

# Rochester Institute of Technology

A Thesis Submitted to the Faculty of  
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in Candidacy for the Degree of

MASTER OF FINE ARTS

INTERACTIVE ANIMATED STORYBOOK  
BASED ON KOREAN FOLK TALE

by  
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Date 1-5-98

This project is dedicated to my parents for their love.

I would also like to thank the people below who truly supported and helped me in bringing this project to culmination.

Jim Ver Hague  
Nancy A. Ciolek  
Chris Jackson  
Rex Hunt  
Robert Zipeto  
my classmates  
and  
friends

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The intended purpose of my project was to develop an interactive animated storybook for children based on a Korean folk tale. Unlike a traditional storybook, I created an interactive computer program for children with diverse interactive animations. I wanted to explore how multimedia design can be entertaining and educational simultaneously.

# INTRODUCTION 1

In the fall quarter of 1996, I took the major course Computer Generated Animation. At that time, I created a four minute animation using Macromedia Director. The animation was based on a children's story written by P. D Eastman. Even though it was a non-interactive animation, I discovered the ability that interactive media has to entertain and educate. After that, I have been fascinated with creating an animated storybook for children through multimedia. Therefore, I decided to create an interactive animated storybook as my thesis project.

From the beginning of the winter quarter, I began to research many sources for my thesis project. First of all, I had to find a story which was absolutely necessary to create the thesis project. I decided to use a Korean folk tale that influenced the building of my spiritual world. The reason I chose it was to be able to use my experience and skills in computer graphics and the artistic applications of computer technology as well as conventional art in a new way. Unfortunately, I could not find enough sources related to Korean folk tales in Rochester. Therefore, I visited Chicago during the winter break where I found some useful sources from Korean book stores.

Before I came to America, I studied Visual Communication Design in undergraduate courses where I developed visual communication skills, creativity and concepts. Having an understanding of two dimensional imagery in my background, I wanted to create a unique piece with the combi-

nation of sound, music, graphics and text. The most important part of this project was to use these multimedia elements in an interactive manner. I believe that the important element to enhance a learning environment is that children are not led by the computer, but rather, have an interactive relationship with it. From the start, I always had to create images with this in mind.

I began to make the frame of my thesis project piece by piece. During the construction of storyboard, I concentrated on what was important to children, how to navigate them through this project without confusion, and how to entice children's curiosities. Even though the images do not directly give the information to the user, the key ingredient of the image making process was to be correctly expressed Korean culture. This helps me obtain my goal of allowing children to learn about a new culture through interactive multimedia.

In making small animations of each page, I used Adobe After Effects software a lot. I saved them as a Quicktime movie format. However, a few days later, I had to change the file format from Quicktime to Pict Sequence because the Quicktime movie I brought into Macromedia Director had minute differences from a background color. Throughout this project, my experiences with the media is more important than anything. Overall, this project shows great challenges and opportunities of interactive multimedia for children.



Multimedia represented the act of combining different forms of media. It is a technology which provides an unstoppable revolution in our global land. Even though this thesis project is a prototype, it shows not only a technical approach but also one more way to educate children with multimedia.

KOREAN FOLK TALE 2

Korean folk tales have been passed down from generation to generation through spoken and written traditions. In Korean folk tales, various characters like people with all their human frailties, cows, horses, dogs, magpies, crows, ants, and snakes are major subjects. Their view of life, notions about love, sorrow, honor, justice, and the deep-rooted beliefs and customs of ancient Koreans are revealed through them. Koreans have shaped their philosophy and society by Shamanism, Taoism, Buddhism, Confucianism and reverence for heaven and all the spirits that inhabit nature's creatures. Korean philosophy has progressed and became enriched through meetings, conflicts, and combinations with alien thoughts. Buddhism and Confucianism have had an enormous influence on all facets of Korean literature.

Shamanism, based on natural phenomena, is the root of the Korean psyche. They believed that the fortunes and misfortunes of life and its future are judged through the sun, the moon, the stars, clouds, rain, rainbows, and wind. Natural phenomena resulting from the interactions of these elements are thought to have certain relations with human life.

Buddhism, brought by missionary monks from India and China, appeared in Korea around 372 A.D. It became firmly established with all sorts of local superstitions and theological systems of Korea. Buddhism has the largest following of all Korea's religions. As of 1991, there were 26 Buddhist sects and 9,231 temples with more than 11 million

followers in Korea.

Taoism, brought to Korea in the 7th century A.D., influenced philosophy and religion. It was used for guiding principles of the Hwarang of Shilla (57B.C.-A.D.935) kingdom, who were trained in patience, simplicity, contentment, and harmony. Taoism's influence is found on various forms such as spoons and pillow cases decorated by two Chinese characters, su (longevity) and pok (bliss), in the everyday life of the Korean people although it failed to spread as an independent cult.

Confucianism was accepted around the fourth century A.D. from China. Confucianism in Korea meant a system of education, ceremony, and civil administration. It became the official religion and philosophical basis for government and administration of the Yi Dynasty which ruled Choson (1392-1910). After 1910, the Confucian system virtually disappeared.

Poised strategically in the northeastern part of the Asian continent, the Korean Peninsula thrusts in a southerly direction for about 1,000 kilometers. To the north are regions of China and Russia, while the Chinese mainland lies directly to the west. To the east, the peninsula faces the islands of Japan. The Peninsula, contiguous to the two continental powers of China and Russia and adjacent to oceanic Japan, long acted as a land bridge over which continental cultures were transmitted to Japan. The peninsular location

brought not only the advantage of easy access to adjacent cultures but also the disadvantage of furnishing a target for aggressive neighbors. Therefore, in Korean folk tales, it is very natural to find easily the traces intermingled with currents from the surrounding countries.

In this project, I used one story titled “The Tiger and The Dried Persimmon” of Korean folk tales. This is the story of a foolish tiger that misunderstood a dried persimmon with which a mother soothes a crying baby as a much stronger creature than himself. This project includes not only a Korean folk tale but Korean emotions.

RESEARCH 3

## THE MULTIMEDIA ENVIRONMENTS FOR CHILDREN

Before creating a compact disc called CD-ROM that could store huge amounts of digitized information, the multimedia environment was not mature. Now, most multimedia programs are stored on it. CD-ROMs give multimedia designers more opportunity to combine graphics, sound, text, video, and animation. In recent years, the application of multimedia to children has been wide and the impact of it in our homes, schools, and on-line communities profound. The potential of multimedia as a new way of education and entertainment is beyond doubt after watching children go deep into multimedia products: interactive storybook, games, and learning products.

Multimedia technologies offer children the opportunities of learning by allowing them to explore various combination of media. Weldon Owen who is producer at Todd Power in Careers in Multimedia states that "With multimedia and interactivity, what the kids can do is blown wide open. They can click on the words individually in any order they want. They can see and hear what they sound like in association with what they look like. They can interact with them in the context of the story. Animated characters add a lot to the story. They open it up so kids can make freer association with the words and have a lot more fun." They can learn to read by hearing a word, inspire their imagination by playing a unexpected animation, and enrich their experiences by hearing a humorous sound effect. Children can also

learn about new culture through video clips of the people, their story, and their music. We should make the best of multimedia environment as a creative tool or a tutor or a playground for children.

## THEORY OF CHILDREN'S BEHAVIOR

*"Seeing comes before words, The child looks and recognizes before it can speak."*

[John Berger in Ways of Seeing]

Before developing multimedia environments for children, we as designers must study who they are because they are very different from adults. Children as a group, from three to eighteen, have their own likes, dislikes, interests, and curiosities. They take an interest in even trivial things which we do not think much of. They love repetition more than adults. If you watch children who sit down with a computer, they love to do the same thing over and over again. They can find a hidden hot spot which adults wouldn't, and they want to recognize by themselves where it is. Although they have some difficulty with fine motor skills with the mouse, they love to explore a program with their creative abilities on the computer screen. Children need help from parents to play a program but they don't want to do it by force. Allison Druin and Cynthia Solomon says in Designing Multimedia Environments for Children "Honesty, curiosity, repetition, and control are all ingredients we need to con-



sider when designing multimedia environments for children.” Usually most designers consider that children like bright colors but that is not entirely correct. “A common misunderstanding about children’s preferences involves the use of color and characters. While infants and very small children respond best to bright, highly saturated primary colors (because their eyes are not yet fully developed), most children have color experience and preferences that are much closer to those of adults. They can appreciate rich color schemes and fine illustrations.”(1) When developing multimedia environments for children, designers must think how to create multimedia from the same standpoint of children.

## INTERFACE DESIGN FOR CHILDREN

Before talking about the interface design for children, I will briefly define the meaning of an interface. One goal of multimedia is better communication between users and computers. “As computer technology has become available to more and more people in a greater variety of devices and contexts, the need for accessibility, ease of use, and user engagement has grown more and more pronounced.”(2) The interface design is the most important in communication between users and computers. Brenda Laurel gave a definition of an interface in *The Art of Human Computer Interface Design*- “The noun, interface, is taken to be a discrete and tangible thing that we can map, draw, design,

implement, and attach to an existing bundle of functionality.” and “An interface is a contact surface. It reflects the physical properties of the interactors, the functions to be performed, and the balance of power and control.” In order to help understanding the interface design concretely, we need to know what an interface is made of. Interface is composed of various elements- background, windows and panels, buttons and controls, images, text, video, sound, and animation. I will cite the definition for these elements of Ray Kristof & Amy Satran.

**Background**– The backdrop that sets the scene, whether realistic or abstract, decorative or fully integrated with the content.

**Windows and Panels**– Screen areas, with or without frames or borders, that contain media or delineate different functional region.

**Buttons and Controls**– Pictures, labels, and other devices that represent topics to visit or tools to control things.

**Images**- Photographs or illustrations that may be part of the content, graphic design, or both.

**Text**– Any words on the screen, from headings and labels to entire documents.

**Video**– Digital movies of live action or animation, often with a soundtrack.

**Sound**– Music, narration, and sound effects that deliver content, reinforce action, and contribute to overall style.

**Animation**– Any motion created using the authoring tool (not as digitized video), from moving text to screen transi-

tion and special effects.

