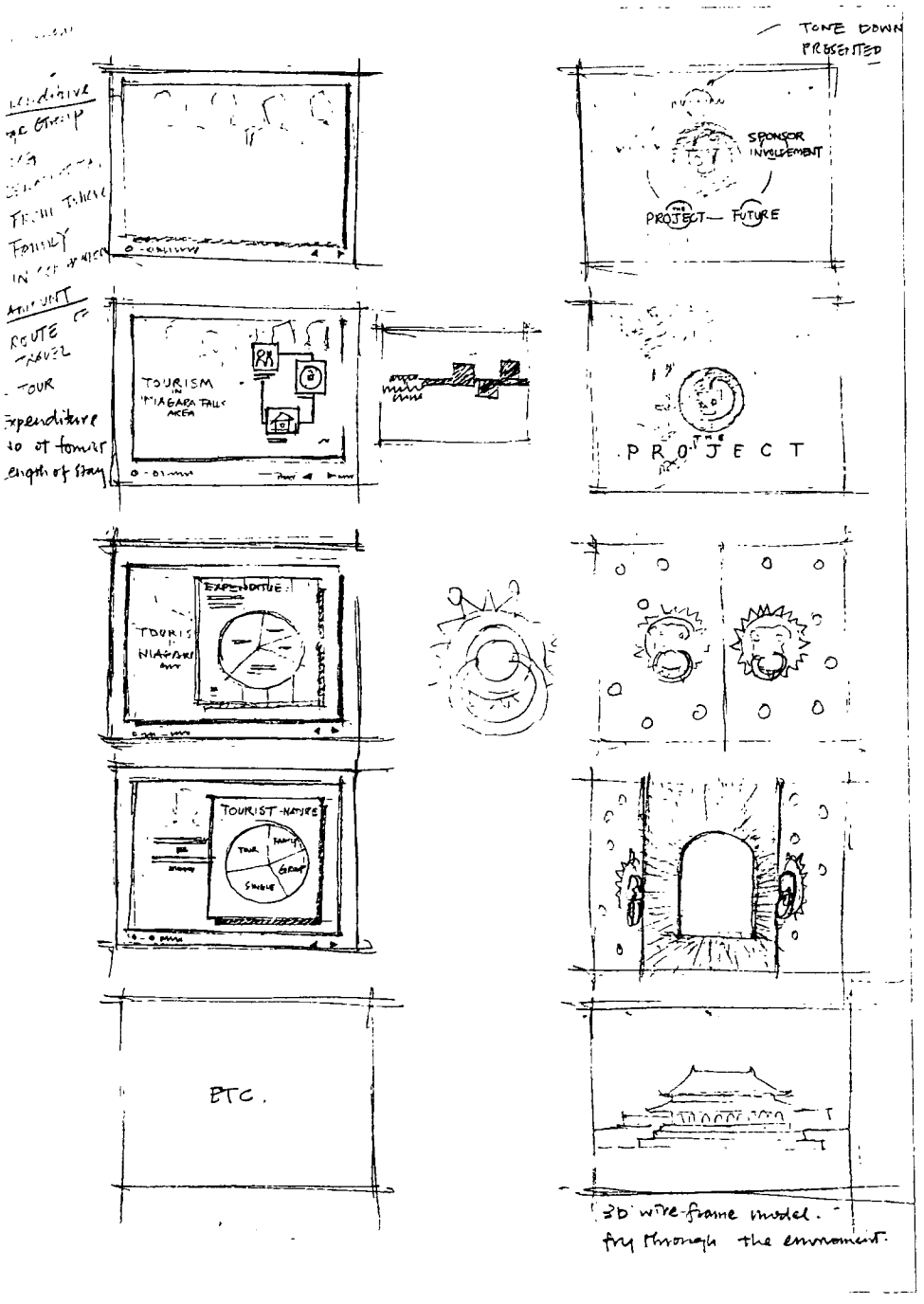
6. Ibid., p. 36

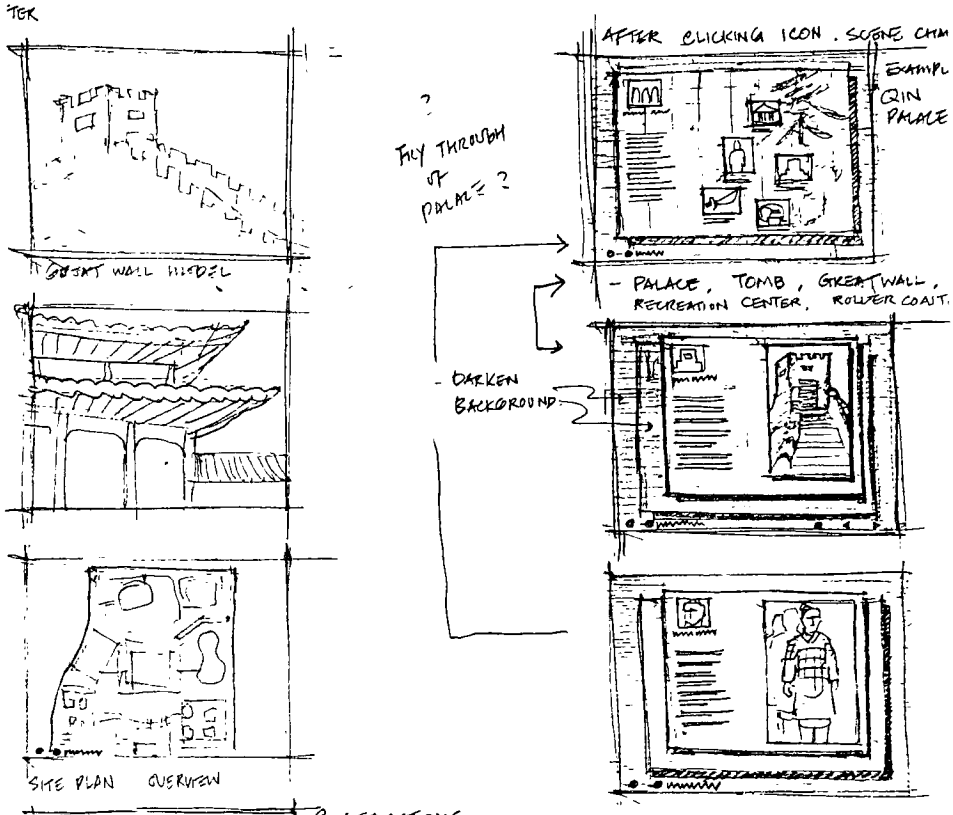
7. Michael F. Kenny and Raymond F. Schmitt, Images, Images, Images (Eastman Kodak Company, 1983), p. 10

