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A Thesis Submitted to the Faculty
of The College of Fine and Applied Arts
in Candidacy for the Degree of
Master of Fine Arts

"Eggexpressions"

by Eyda Jové

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The purpose of this thesis is to create an animation for entertainment utilizing the computer as opposed to traditional cel animation. I intend to use the computer as a tool to tell a visual story rather than performing visual tricks and techniques so often found in computer animation.

The animation will tell a story in which the characters will have visual appeal in order to involve the viewer. It is also possible that I may integrate some video techniques.

The Genigraphics computer systems will be used incorporating both the paintbox and animation system.

“There is no particular mystery in animation...it’s really very simple, and like anything that is simple, it is about the hardest thing in the world to do.”

Bill Tytla at the Walt Disney Studio

As the days passed and I got more and more involved with my thesis, I decided to integrate some video techniques. This interest was reinforced by the video classes that I began in September and continued taking through March.

I thought of doing a video consisting of a story where in-animated objects were going to be moved with the aid of the computer. To do the video I had to shoot with a 3/4" camera because the Genigraphics' recording system uses that size of tape. In addition, the 3/4" tape has a better quality, therefore, after I keyed the computer animation and the video together, its quality would not be lost. For this process, I needed some help because I did not have any previous experience with the 3/4" camera.

Two people offered to help me, but at the last minute, they were not available. To solve this problem, I had to think of something fast that could attain the same results as what I had originally proposed. The solution was to replace the parts in which I was planning to use video with computer generated images.

This experience has taught me to rely on what I know and have learned.

Animation done by computers was always used as a tool to show visual tricks that the system was capable of displaying until recently when John Lasseter at "Pixar" came out with the first computer animation with a built in story. The animation was very simple and attracted the attention of everyone who watched it. What did this computer animation have that fascinated so many individuals? The answer was simple, it told a story. It seemed very obvious but no one else had thought of it before. Just the simple task of telling a story changed the way in which computer animation was seen.

In an article of the Computer Graphics Daily at SIGGRAPH '87, John Lasseter explained the major differences between computer and traditional animation. "The big difference between computer and traditional animation lies in the characters and the story," he said, adding that while computer generated animation tends to rely on visual techniques to entertain audiences, traditional animation tells a story and gets viewers involved with the characters.' ¹

The storyline beneath Lasseter's "Luxo Jr." and "Red's Dream" stole the heart of the audiences immediately, but this was not the only thing that made them so great. The characters had acquired their own personalities. "What gives successful exhibit pieces such as Pixar's "Luxo Jr." and "Red's Dream" such impact is that both reels feature anthropomorphized objects (a family of desk lamps in the first, a dreaming unicycle in the second) with personality." ²

In order for an animator to develop a character with a personality of its own and to transmit it successfully to his public, he has to study and follow the principles of traditional animation. These principles, which are the golden rules for animators, were originated at the Walt Disney Studio and have been used for hand drawn characters for over 50 years.

These principles are essential for creating good animation and whether it is generated by hand or by computer, a good animation must fulfill its purpose, which is to entertain. Later on, these principles will be discussed.

When I began thinking about the thesis, I wanted to animate an object that normally did not have a life of its own. I explored the potential of kitchen articles from fruits and vegetables to pots and pans.

I needed to use a recognizable object that could give me the flexibility of changing its “character” without losing its original quality. That is why I chose an egg. The animation involved music from different countries and a dance performance of two eggs representing those same countries.

In choosing a title, I looked for a word that best communicated the idea of diversity and also characterized the object. This is where the word “Eggspressions” came from.

Writing the script did not take much time because I already knew what I really wanted to achieve. I wanted some still objects (the eggs) to come alive in response to the dialogue.

I made changes while I was doing the animation in order to achieve my main goal.

A door is seen . Steps are heard and the camera moves towards the door. The door is opened. The camera is at the level of an average person. (I never used the door. Instead, I had the screen in black and it opened into the kitchen scene.)

As the camera zooms in two people start talking.

(Female voice) -(A yawn...) What's for breakfast?

(Male voice) -I don't know. What would you like?

(F) -Lets do something different.

(M) -All we have is eggs. What can we do with them? Fry them.

(F) -No, I don't want ... Hey! Lets look in this recipe book.

(While the conversation takes place, she takes down a recipe book and carries it to the counter where a bowl of eggs is seen.)

(F) -Lets see what do we have over here.

(Sound of turning pages)

(F) -Oh! Look a section on Chinese cooking.

Two eggs come to life and jump out of the bowl. When Chinese cooking is mentioned, music is heard and the eggs will acquire outfits and begin to dance. This will happen everytime the people refer to food from a different country.