When these elements are assembled into a family of screens, they work together to produce a coherent interface.(3)

In designing an interface, designer keeps one thing in mind: what the user wants to do. In developing multimedia environments for children, designers must research child behavior and development. Actually we do not know enough about what kinds of interfaces work well for children and how their preferences differ from adults. Here are some points to be considered in developing an interface design for children.

According to the children's age, we should decide sizes, colors, and positions of the seven elements mentioned previously. We can divide children into three groups: the age of 3 to 8, 8 to 12, and 12 to 18. Each range has different characteristics and preferences. Therefore, an interface should be designed according to each range of age.

Don't use too much or too little text. Colorful graphics, sound, music, speech, animation— all of these are excellent ways to communicate ideas and information for children. Screens filled with printed words are not appropriate for children because text makes children tired. Even adults can not view text screens for long periods of time. "Text is used when necessary to convey information, but it is only one of

many ways in which to communicate with children.”(4)

An interface for children should have interesting and accurate elements to stimulate children’s interest. We already know how responsive kids are to video games. They are much better at them than adults. Kids respond to all of the information presented on screen much quicker than adults. We should not underestimate children’s capability to learn and understand all kinds of information.

## **MARKET AND AUDIENCE SURVEY**

Today there are thousands of products for children in the market and hundreds of software programs for them are produced each year. Most products are indicated by children’s age because if young children attempt to use a program which they are not ready for, they might be disappointed. “Children between the ages of 3 and 8 have received the most attention so far (excluding video and arcade games), although more companies are beginning to create products for older kids.”(5) And primarily those products are characterized by three basic forms: storybooks, games, and learning products.

For preschoolers who are between 3 and 7, these products are usually focused on reading texts, basic math skills, and drawing skills. Children at this young age need parents’ help to follow instructions correctly because they don’t

know yet how to read. "Children near the age of 3 naturally have less developed perception and higher thinking skills. They tend to enjoy simple goals and repetitive events-features that would bore older children."(6)

"Younger children may not demand too much realism or originality in characters when presented with simulated actors such as small animals or cute, anthropomorphized objects."(7) But older children may want to participate more in the creating their own puppets and writing their own stories. Older children over eight years old tend to spend more time to solve the complex problems with their challenges instead of playing with simple graphics or enhanced sound. They usually find something stimulative for their curious young mind. "These children generally feel a need to accomplish something more substantial, and by using the computer to write a story, design a car, or chase a fictional character through time, they will. At the same time, they'll apply knowledge in a meaningful context. As a result, they'll gain a better understanding of math, history, and other subjects, and they'll learn software applications that are used in college and in the working world."(8)

I made a list of questions for survey of my target audience and interviewed a few children. Here is the form.

I am a second year graduate student majoring in Computer Graphics Design at RIT. This survey will use for my project creating a digital prototype of interactive animated storybook.

1. How old are you?

1) 3-5 2) 6-8 3) 9-12

2. Have you ever purchased a educational software?

1) Yes 2) No

3. How many animated storybooks do you have?

1) 1-3 2) 3-5 3) more than 5

4. How many times do you play with an animated storybook?

1) 1-3 2) 4-6 3) more than 6

5. Why do you buy it?

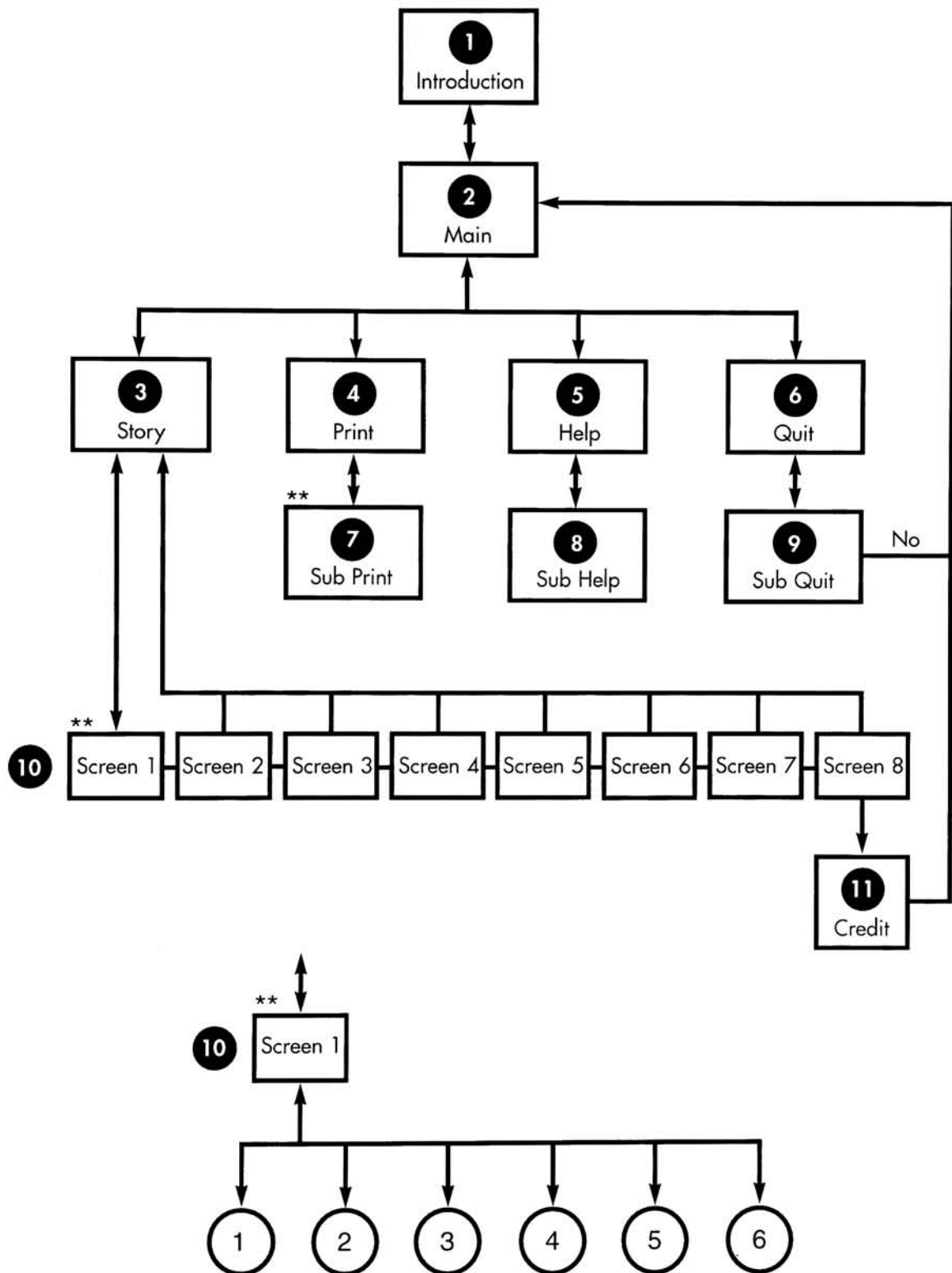
6. Usually who buy it for you?

1) Parents 2) Grandparent 3) other relative

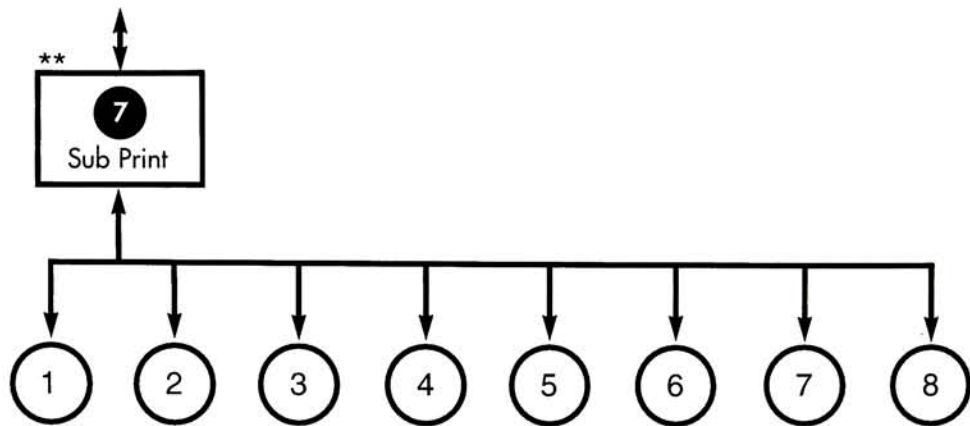
According to the survey, most children have had an experience purchasing software programs and they have their own programs at home. Usually they have at least four programs and have purchased a program with their parents. After purchasing it, they have played the program more than 6 times.

NAVIGATION 4

# A NAVIGATION DESIGN FOR ANIMATED STORYBOOK BASED ON KOREAN FOLK TALE







This is a navigation which people can get a sense of how the real product might work. Each box represents a different screen of the project and every link in the flowchart—forward, backward, or both forward and backward—represents an access route.

- 1 Introduction: Point of entry. When the users first runs this project, an animation shows a symbol of an fictitious company and is accompanied by music.
- 2 Main: There are 4 buttons—Story, Print, Help and Quit—which the Users can click on.
- 3 Story: There are the same 4 buttons from the main page in this part. The story button is much bigger, so users know where they are.
- 4 Print: There are the same 4 buttons in this part as well. The print button is much bigger, so users know where they are.
- 5 Help: There are the same 4 buttons in this part as well. The help button is much bigger, so users know where they are.
- 6 Quit: There are the same 4 buttons in this part as well. The user can go Sub Quit page from here.
- 7 Sub Print: User can print out each page of the story which is drawn

with simple black outlines. Each number in the circle represents a page number of the story.

- 8 Sub Help: All buttons are identified and defined for the user.
- 9 Sub Quit: User can decide whether to play again or not.
- 10 Page 1 to 8: Each screen has at least 6 small animations waiting to be activated on the screen. Each number in the circle represents an animation.
- 11 Credit: All credits are showed and User can go back to the main screen automatically or by clicking anywhere on the screen.

PROCESS 5

After I decided to use the story named “The Tiger and The Dried Persimmon”, I proceeded to create my thesis project. I tried to illustrate this piece with unique Korean images by visual communication because this project is based on a Korean folk tale. First, I considered the structure for the thesis project. This thesis project is generally composed of four parts: Main, Story, Print, and Help.