8. Connie Guglielmo, "Apple to develop multimedia file format," MacWeek, (June 20, 1989), p. 4

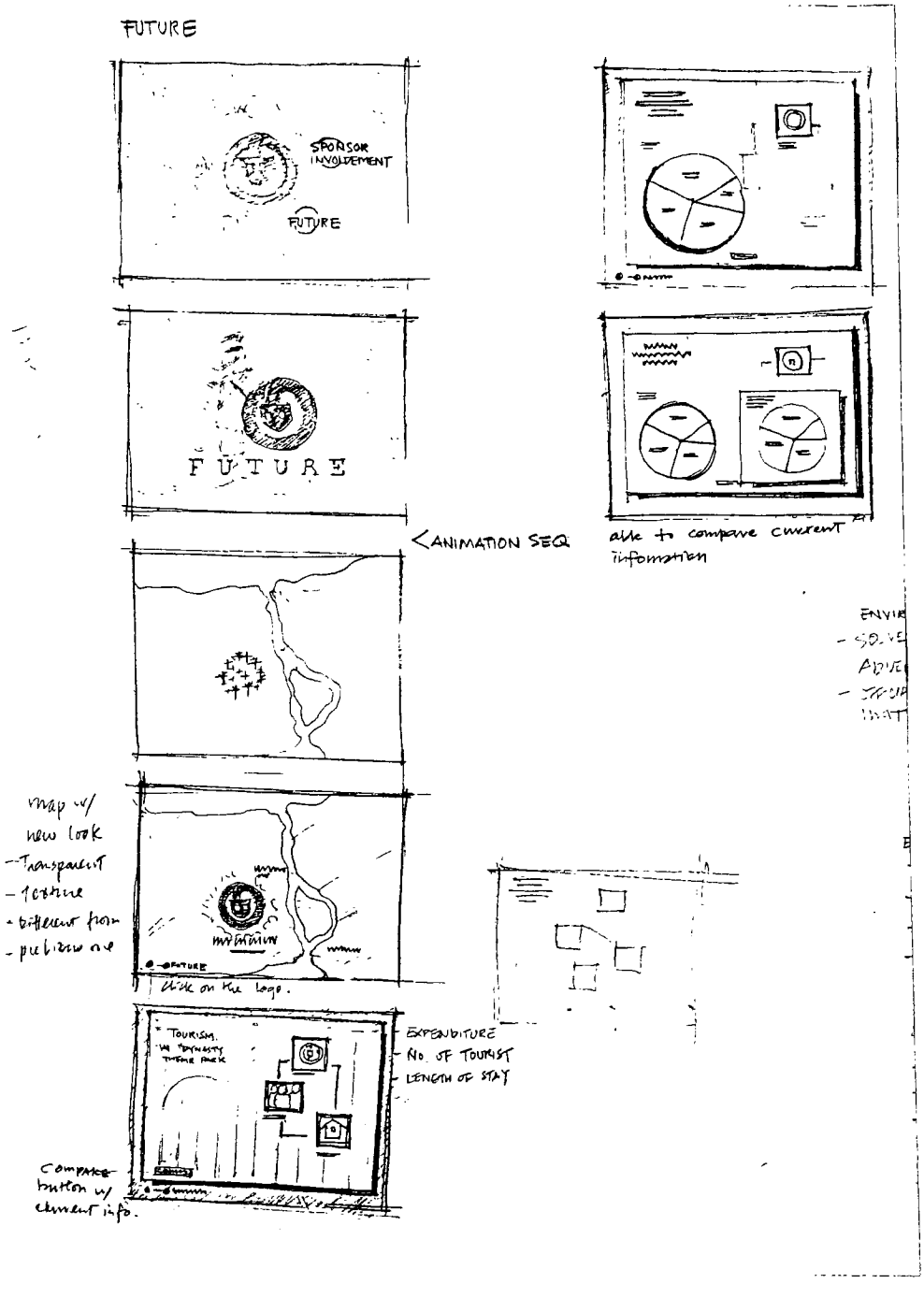

architecture
painting
character
metalic
mapping logo
(LOOP BACK)

