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Ces't la vie

Andrew Thornton

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An Animated Film

by

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Submitted in partial fulfillment of the
requirements for the degree
Masters Of Fine Arts

M.F.A. COMPUTER ANIMATION PROGRAM
SCHOOL OF IMAGING ARTS AND SCIENCES
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Thesis Chairman: Professor Erik Timmerman

Thesis Advisor: Professor Jack Slutzky

Thesis Advisor AssociateProfessor Stephen Kurtz

Ces't La Vie

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Time Line

JULY 1990

Started writing stories while at home for the summer.

SEPTEMBER 1990

Met with Professor Erik Timmerman to discuss several stories that I had written.

NOVEMBER 1990

Story is accepted, and storyboarding begins.

FEBRUARY 1991

Storyboards were approved, and model building began.

MARCH 1991

Began animating and rendering.

AUGUST 1991

Co-produced short film with fellow student, Chuck Gamble.

JANUARY 1992

Dumped animations from optical disk and edited rough version of film. Determined needed corrections and began re-animating.

JULY 1992

Dumped and edited second version.

AUGUST 1992

Met with musician, Dave Rivello to discuss music score.

OCTOBER 1992

Finished first draft of paper.

DECEMBER 1992

Master tape failed while inserting sound track.

JANUARY 1993

Edited a new master tape with sound track. Re-wrote paper and submitted both to thesis committee.

MAY 1993

Made final corrections to paper and re-submitted to thesis committee.

In the Beginning:

I began planning my thesis project early in 1990. However, I was unable to come up with a satisfactory story line by the time I went home for the summer recess in early May. I had great expectations that I would return to school in the fall with a clever story which would make a good film. Having never produced one before, I found story writing difficult and frustrating. Eventually I had an idea about two mountain climbers competing with one another to be the first to scale a mountain. Neither knew they were tied to opposite ends of a single rope which was fed through a pulley at the top of the mountain. In desperation, each tried to cut the other's rope. When one succeed, both plummeted to their deaths.

In September of 1990, I presented my story to Professor Erik Timmerman. After discussing it with him, I was reminded of a puppet animation I had seen in the spring. Titled "Balance", It was about a square balancing board with one of four wise men in each corner. A box in the middle of the board began emitting strange and muffled music. Each time one of the men moved towards the box, the balance was upset, and the board tilted dangerously, sliding the box towards the low end. The four men tried to strategically manipulate the balance of the board. By changing their positions the box slid from one side to another. Each hoped that the box would be within his reach when the board regained it's balance. Each time the balance shifted, one of the men fell off. Finally one man remained in one corner precariously counter balanced by the unattainable box in the opposite corner.

These stories were too much alike to suit me. I wanted my story to be unique and original in concept. I went back to the "drawing board" and after several false starts, hit upon a totally different approach. I decided to develop a non-human character animation and one month later, I had a new Idea that eventually become the story line for my thesis. After two months, I had one hundred and forty eight storyboard images. I wanted to get the opinion of a fellow student before I presented my story boards to my thesis committee so I showed what I had done to Chuck Gamble. His impression was that too much was happening and he made suggestions on how to strengthen the story . With this information, I began my first revision for presentation to the members of my thesis committee. Professor Jack Slutzky liked the story and had many positive things to say. Professor Timmerman felt that I was telling two stories so I delete the last part of the story because the first half could stand alone. I showed Professor Kurtz and he seemed to liked the story, but was concerned that the message was not as clear as it could be. I made a few more changes and was ready to move on to building the model.

Building the Model:

I already had an Idea of how I wanted my characters to look. I wanted them to be brightly colored and to have bold yet simple patterns. The characters seemed suitable to my story.

The trees required a bit more thought. I wanted to make trees that were shaped like real trees but didn't stand out. At first I texture mapped a leaf like pattern onto the tree tops and a bark pattern onto the trunks but, this made the images too complicated. One day I loaded the model into Topas, our animation system, but had forgotten to tell the program where to look for the texture maps which I had used. I had a pleasant surprise when I rendered the model. The trees were un-textured and simple looking and the forest still had a feeling of fullness. I liked the look and decided to use it.

Building the wall was the hardest part of the frame. I tried at least ten different texture maps of walls and they all looked too symmetrical. Most of the textures

turned to a moire pattern at distances. For a non-human environment, a perfectly offset red brick wall was not appropriate. I also thought the wall should look as though it had been there for hundreds of years. It had to look strong and permanent and be made of irregularly shaped blocks. I found my wall texture on an old abandoned building which was hanging on the edge of the water falls in downtown Rochester. This building looked exactly the way I wanted my wall to look.

In the three Topas classes I had taken, I had been told that I was putting more time than necessary into model building rather than into animation scripts. I didn't want to make that mistake in my thesis. During the model building part of my thesis I decided to forego various options to avoid making the model too complicated.