## CONSTRUCTION OF THESIS PROJECT

**Main Section:** Users learn briefly what this program is at this stage and they can go to the story, print, help, or quit from here [See figure 1].

**Story Section:** This part has 8 pages of the story. Each page has at least 6 hot spots waiting to be activated with humorous sound and highlighted words which users follow along as a narrator reads it. It has a beginning, middle, and end which are created within the paradigm of traditional narrative structure [See figure 2].

**Print Section:** In this part, children can print out each page of the story drawn by simple black lines so that children can make a coloring book and develop their drawing skills. [See figure 3].

**Help Section:** My target audience is preschoolers who are between 3 and 7. Usually they play a program with parents. Therefore it should be clear and unambiguous. In this part, I tried to explain through icons how to control this program instead of using too much text [See figure 4].

## CREATING BACKGROUNDS

Usually, a background is integrated with other screen elements. It needs to be created as an independent image so those elements can move and change in front of it. I created decorative, colorful, and three dimensional backgrounds so as not to be alien to the other elements that will appear on top of it. I thought that a background can be strong when its role is to make a design statement and a decorative and perspective background is better than a flat one for this project in considering children's preference.

Each part has a different background. I wanted to create backgrounds using 8-bit(256) color in Adobe Photoshop 4.0, which is best known for its revolutionary aspects in digital image making, so that the final movie would run smoothly in Macromedia Director 5.0. But I had to change my mind because I met a problem. The problem was that the background images I wanted to have had too much gradation. When I tested the images in Director, I found that a 8-bit image looks ugly because of the gradations. Therefore I had to change them from 8-bit images to 16-bit(thousands) images to create fine backgrounds. If I use these images for CD-ROM, it would require more time for Director to process and slow down the animation. However, using 16-bit color was unavoidable to create neat images even though it will not be suitable for CD-ROM. I decided to make the final Director movie with 16-bit color depth.

In order to create backgrounds, I referred to some images of traditional Korean houses from a book named “The Illustration of Korean” to create old Korean environments [See figure 5, 6, 7, 8, 9, 10].

## CREATING CHARACTERS

Constructing and developing a character is not merely a matter of drawing the figure. Each character also has its own shape, personality, features, and mannerisms. In creating a character, it is important to design its character fitted to the story. In other words, you should fully understand the story before creating a character you wish to bring to life.

This thesis project contains two kinds of characters: the main characters and the sub-main characters. Main characters includes a tiger, a mother and a baby, and a thief which are necessary for the story [See figure 11, 12, 13,]. Sub-main characters includes a monster, a insect, a crane, a dog, and so on which are waiting to be activated on the screen [See figure 14, 15, 16, 17, 18, 19, 20]. Even though these are not necessary for the story, these are very important to spark the user’s interests. Most characters are animated by the user clicking on them in Director. I created them by myself or I scanned some images from the book named “Cartoon Animation” and colored them using Adobe Photoshop.

In the story, the tiger's character design was the most important. Even though a tiger is the king of the beasts, it should look dull, stupid, and coward according to the story. I created the tiger based on this description [See figure 21].

## CREATING BUTTONS AND OTHER CONTROLS

"Buttons and controls are the tangible part of the interface, the objects users interact with. Naturally, they need to be clear and unambiguous, but that doesn't have to mean predictable or dull. Controls are an opportunity to involve users in the content, and to intrigue, amuse, and entertain them."(9) The look of the button should come from the style of the interface.

In this thesis project, buttons are parts of the screen or a region of an image. It doesn't look like a button or a discrete object. In Main Page, I used Korean totem poles as buttons. These blend in with the background but functionally, their roles are to go to different parts. Quit button also is at the bottom left on the ground as a part of the background image. There is a Korean silk-covered lantern as a roll-over button which is to help identify hot spots and to give users a sense of what's "clickable". You can see these two buttons in each topic. In each page of the story, there are three buttons to go previous, next, main page. When users roll over these buttons, they will change to different figures to identify screen numbers or directions [See figure

22, 23].

## CREATING 2-D ANIMATIONS

Animation is the process of drawing and photographing a character in successive positions to create lifelike movement. Computer animation can be done in an authoring tool by rapidly displaying a sequence of images.

In this thesis project, most animations are in the Story Section. As I mentioned before, there are 8 screen in the Story Section and each screen of the story has at least 6 small animations. There are two ways in which I created animations for this project.

First, I scanned some movements from the book named "Cartoon Animation" and colored on them using Photoshop. Then I brought all the still images of the movement into Director as cast members and created a computerized animation similar to a frame-by-frame cartoon animation. This kind of simulated movement is the same method used by traditional animators. [See figure 24].

Second, I created characters myself in Photoshop. Then I animated them in Adobe After Effects which is the most powerful tool for compositing, two-dimensional animation and special effects. I imported Photoshop files to After Effects. When importing raster-based Photoshop files, I was



able to import each Adobe Photoshop layer independently. I manipulated each element's position, scale, rotation, and opacity over time independently in the time layout window. I also controlled the speed and the direction of time within a movie. After Effects allows you to apply variety of filters including blurs, blends, sharpens, color modifications, three-dimensional transitions etc. as many effects as you want on a layer [See figure 25, 26, 27].

After setting up everything for making an animation, I rendered a movie as a sequence of PICT documents with millions of colors depth. Then I imported it into Director as a "cast member" and I gave it a "Script" to animate [See page 46].

In page 2 and 6 of the story, I created a three-dimensional effect using multi-planing in Director. For example, "The basic background includes the distant structures, the woods, and the sky; the first overlay is of the central structure, and the second overlay is of the large foreground structures. the three-dimensional effect is created by moving the second overlay quickly, the first overlay fairly slowly, and the basic background even more slowly." (10) In Photoshop, I created a background larger than "Stage" size (640 by 480 pixels) of Director to make a successive movement of a background. Then I gave a different speed to the images I wanted to move on the background. While the layers are moving with each different speed and direction on the screen at the same time, it gives you the feeling of per-

spective and distance [See figure 28].

## EDITING THE SOUND

Sound is the ultimate editorial tool. It can make or break the tone of an interactive product, and have a tremendous influence on user's perceptions of the content. In this thesis project, there are three kinds of sounds; music, sound effects, and narration. These are key elements in creating and establishing an environment.

In creating background music to link each part naturally, I needed traditional Korean music for this project but I could not find any Korean CDs appropriate for my project in Rochester. Therefore I bought some CDs in Chicago when I visited there. Finally, I could create background music by cutting and pasting various parts of original music in SoundEdit 16.

Creating sound effects is very important to this project because there are lots of hot spots in the interface. Therefore I had to create many sound effects as feedback for them. Most sound effects are from TV cartoon shows and sound files of SoundEdit 16. I recorded TV cartoon shows onto video tapes and digitized the sounds on my computer by hooking the computer up to the TV. I used SoundEdit 16 to digitize the sounds and incorporated effects, such as pitch shift, amplify, backwards, etc. to edit

them. I saved the files as Audio Interchange File Format (AIFF) or QuickTime Movie format. The Sound files, imported into Director, are considered cast members in the Score window.

Narration is used in special interest titles, dialogue in children's storybooks, games, and instructions for training pieces and help systems. "It's like radio because what you're doing is visualizing your character and bringing them to life. I tell my students that you can't just focus on your voice, you have to focus on your character. You have to make your character come alive." (11) Using voice-overs help achieve the appropriate dramatic effect. Particularly, in the Story Section, a narrator's voice is very important. I needed a person who has a deep and old voice. Fortunately, Rex Hunt who is my landlord, had a similar voice what I need. I recorded his voice for 2 hours then edited it in SoundEdit 16. In Director, over and over again, I adjusted narration speed to the highlighted words which children follow along with as the narrator reads them.

## TEXT

"Multimedia authoring tools are sophisticated screen composition tools, but they are not precision typography tools. They can compose text that's seamlessly integrated with other interface elements, but the text elements themselves may be limited in style and format. For the greatest flexibil-

ity and control of formats, spacing, and special effects, text can be created separately using specialized tools, and then integrated using the authoring tool.”(12) It has to be easy to read and it also has to work in the interface.

In this project, I did not include too much text because children don't want to read a lot of text and some of them do not know how to read. It makes them tired. Writing the text for developing multimedia of children should be limited and concise. Therefore I used simple terms to make the story accessible to children. In Photoshop, I created the text and saved it as a bitmap format.

*The following describes the process involved in creating this project in Macromedia Director.*

## **CREATING THE PROTOTYPE**

With elements created in Photoshop, After Effects, Adobe Illustrator, or SoundEdit 16, I proceeded to make a prototype which is a preliminary, incomplete, on screen version of the thesis project. I used a friendly authoring tool, named Macromedia Director, to build this project. Actually I imported small movies as a QuickTime Movie format and assigned them instructions by scripting in the “Score” window. But I found a problem with the small QuickTime movies.

The problem was that the color of QuickTime movies does not match to the background color in Director. There was a slight difference in color. I spent a lot of time fixing the problem but I couldn't do anything with QuickTime Movie format. Therefore I decided to use "Lingo" to animate the characters. Instead of QuickTime Movie format, I rendered small movies as a sequence of PICT documents. This solved the problem with the color sniff. At this time, I found an interesting point. The animation speed by using "Lingo" is much faster than QuickTime Movie format.

## **CREATING THE INTRODUCTION**

An introduction is first part of this project the users will see when they open it. In this part, I used an assumed symbol of my company named "Lee Interactive Company". In Adobe Illustrator, I created a sequence of the symbol to make an animation and I saved it as an Adobe Illustrator file. You can import an Adobe Illustrator file directly into an After Effects project. In After Effects, I created a QuickTime movie with it. I then imported it to Director and I put it on the center of the white background. It plays continuously with background music until the user clicks on it to go to the Main Section [See work 1].

## **CREATING THE MAIN PAGE**

After the introduction, the title of my project, a Korean silk-covered lantern and a quit button, fade up from a black screen. Then three totem poles, which are rollover buttons which navigate to the Story, Print, or Help, will fade up from the background image with a sound effect. The users will see the Korean silk-covered lantern and a quit button in any topics. The users could get brief information of the Korean Folk Tale by clicking a green button of the project title. They also could easily get the topic's name they like as the cursor passes over them, then they will go to next screen [See work 2].