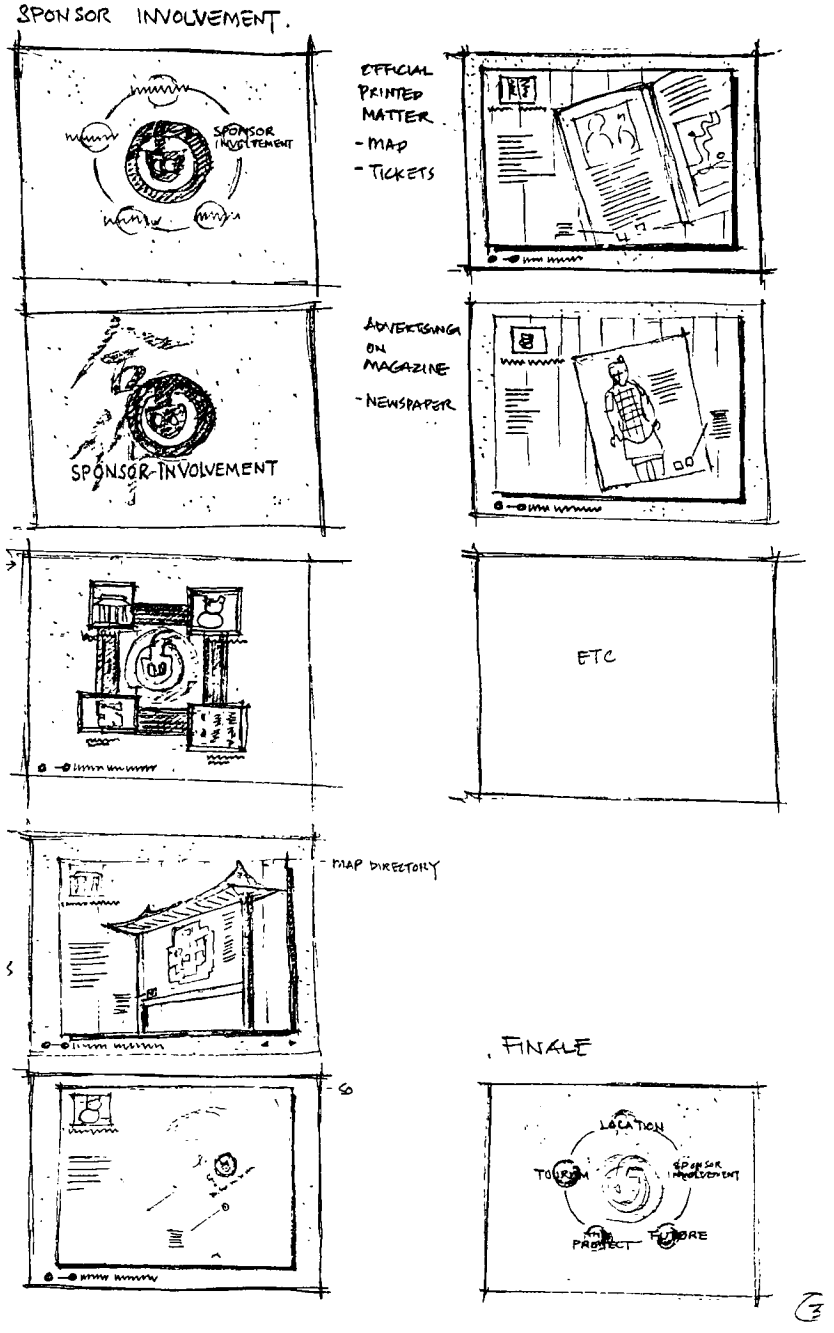

LOCATION
TOURISM
SPONSOR INVOLVEMENT
THE PROJECT
FUTURE
5 different Color, representing different category.
- magenta
- blue
- red
- yellow
- green
LOCATION
Color change to corresponding color
ANIMATION SEQ.
CLICK ON G. LAKES AREA
See insert
TORONTO
HAMILTON
NIAGARA FALLS
BUFFALO
- Atlantarium
- Game Farm
- Hall of the Mist
- Skylon Tower
- Illumicita Tower
- Maple Leaf Village
- Niagara Parks
- Scenic Tunnels
Wax Museum
CLICK TORONTO play video of TORONTO
MAP FADE TO VERY DART/GRAY TINT BECOME B/G
TORONTO
• TORONTO
• BUFFALO
• NIAGARA FALLS ?
TRANSPARENT SHEET
TOURISM
PROJECT
FUTURE
TOURISM
in Niagara Falls area
ANIMATION SEQ
N.F.
BUFFALO
TOURISM
Pix of scenic sites up