(M) -You know, I kind of feel like having a Spanish omelette. (Spanish music)

(F) *-Too spicy, why not a western omelette? (USA music)*
(M) *- I like spicy. How about Huevos Rancheros? (Mexican music)*
(F) *-No, if you are looking for something we've never had, what about Brazilian?*
(M) *-No...Lets go out!*

When the last line of the dialogue is said, the two eggs are so involved with the dancing that one of them falls from the counter. (A loud noise of something breaking is heard.)

Then there is a shot with one of the eggs cracked open with the little hat of his outfit near him.

The first scene was a view of the kitchen. I looked at magazines to render a kitchen that fulfilled all the needs of the animation. I used the Genigraphics as a tracing device to input the graphical information of the kitchen that I sketched. I outlined it as a wire-frame drawing or a line drawing that looks as if a wire mesh has been stretched over the surface of the object. Then, I proceeded to replace the lines with shapes until everything seemed solid.

The next scene took place on the counter where the bowl of eggs were but seen from a different perspective. Most of the action occurred in this scene where I needed to use as few objects and details as possible in order for the animation to work.

The last scene was full of detail because the only thing animated was the camera with a zoom out. It started as a close up from the cracked egg and ended with the whole perspective of the kitchen from a bird's-eye view.

Designing the characters was the part in which I had the most fun. I began by doing research about the clothes from the five countries chosen: China, Spain, United States, Mexico and Brazil. I selected the most characteristic pieces of the costumes from each country and dressed the eggs accordingly by couples (Fig. 1-2). I had to carefully choose the pieces that fit and looked good around the eggs because they were not going to have either arms or legs. The eggs were drawn on the computer and each couple was saved separately. Even without the eyes, each character well represented its traditional attire and acquired a personality.

The eyes were the next thing to work on after the garments were done. I designed more than a dozen pair of eyes and tried almost all of them on the eggs (Fig.3). I selected oval ones which complimented well their rounded figures. The eyes seemed to be appropriate for the eggs but were lacking some liveliness. Then, someone suggested making the white of the eyes a different color and adding some light or sparkle to the pupil. I colored the white of the eyes with different hues but if the chroma and saturation were too high the eggs looked as if they were sick. I found that a pale blue enhanced and contrasted the color of the eggs. The light reflection was achieved by drawing a small white triangle at the side of the pupil. These two little changes made a great difference on the egg's appearance.

Sound plays a very important role in animation. It does not matter if it is music, dialogue, special effects, or all of them together, a good sound makes an animation work. If you see an animation without sound it could be good, but there will be nothing special about it. If you see the same animation with sound there will be a big difference. You will be able to remember it better because of our association with our world full of noise and sounds. Also, the sound of an animation will lead you to follow the story and feel the mood changes the animator wants the public to perceive. Sound is as important as the animation itself.

If the piece has more than just music, you could get help from Instructional Media Services (IMS), a post production house, or if you feel capable, you could do it yourself. IMS usually has a full schedule and is running behind. A post production house is a good idea if you can afford it. I chose to do it myself because it was inexpensive, and I wanted to learn how to do it.

I needed to use sound effects. I was surprised to find that the library did not have a sound effects library. I looked into several other schools at RIT. There was one that had a sound effects library but because I was not part of their program, I was not able to use it.

After searching for a while, I found out about Instructional Technology where Dr. Clint Wallington, who later I discovered writes for AV Video Magazine, was willing to give me some help. He recorded different sounds for the steps, opening door, turning pages, and breaking noise. Then, I chose the ones that were suited for the animation.

The animation "Eggspressions" included a dialogue with inserted music and sound effects. I wanted a variety of music which I found in a medley of a Spanish record. I selected short parts of music that were identifiable from the countries I was using. Then, I edited the music into a cassette.

Three cassette players were used to make the sound for "Eggspressions." One cassette player played the music, the second made the sound effects, and the third recorded every-

thing. The voices were recorded at the same time the music and sound were played. It was done several times until everything was properly coordinated. Afterwards, some parts were edited making the sound perfect for the animation.

Animation done in a traditional 2D hand drawn way or by computer has to follow the principles of traditional cell animation. "Understanding these principles of traditional animation is essential to producing good computer animation."³

I studied and applied each one of them in "Eggspres-sions." They should always be taken into consideration.

The Principles of Traditional Animation⁴

1. **Squash and Stretch**-defining the rigidity and mass of an object by distorting its shape during action.

Application-every time the eggs jumped.

2. **Timing**-spacing actions to define the weight and size of objects and the personality of the characters.