## **CREATING THE STORY SECTION**

The screen including story title, three totem poles, and a quit button, all pop on with a different background music from the Main screen. Users could get the name of the three totem poles as they roll over them. The totem pole of "Story" is bigger than other poles. They could choose the totem pole of "Story" to start the story and also choose other poles to go to Print or Help. The users could get brief information of the story by clicking a green button of the story title. [See work 3].

## **CREATING PAGE 1 TO 8 OF THE STORY**

As I mentioned before, each screen has at least 6 hot spots

waiting to be activated. In front of each new screen, there is a “cover” screen including a representative small image from each screen to stay for a while for preloading cast members. Some graphic elements of each screen animate and text of the story is highlighted on the background image while the narrator reads the story. Users could discover and explore any small animations played by “Script” with various humorous sound effects. On each screen, there are 4 rollover buttons in front of text. A light green footprint is for giving a sense of where hot spots are to users. When the user rolls over it with the cursor using the mouse, red footprints indicating hot spots will appear on the screen. Two squirrels are to go previous or next screen. As the user rolls over them with the cursor, they display themselves in a different pose. The small tiger in a rectangle is to go to Story or indicate screen number when the user rolls over it with the cursor. Each page has a different background music edited in SoundEdit 16. After page 8, the Credit section including names of a designer, advisors, softwares, helpers and etc. for this project follows automatically. Users could click anywhere on the screen to go back to Main part or wait to go back there automatically [See work 4 to 11].

## CREATING THE PRINT SECTION

It is similar to the Story section in creating this part. The totem pole of “Print” is bigger than other poles. Users could choose it to go sub-print part and also choose other poles

to go Story part or Help part. The users could get information of how to print out each page of the story drawn by black simple lines by clicking a green button of the title [See work 12].

## CREATING THE SUB-PRINT SECTION

An animation figure of a printer, 8 small rectangles including each page number of the story, three totem poles of topics in a large rectangle placed the center of screen, and an icon of my company to go Main page, fade up from a black screen with humorous sound effects.

The animation was created in After Effects and imported into Director as a QuickTime movie. It plays continuously. The image in a large rectangle will change to a line drawing of each page when the user rolls over the small rectangles with the cursor. They can also print out each image and paint colors on them. In this part, User can go to any topic they want to [See work 13].

## CREATING THE HELP SECTION

It is similar to the Story or the Print part in creating this part. The totem pole of "Help" is bigger than other poles. Users could choose it to go to Sub-Help and also choose other poles to go to Story or Print. The users could get infor-



mation on how to control this program by clicking a green button of the help title. There is a convex lens to give a sense of fun to the user. Every time the user clicks on a part of the handle, it changes to be concave or convex, crooking the graphics inside the lens [See work 14].

## **CREATING THE SUB-HELP SECTION**

In this part, I explained how to control all buttons used in this program. Users could go to any topic because some buttons are used as an image as well as a button [See work 15].

## **CREATING THE QUIT SECTION**

Users could get in here from any topics and they also could go back by clicking the three totems. They can make a decision whether they play this program again or not. They could quit this program by clicking "Yes" [See work 16].

## **THESIS SHOW AND EVALUATION**

The thesis show was on May 2th from 7 to 9 p.m. in our computer lab. I used 16 bit color depth and 640 by 480 pixels of standard resolution screen size to give the audiences more impressive images. The overall structure of this project was very clear. Based on people's reaction from the

thesis show, I created this project successfully. Most of the audiences set a high value on this project as an interactive multimedia project for children. Particularly, children liked to play my project in the thesis show. They liked the idea that allowed them to make a coloring book by printing out each page.

In the thesis show, I found one technical problem. In Director, the loading time between each page of the story is a little bit too long. Because of delay the audience could become tired and it could break the flow of this interactive project.

Generally, I feel satisfied at having my ability recognized. Most of the audiences liked my thesis and thought it was a good project for children. They also gave me cheers for my challenge to create an interactive animated storybook.

STORY & DIALOGUE

6

## THE TIGER AND THE DRIED PERSIMMON

### [page 1]

A long, long time ago, a huge tiger lived deep in the mountains. There was a long spell of snowy weather. Then one day, hunger forced him to leave the snow-covered forest in search of food.

Tiger: "I'm very hungry. I should find something to eat."

Squirrel: "What are you doing, Tiger?"

Deer: "Look! That is the tiger."

### [page 2]

Stealthily he crept into the yard of a house at the edge of a village and looked around. Then he heard a baby crying.

Tiger: "Human babies certainly have an odd way of crying."

### [page 3]

Being very curious, he crept closer to the house. "He is really loud. How can his mother stand the noise?" he wondered.

Tiger: "Oh! He is really loud."

Mother: "Hush! Hush!"

Dog: "Hey! tiger. You can't do anything here."

**[page 4]**

"Hush! If you don't stop crying, the tiger will get you." said the mother. But the baby cried even louder, which angered the proud tiger.

Tiger: "That baby isn't afraid of me?"

Mother: "Stop crying. Do you want the tiger to get you?"

Genie: "I can't sleep because of the baby?"

Ghost: "Hi! tiger."

**[page 5]**

"Oh! Here is a dried persimmon!" said the mother and the baby stopped the crying at once. "What is a dried persimmon?" said the tiger and a chill ran up and down his spine.

Tiger: "A dried persimmon must be stronger than me."

Mother: "Don't cry my baby. This is very delicious."

Rat: "I'm a rat. Who are you?"

Persimmon: "It's delicious!"

**[page 6]**

At that moment, the shadow of something was playing behind him.

Tiger: "I better forget the baby before that dried persimmon gets me."

[page 7]

Then, something touched his back and felt up and down his spine. "Oh, no!" he said to himself. "It's the dried persimmon. It's got me. I'm going to die for sure."

Tiger 1: "I'm going to die. I'm going to die. I must try to get him off my back. That's the only thing I can do."

Tiger 2: "It's very cold."

Thief 1: "Don't take off my mask."

Thief 2: "What a nice, thick coat. I'll get a lot of money for this calf."

[page 8]

The tiger started running. He just kept running and running as fast as he could deeper into the mountain.

Squirrel: "This is my food!"

Raccoon dog: "You want to play?"

Rabbit: "Oh! It's still dark."

Bird: "Oh! I'm so sleepy."

CONCLUSION

7

In creating an interactive multimedia project, we should go through three design processes: Information Design, Interaction Design, and Presentation Design. As a multimedia designer, I organized a large amount of information and interacted each category, then produced a prototype. The process of designing children's multimedia environments should bring together diverse professionals: graphic designers, animators, musicians, teachers, researchers, and so forth. Even though it was arduous to solve all problems occurred in creating this project for myself, it was a good experience to be an expert of developing multimedia for children.

In order to produce an effective multimedia product, one should know the target audiences before starting to create. My research of children concurred with the audiences' reaction showed from the thesis show. The project should also be regulated with the result of user testing: what they do, where they get confused, what they try that doesn't work. It must be tested to ensure that it is bug free and accurate.

This program was focused on edutainment for children. It introduces a humorous Korean folk tale so that users can study its culture and emotion. It also includes over 100 click and explore interactive elements, over 20 minutes of beautiful animations, and over 50 humorous sound effects. Through these creative experiences, I gained technical



skills and the ability of controlling various multimedia software applications. Multimedia designers should have the ability to integrate a myriad of multimedia software into a project. It can save money and time.

Finally, this thesis has been successfully developed as a multimedia project for children. I hope it will be a good example of developing multimedia environments for children. I believe this project will be a foundation of my thought that I, as a multimedia designer, want to have the chance to make a child's life a little better.

APPENDIX 8

## SCRIPT FOR A SMALL ANIMATION

### Score Script

```
on mouseup
  repeat with n = which cast member to which cast member
    puppettempo the width of sprite the number of sprite channel
    /vertical or horizontal length of the sprite.
    set the castNum of sprite the number of sprite channel to n
    updatestage
    wait s
  end repeat
  set the castnum of sprite the number of sprite channel to which
  cast member
end
```

### Movie Script

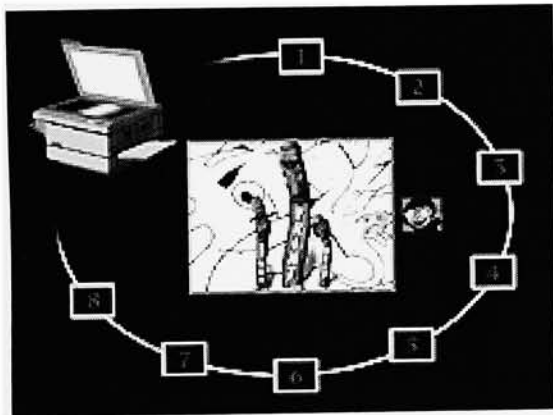
```
on wait s
  starttimer
  repeat while the timer < s
    nothing
  end repeat
end
```