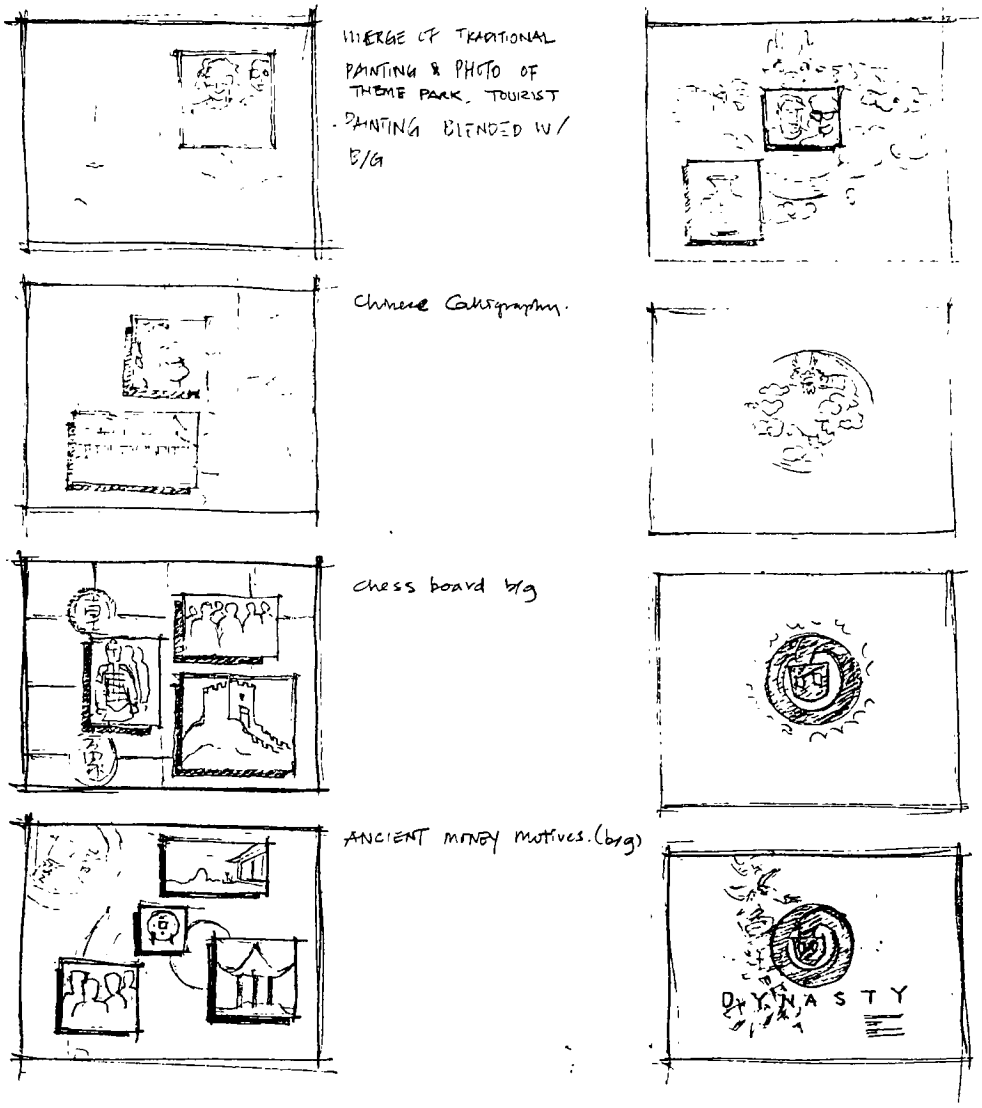

TONE DOWN
PRESENTED
SPONSOR INVOLVEMENT
PROJECT
FUTURE
TOURISM IN NIAGARA FALLS AREA
PROJECT
EXPENDITURE
TOURIST NATURE
TOUR
FAMILY
GROUP
SINGLE
ETC.
3D wire-frame model.
fly through the environment.


TER
GREAT WALL MODEL
SITE PLAN OVERVIEW
?
FLY THROUGH OF PALACE ?
AFTER CLICKING ICON . SCENE CHAN
EXAMPL
QIN PALACE
- PALACE, TOMB, GREAT WALL, RECREATION CENTER, ROLLER COAST.
- DARKEN BACKGROUND
ETC
SIMILAR STRUCTURE FOR 5 ATTRACTIONS
9 ATTRACTIONS
1) SUNG STREET
2) CHING PALACE
3) QIN PALACE
4) MONARSTERY
5) YUEN PALACE
6) TANG PALACE
- 6 ICONS FOR EACH ATTRACTIONS.
- ADDITIONAL GEOGRAPHICAL DATA
eg- How is the size of the park
- How many people can be entertained at a time

(2)


FUTURE
SPONSOR INVOLVEMENT
FUTURE
FUTURE
ANIMATION SEQ
able to compare current information
map w/ new look
- transparent
- texture
- different from
- publicview
click on the logo.
TOURISM
EXPENDITURE
NO. OF TOURIST
LENGTH OF STAY
Compare button w/ element info.


SPONSOR INVOLVEMENT.
SPONSOR INVOLVEMENT
EFFICIAL PRINTED MATTER
- MAP
- TICKETS
SPONSOR-INVOLVEMENT
ADVERTISING ON MAGAZINE
- NEWSPAPER
ETC
MAP DIRECTORY
FINALE
LOCATION
TOURISM
SPONSOR INVOLVEMENT
PROJECT
FUTURE


MERGE OF TRADITIONAL PAINTING & PHOTO OF THEME PARK. TOURIST PAINTING BLENDED W/ B/G
Chinese Calligraphy.
chess board b/g
ANCIENT MONEY motives.(b/g)
DYNASTY

Program Structure

"Dynasty" theme park interactive presentation program

Introduction

- Self-running short audiovisual show
  e.g. Brief intro of Chinese Culture and History
- Theme Graphic

Location

- Niagara Falls Area (Canada)

Tourism

- Current Attractions
- Tourist Flow
- Man Made Attractions

The Project

- Future Location
- Site Plan
- Facilities

Attractions

- Tang Dynasty
- Chin Dynasty
- Shaolin Temple
- Ching Dynasty
- Sung Dynasty
- Yuan Dynasty