Application-each one of the dances had different rhythms and needed different timing.

3. **Anticipation**-the preparation for an action.

Application-the first time the eggs move the scene got darker; in the Brazilian dance he suddenly looks to one side to let people know that she was coming.

4. **Staging**-presenting an idea so that it is unmistakable clear.

Application-when the eggs look at one another while dancing.

5. **Follow Through and Overlapping Action**-the termination of an action and establishing its relationship to the next.

Application-there was always something going on.

6. **Straight Ahead Action and Pose to Pose** (Keyframes)-the two contrasting approaches to the creation of movement.

Application-I mixed the two approaches through the whole animation, in order to have spontaneity

with a planned story.

7. **Slow In and Out**-the spacing of the inbetweens.

Application-it could be seen through all the animation, giving more or less frames depending of the action.

8. **Arcs**-the visual path of action for natural movement.

Application-when the eggs jumped from the bowl; when she flirts with him moving and dancing the Flamenco(music from Spain).

9. **Exaggeration**-accentuating the essence of an idea via the design an action.

Application-when he looked for her and she came with the Brazilian outfit.

10. **Secondary Action**-the action of an object resulting from another action.

Application- at the Brazilian dance, she gets so carried away with dancing that she starts bumping into him.

11. **Appeal**-creating a design or an action that the audience enjoys watching.

Application-in each of the characters with its traditional outfits and dances (Fig.4-8); at the end with the Casting in order of Appearance.

If you want the sound and animation to be precise, find the music or do your sound recording first. You will have a much easier time trying to coordinate it. For this, a chronometer would be very helpful. Before you measure the time, try to hear the sound several times so you will be familiar with every sound change. Measure the seconds of every change of dialogue, music, or sound effect where you want to start a new scene or movement. This can be very tedious but it yields good results. Video uses 30 frames per second as opposed to film which uses 24. To simplify this process, prepare a chart.

For example:

Sound	Seconds	Frames
Music	2	60
Dialogue	15	450
Movement	3	90

What can be done on the Genigraphics? You can move the camera, enlarge or reduce the frame, change colors, transform shapes, move, rotate, orbit, and inhibit objects.

The Genigraphics is a vector graphics system. This means that it works on an object basis program, and a design has to be created by separated objects. The Geni has a digitizing tablet which is used as a pointing device to interact with the screen. It could also be considered a 2 1/2 D system because it has no perspective of depth. Everything is seen flat, however it can give a illusion of three dimensionality.

Animation on either the 100V and D+ follows the same steps. First, type a five digit number (00000), overlay it on to the background, and move it to the left side of your frame. This will be used as your frame counter. Then, capture the object or objects that you want to animate. Go to the ANI(animation) menu and then to CREATE. Now, the function menu comes up for you to select from. After you make the selection, the machine will corroborate what you did and will ask you to pick if this is the START or FINISH of the frame. Next, proceed to make the changes or movements. When the changes are done, go to ANI and chose again between START and FINISH. Finally, you will have to type the number of the first and ending frame. The computer will calculate the intermediate frames.

Now, you have all the data needed to animate any object. Do this until you have animated everything in the scene. If you have any doubts about what you did, dump the animation table and proceed to make the corrections.

Editing can be avoided by recording the animation in its proper sequence. You will also save some time and the only thing you will have to do is program the video cassette recording for every new file being recorded. Then, put the sound track in one tape and transfer it to the cassette where you have the animation. Remember to make copies of your master and that each copy will loose quality.

- Do NOT delete objects while animating. If you have to, make a new entree and inhibit them.
- If you make a transformation and when you view it your image is being distorted, try to change your object because it probably has too many points.
- If your animation does not want to save on the disk, and you have tried a new disk, save it on the temporary memory of the computer and tell your professors in case they want to clean the old files. Remember to take slides of your work that is saved in the memory of the computer as soon as possible.
- Try to break your animation into different files. Start from the last frame you stopped. To do this, clear the animation table and continue in the same scene. It gives the same results and you will avoid further problems.
- If you are using the VSR command that regens anti-aliased images making them smoother in the Full Screen Regen Menu, and you find that after recording some of the objects move or disappear, turn the command off and record without it.

I feel that the thesis was successful because I achieved what I proposed to do. I got good results, a positive response from the audience, and the main purpose of a character animation was achieved, which is, to entertain.