[figure 1] - Main Page



[figure 2] - Story Page



[figure 3] - Sub-Print Page



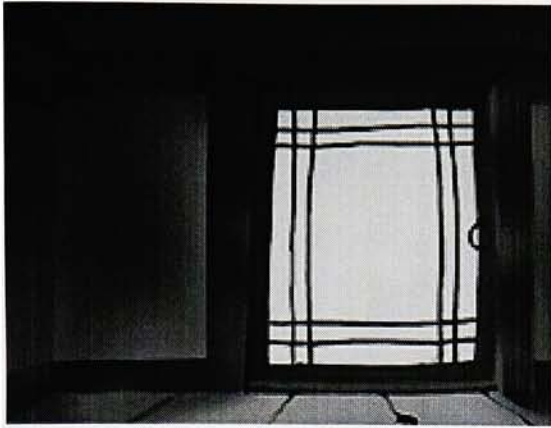
[figure 4] - Sub-Help Page



[figure 4] - Background of Main or Page 2



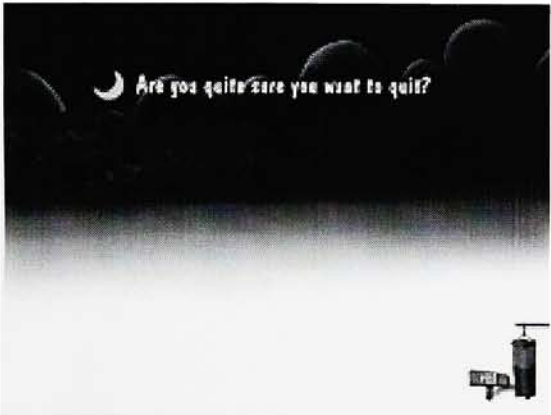
[figure 4] - Background of Page 1



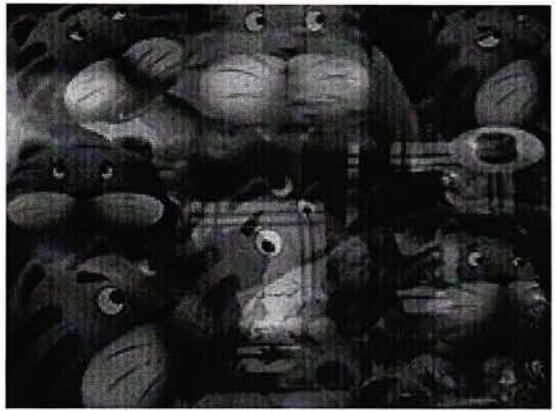
[figure 7] - Background of Page 4



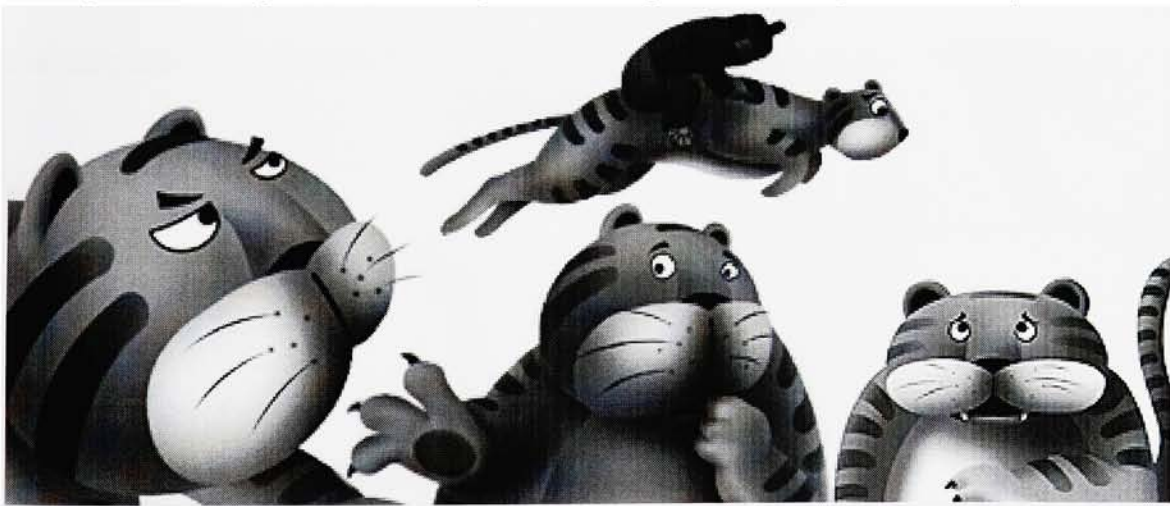
[figure 8] - Background of Print Page



[figure 9] - Background of Quit Page



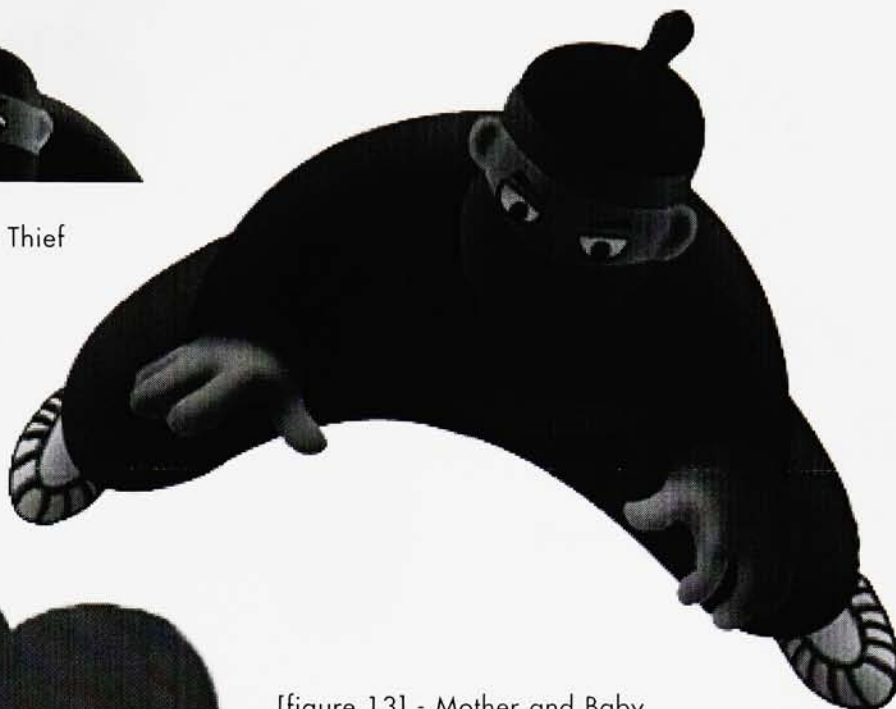
[figure 10] - Background of Story or Credit Page