The Future

- Projected Income
- Market Share
- Growth of Visitation

Sponsorship

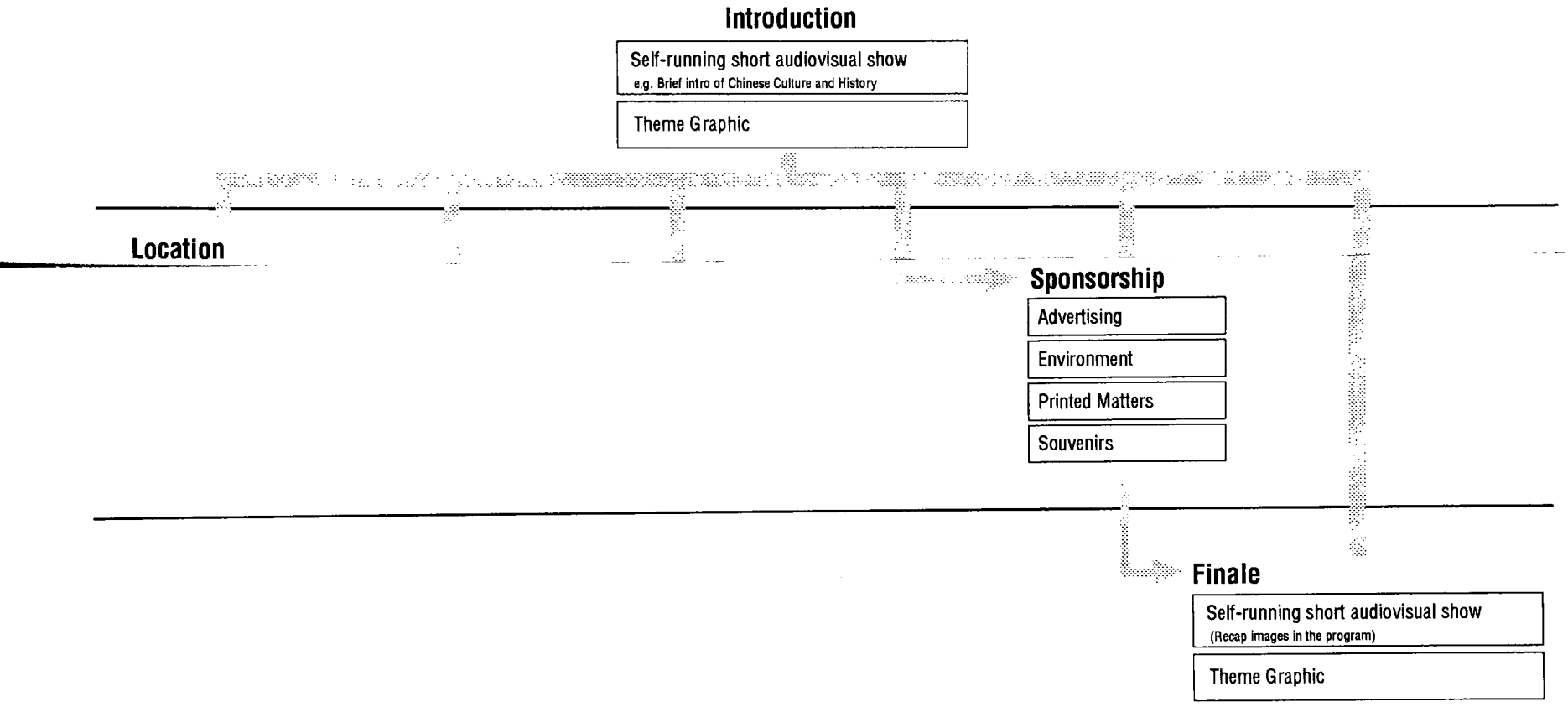
- Advertising
- Environment
- Printed Matters
- Souvenirs

Finale

- Self-running short audiovisual show
  (Recap images in the program)
- Theme Graphic

Program Structure

"Dynasty" theme park interactive presentation program



Bibliography

Books and Magazines

Bove, Tony, and Rhodes, Cheryl. Que's Macintosh Multimedia Handbook. Que Corporation Carmel, Indiana, 1990.

Edited by Lambert, Steve, and Ropiequet, Suzanne. CD-ROM, The New Papyrus: "As We May Think," by Bush, Vannevar. Microsoft Press, 1987.

Guglielmo, Connie. "Apple to develop multimedia file format," MacWeek, June 20, 1989, p. 4.

Kenny, Michael F., and Schmitt, Raymond F. Images, Images, Images. Eastman Kodak Company, 1983.

McPherson, Alan, and Timms, Howard. The Audiovisual Handbook. Penguin Group, 1988.

Nielsen, Jakob. Hypertext & HyperMedia. Academic Press, Inc., 1990.

Simpson, Robert S. Effective Audio-visual. Focal Press, 1987.

Stefanac, Suzanne, and Weiman, Liza. "Multimedia, is it real?" MacWorld, April 1990, pp 116-123.

Software

MacroMind Director 2.01. MacroMind, Inc., San Francisco, CA.

PhotoShop 1.0. Adobe Systems, Mountain View, CA.

FreeHand 2.02, Aldus, Seattle, WA.