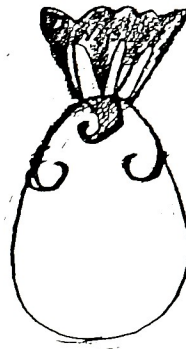
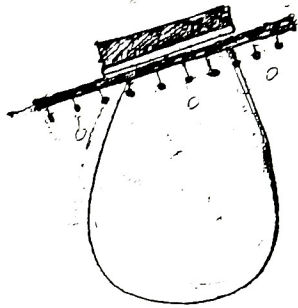
Although I am satisfied with the thesis, I would have liked to push the dance movements further. However, the computer limitations prevented me from doing so. The computer's limited movement choices and the fact that you can not pick some of them together narrowed down the dance movements. The dances successfully displayed the personalities of the characters which enabled the audience to relate to them.

The public response was positive because of the familiar characteristics that the "eggs" had based on real things. "When a character animation is successful and the audience is thoroughly entertained, it is because the characters and the story has become more important and apparent than the technique that went into the animation." ⁵

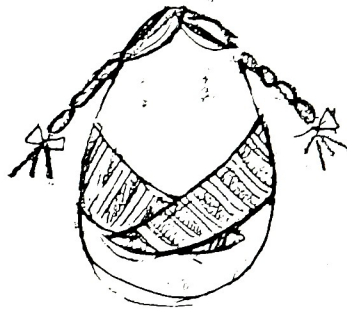
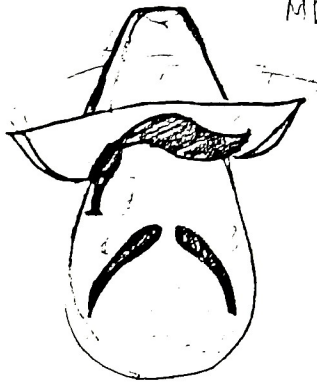
Computer animation is relatively a new field in the world of character animation. It has been growing at a breathtaking pace and has a very promising future with a lot of room for growth and development. Hopefully, computer animators will take advantage of the techniques and principles learned from the past, and continue to build on them.

"Character animation using the computer is becoming more accepted today. But this is not simply a new art form, it is another medium of animation with new and different potential." ⁶

SPANISH



MEXICAN



CHINESE



Figure 1

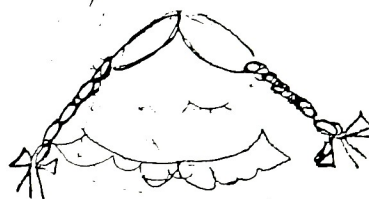
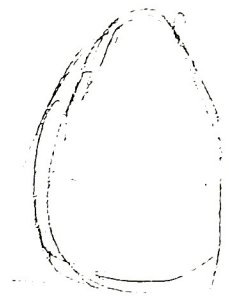