[figure 11] - Tiger



[figure 12] - Thief



[figure 13] - Mother and Baby



[figure 16] - Crane



[figure 14] - Squirrel



[figure 15] - Insect





[figure 17] - Korean Traditional Shoes



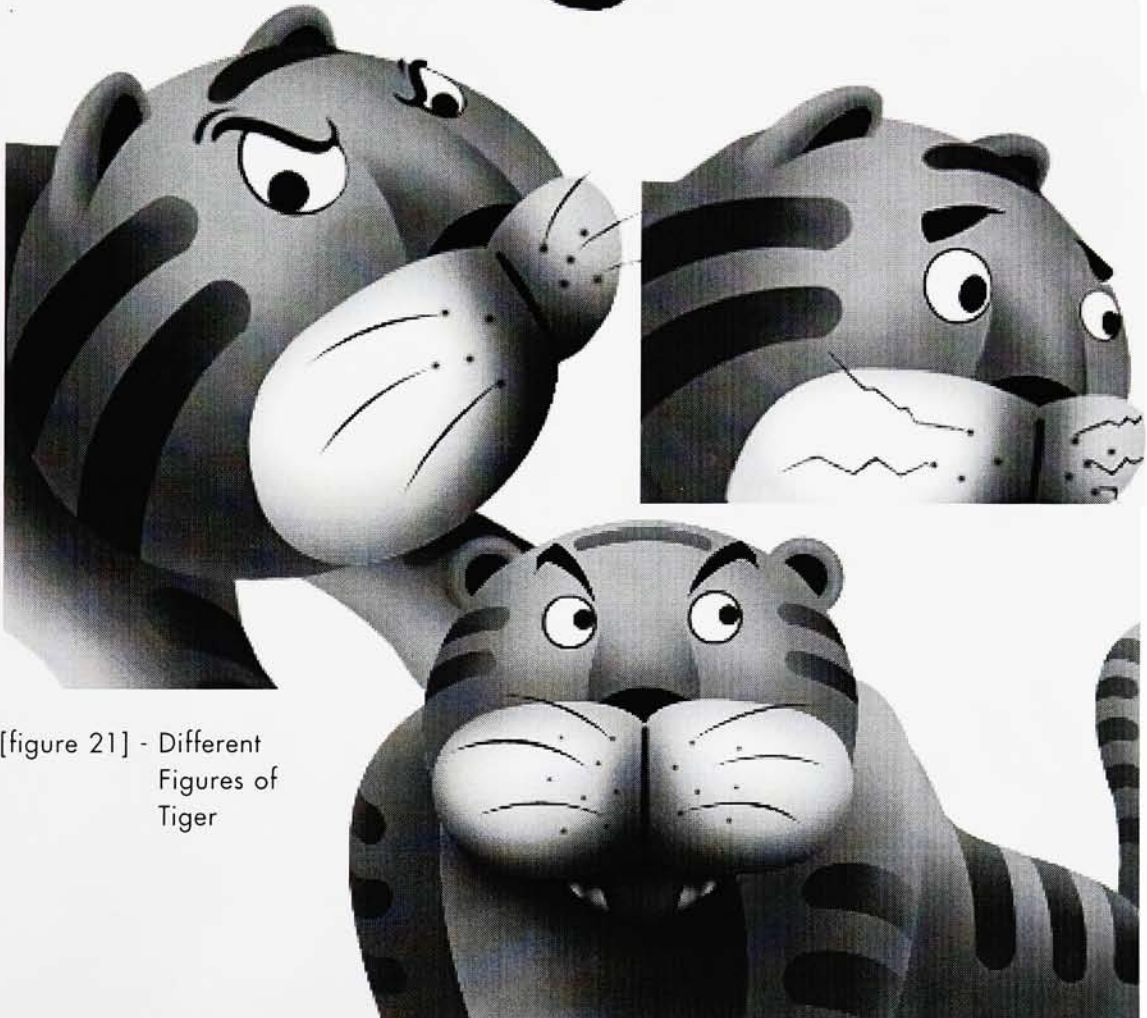
[figure 18] - Basket



[figure 19] - Tree and Pot



[figure 20] - Monster



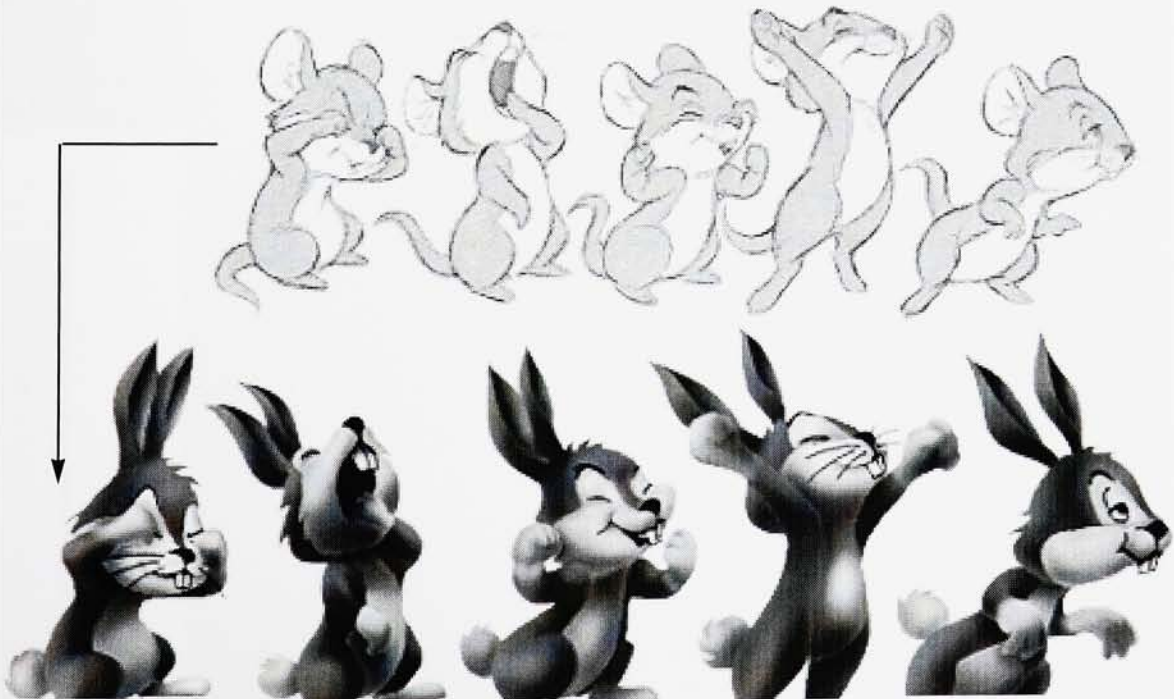
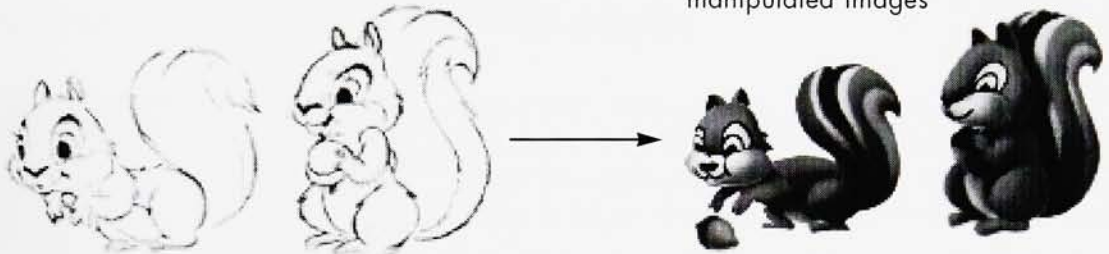
[figure 21] - Different  
Figures of  
Tiger

[figure 22] - Korean totem poles  
These are buttons for  
Story, Print, and Help  
page.

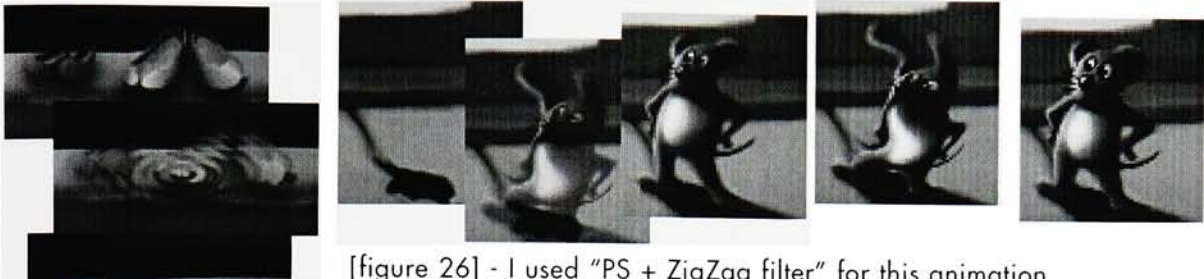


[figure 23] -  
Quit button and  
the Korean silk-covered lantern  
as a roll-over button

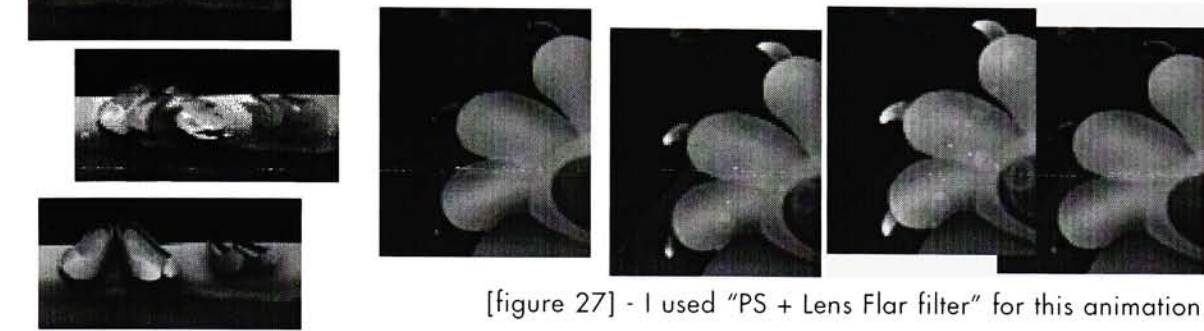
[figure 24] - scanned images and  
manipulated images







[figure 26] - I used "PS + ZigZag filter" for this animation.



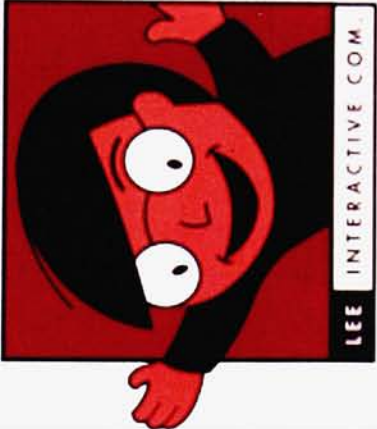
[figure 27] - I used "PS + Lens Flare filter" for this animation.

[figure 25] - I used "PS + ZigZag filter" for this animation.

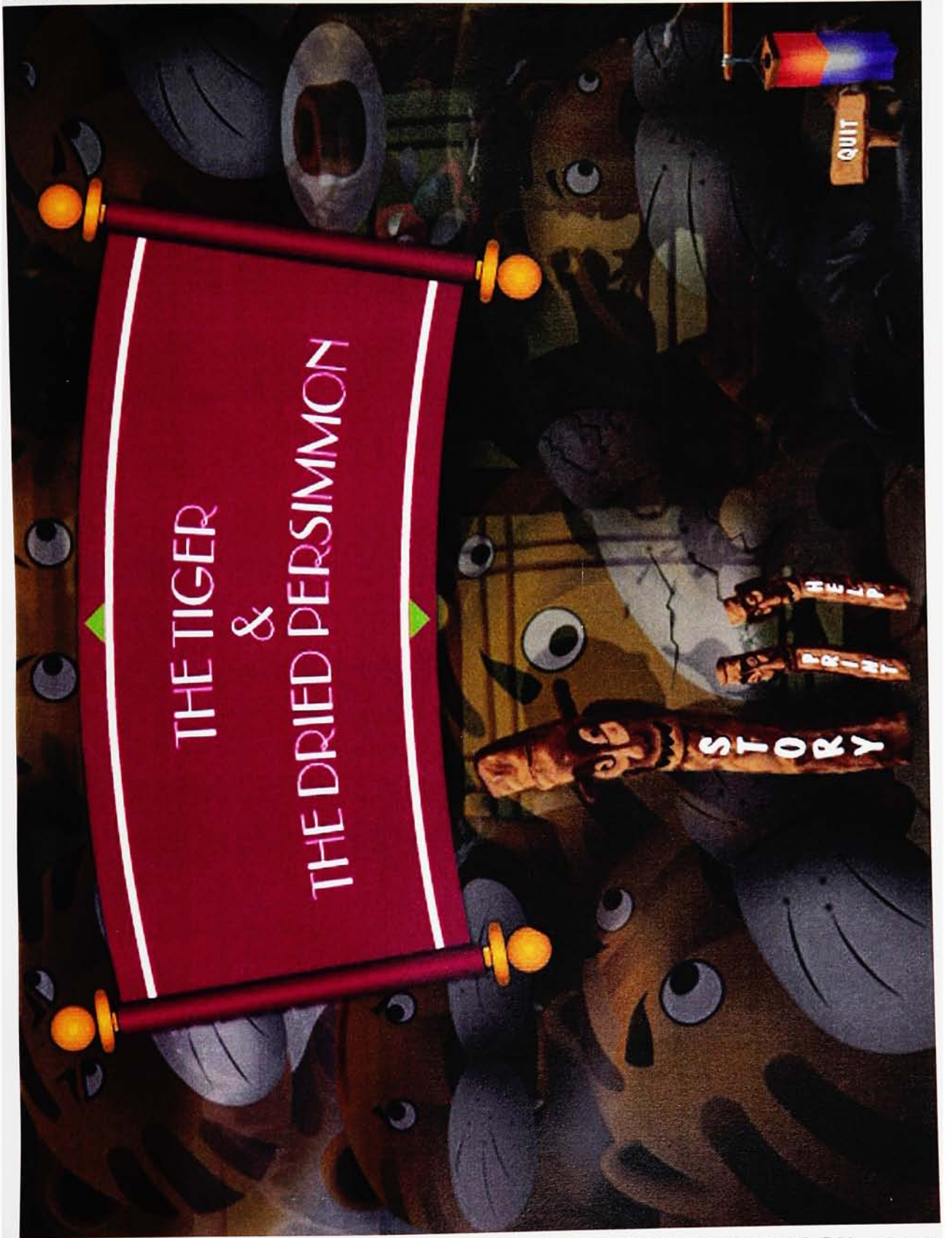


[figure 28] - There are two layers in this picture. The tiger moves from left to center and the background image from right to center. The whole size(700 by 480 pixels) is bigger than "Stage" size(680 by 480 pixels).







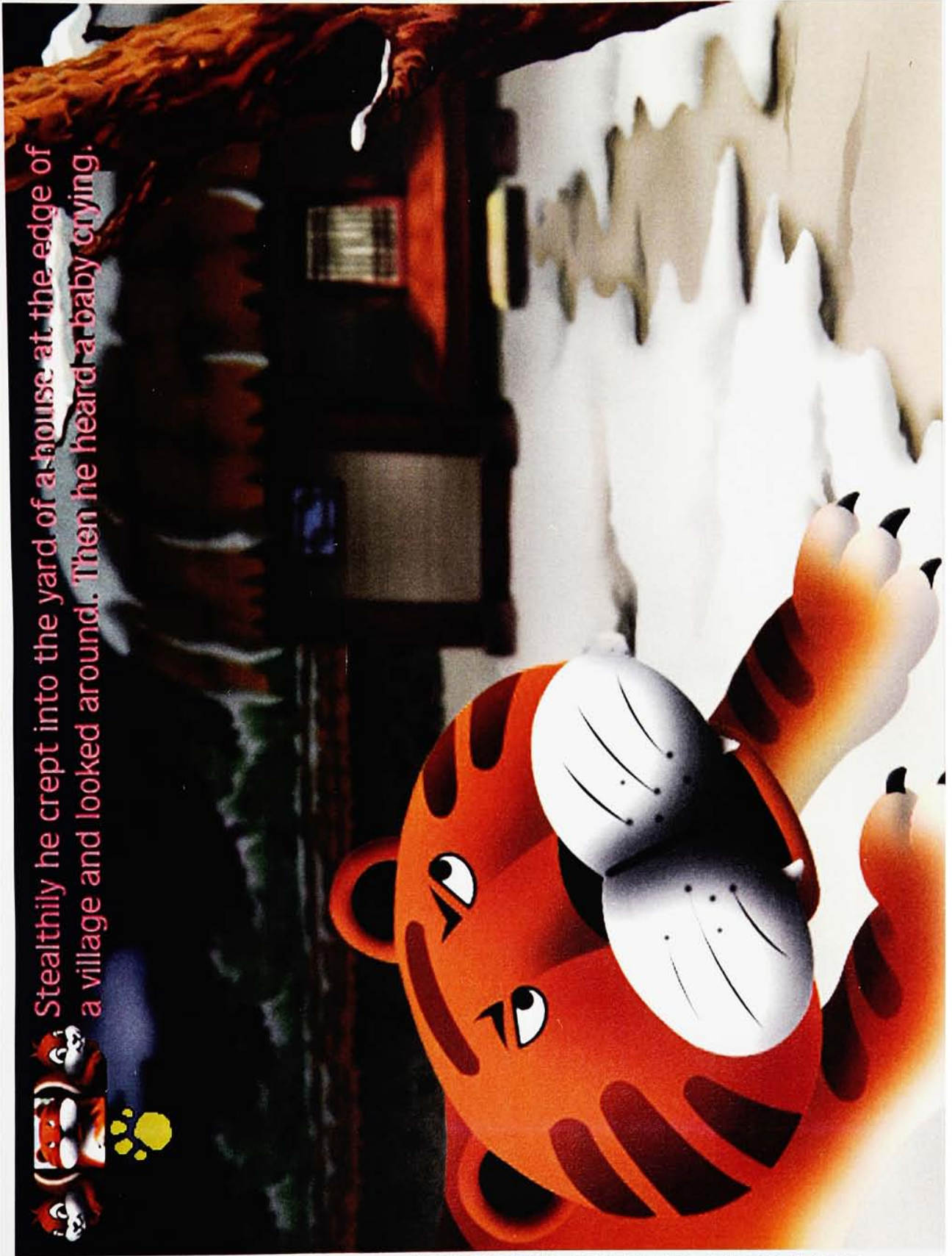




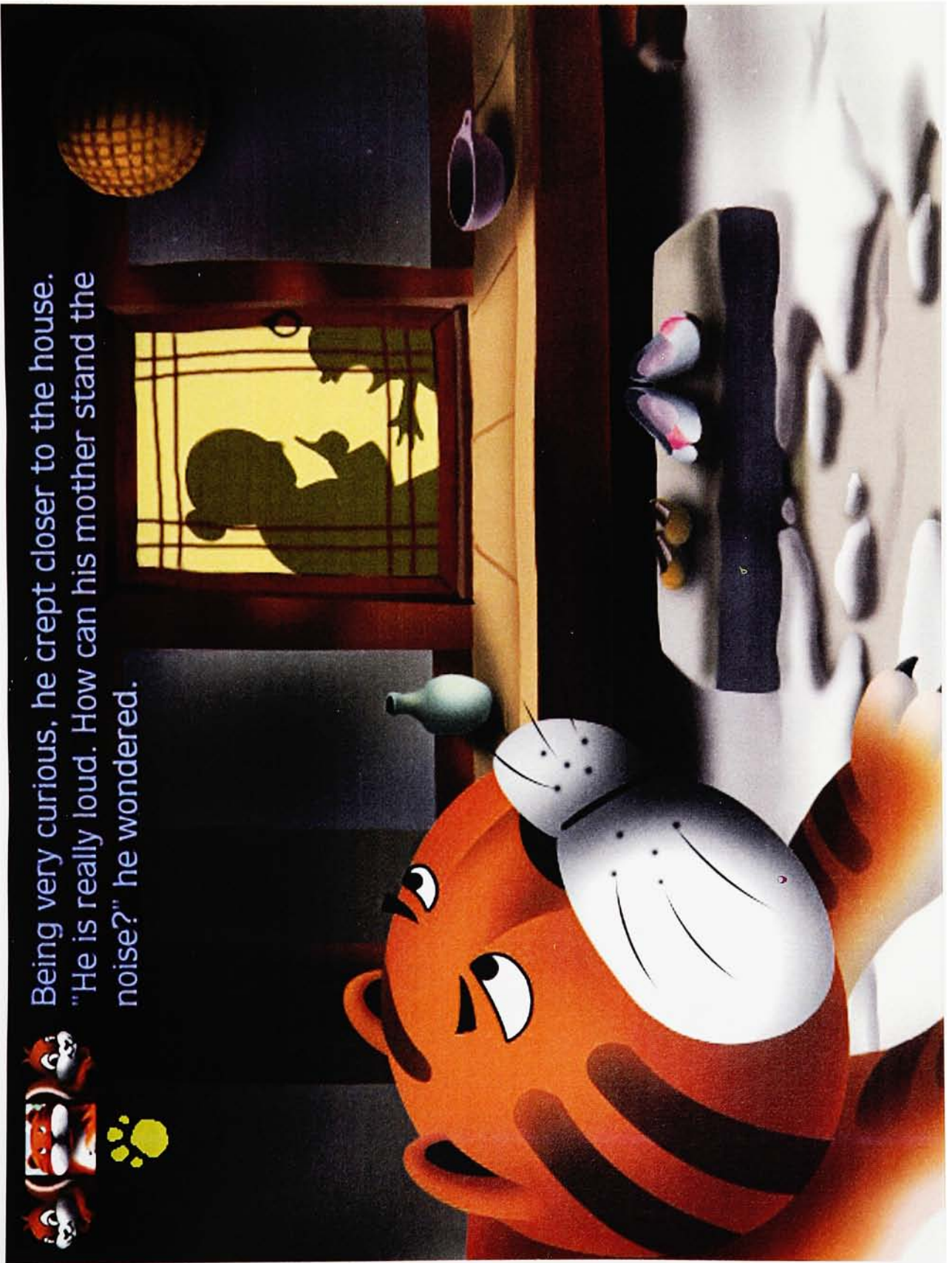
A long, long time ago, a huge tiger lived deep in the mountains. There was a long spell of snowy weather. Then one day, hunger forced him to leave the snow-covered forest in search of food.



Stealthily he crept into the yard of a house at the edge of a village and looked around. Then he heard a baby crying.



Being very curious, he crept closer to the house.  
"He is really loud. How can his mother stand the  
noise?" he wondered.

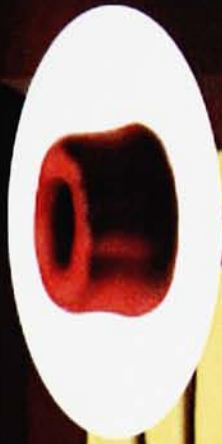


"Hush! If you don't stop crying, the tiger will get you." said the mother. But the baby cried even louder, which angered the proud tiger.