Figure 2

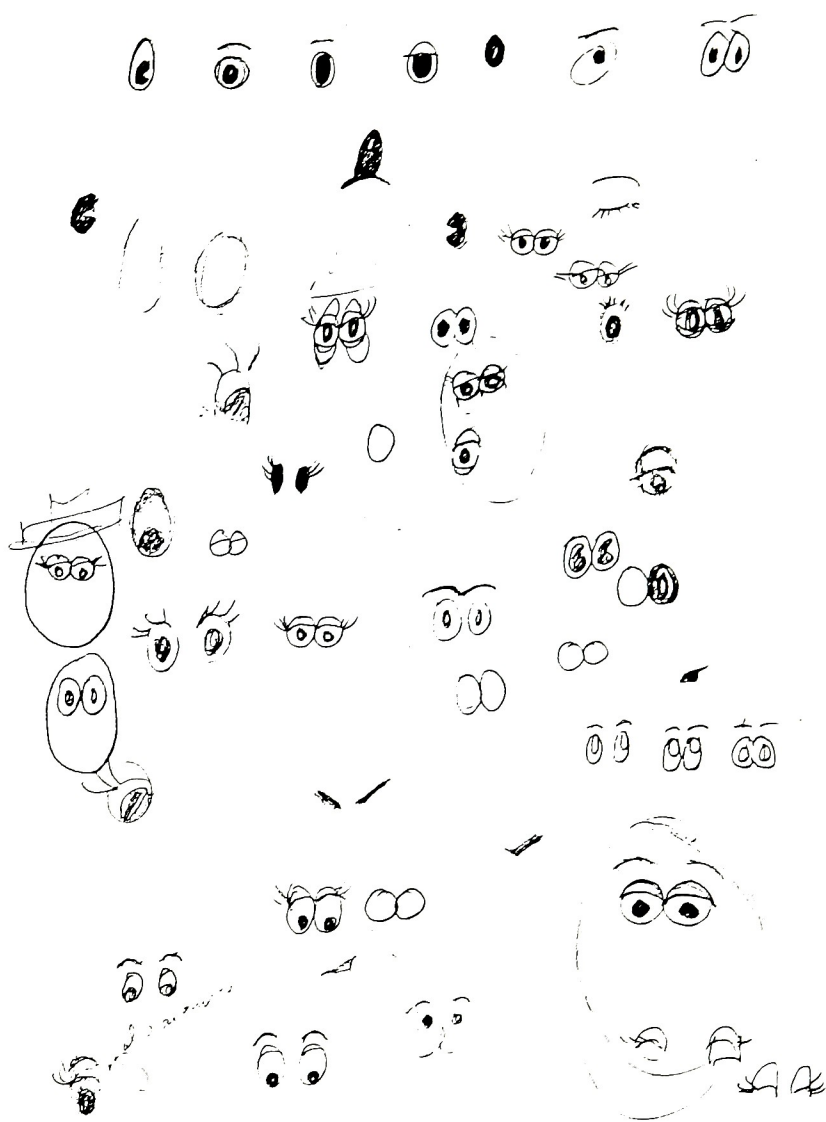


Figure 3



Figure 4

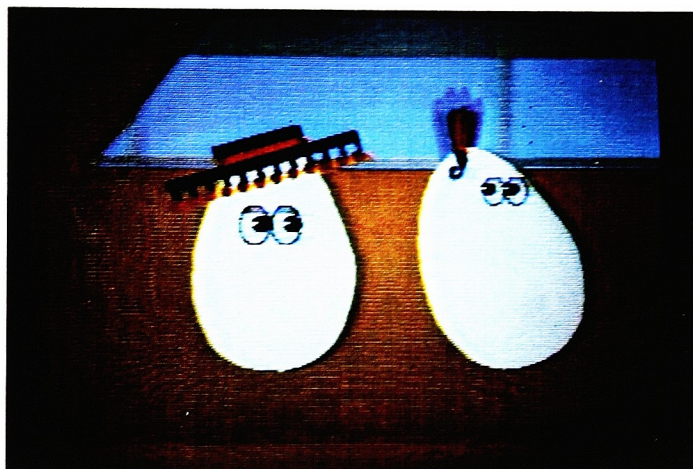


Figure 5

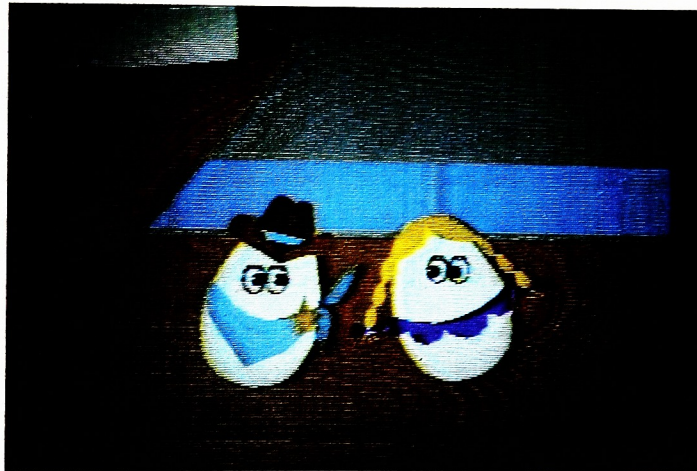


Figure 6



Figure 7

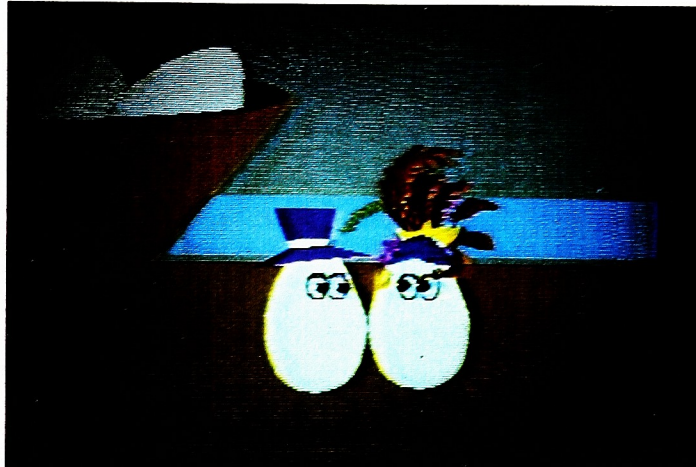


Figure 8

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- 2 Anderson, Beth. "Computer animation develops character," Computer Graphics Today (August 1987): 1,14,16.
- 3 SIGGRAPH 1987, Computer Graphics Conference Proceedings (Anaheim, California), p.35.
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