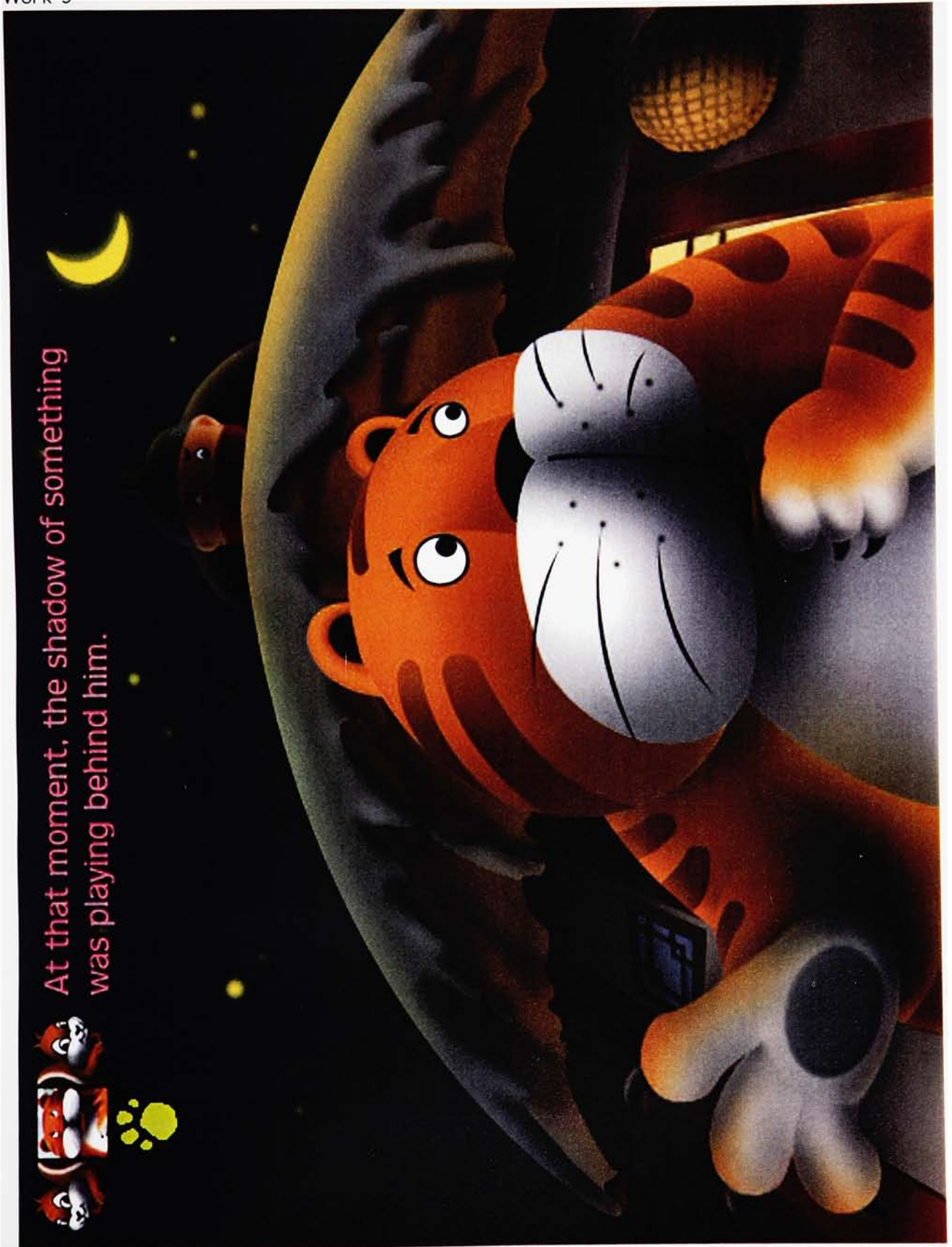




"Oh! Here is a dried persimmon!" said the mother  
and the baby stopped the crying at once.  
"What is a dried persimmon?" said the tiger

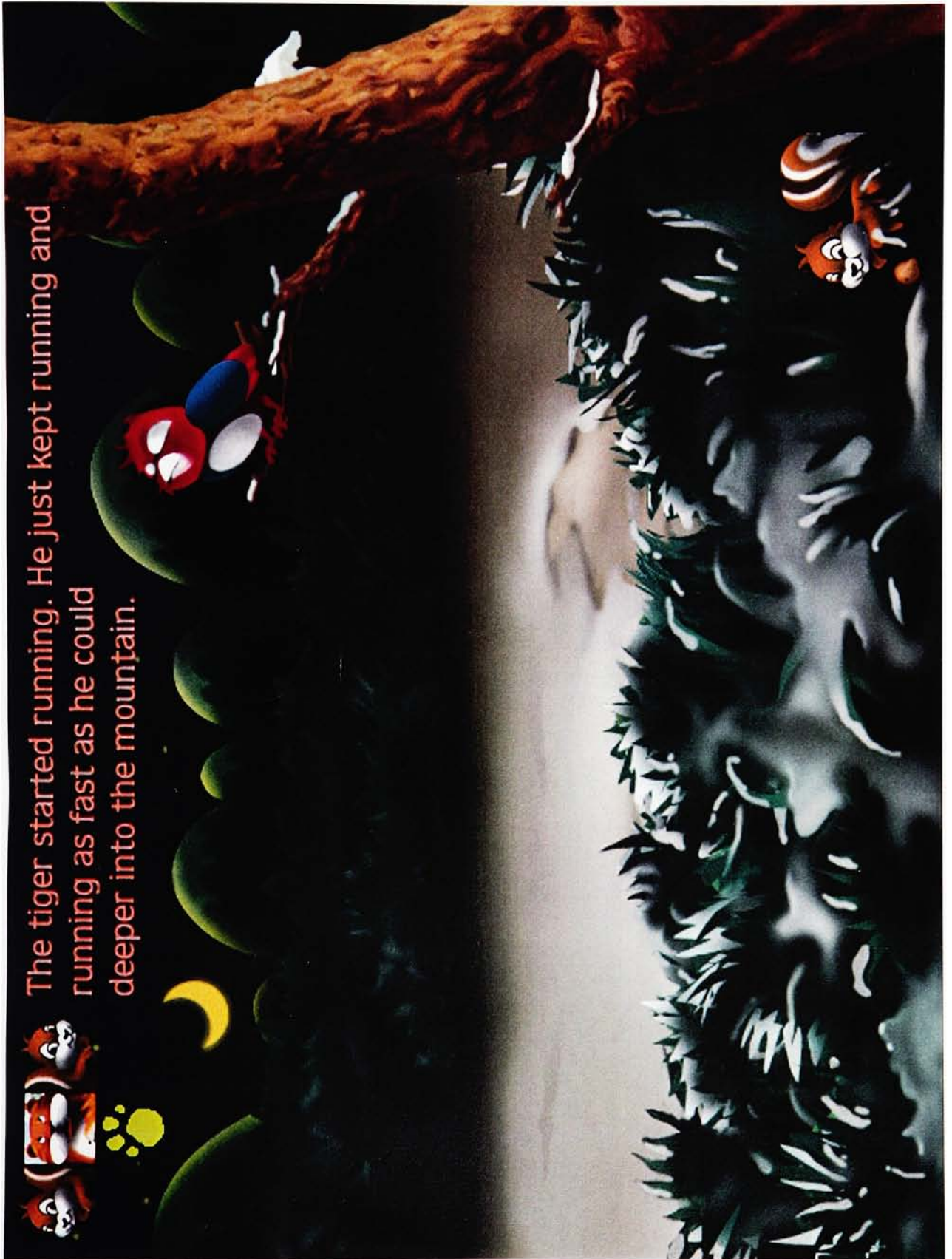


At that moment, the shadow of something  
was playing behind him.



Then, something touched his back and felt up and down his spine. "Oh, no!" he said to himself. "It's the dried persimmon. It's got me. I'm going to die for sure"

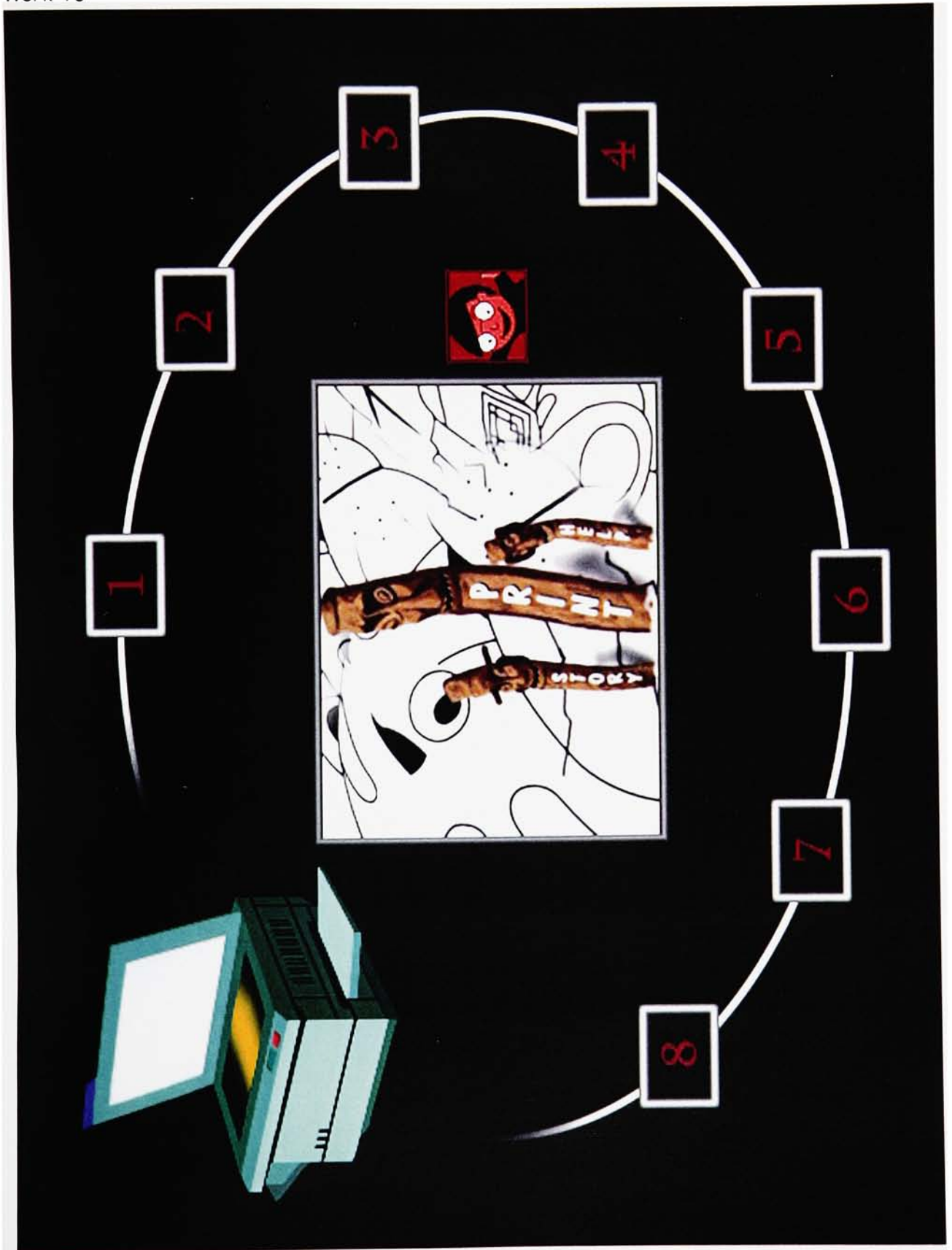




The tiger started running. He just kept running and running as fast as he could deeper into the mountain.







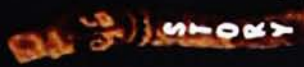


# How to use this program



**Main Page**

Click here to go to main page



**Read and Play**

Click here to read and play along in the story



**Print Page**

Click here to print out line drawings of each page



**Help Page**

Click here to ask for help

Click here to go to main page



Click here to turn back a page

Click here to turn a page forward

Rollover here to get clickable parts of the screen



Click here when it's time to leave this program

Rollover here to get a little help



Are you quite sure you want to quit?

If you are not, click one of them to go where you were.  
If you are, click YES.



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9

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