Animating the Model:

At first, scripting the animation was a problem. I had never done any extensive script writing before. In the first scene I had problems with the bounce of the ball. I didn't know how fast the ball should bounce. I knew that it should look like a comfortable bounce but it was hard to judge in the context of the optical disk. At first I attempted to record a wire frame preview to the optical disk recorder but, our Topas system wouldn't do that. The only other alternative for a preview was to make a flipbook. This was not a fail safe method due to the nature of flipbooks. They usually skip frames causing a slight flicker in the movement. In the bouncing ball, this flicker was enough to mask stalls and hesitations that appeared where they shouldn't. Also, on the first few shots I made the animation twenty or thirty seconds long. This caused two problems: The first was that with150 key frames of a bouncing ball, there were inconsistencies in the smoothness of the movement. In the Time Graph Editor, I fixed all of the bounces to be smooth. However, upon rendering the animation the smoothness was not consistent. When I returned to the script to correct the problem, I would find zero ease-in and zero ease-out. My solution was to shorten the shots. The second problem was in the editing. Many shots were too long and the action was too slow. When I tried to cut a shot down, the ball's slow bounce became even more apparent. In some cuts it looked as though the action was in slow motion. Also, the slow motion of the ball only emphasized the errors of it's movement. The only way to correct this was to re-render the animation.

It was not until the half way mark that I hit a low point and my motivation and enthusiasm waned. The animations were not looking like I wanted them to. I felt that they were boring and unexciting with none of the objects possessing any character traits. Obviously there was more about character animation that I needed to learn.

In the Summer of 1991, Chuck Gamble and I entered into an independent study together. We decided to create a clay animation. We had never done this type of animation and we wanted to stay away from computers. We met in a pub one afternoon and began brain storming. One month later, we wrote the shooting script. It took three hours to refine our story. We shot the film in six days and edited it over the next six months. I can not begin to stress how much I learned from making this film and from working with Chuck Gamble. We used camera and lighting angles which I never would have thought to use. I learned about timing, character expressions and movement, and how to use the camera to emphasize these things. I returned to my thesis project recharged with enthusiasm and ready to apply what I had learned. In January 1992, I assembled the first rough edit of my film. It helped me to see what I needed to fix, add, or

replace. In July 1992, I finished rendering all of the revisions for the film and re-edited the video.

Creating the Sound Track:

Earlier in the Spring of 1992 Professor Slutzky referred me to a student at the Eastman School of Music. We met and made grand plans before he secretly moved to Philadelphia. I began my music search once again. Professor Timmerman advised me on approaching musicians and negotiating agreements. I located Dave Rivello, A graduated of The Eastman School of Music who is a free lance musician. One morning in late July 1992 I met with Dave and showed him my film. His enthusiasm was immediate and he agreed to write the music. Dave wrote a score that I liked very much although it was not what I had expected. It was a contemporary–classical piece and followed the feeling of the narrative well. A literal sound track consisting of bouncing ball noises would have been distracting. The final recording of the soundtrack was made at the Eastman School of Music. Dave Rivello composed the piece on a MacIntosh computer configured for music. Dave's composition was fed into a MacIntosh at Eastman and output to a sophisticated synthesizer. The synthesizer created the sounds of a Flute, Oboe, Bassoon, and Clarinet harmoniously playing the music commanded by the computer. The synthesizer simulated the sound of an instrument to such a high level of accuracy that even the clicking sound made by the keys on a flute could be heard and adjusted. The output of the synthesizer was dumped to 3/4" video tape. The sound from the tape was insert edited to the thesis master video tape. Catastrophically, during this process a piece of oxide from the back of the tape flaked off causing the video signal to fail. My master tape had a serious drop out and the only remedy was to re-edit the entire film on a new tape!

The re-editing process was another learning experience. The standard editing station with which I was familiar consisted of two decks and a console to control them. The frame accuracy of these stations is relatively low and precise editing tasks can be troublesome. I had an opportunity to edit my thesis on a Sony BVE–910. This editing system is controlled by a computer that uses SMPTE time code to insure clean and precise edits. The edit commands are keyed into the computer via a customized key board and the computer executes the edit according to the give instructions. The computer also saves an editing script file that can be recalled and executed at a later date to create an identical edit of the master. On January 20,1993 I finished the final re-edit of my thesis presented it to my thesis committee. The response of both professor Timmerman and professor Slutzky was the same. My film had some weaknesses that were distracting. The music was pleasant but the connection with the actions of the characters was missing. The feeling was similar to an old silent movie. I was advised that a sound effects track might fix the problem so with this knowledge I was off again. I contacted Tom Bachus, A local free lance sound engineer. After viewing my film Mr. Bachus knew exactly what it needed, Warner Brothers sound effects. The sound track was a success in adding life to the characters and momentum to the entire film. My film was finished and after a thorough editing my of thesis paper both were ready for final approval.

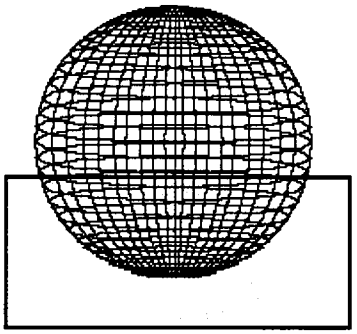
The Model:

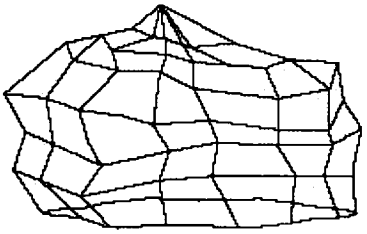
I tried to develop models with two things in mind. The first was to create a look that was based on characteristics found in nature. For example, rarely if ever will you find a forest where all of the trees are the same and perfectly straight. So I created trees that were leaning. As I duplicated them, I rotated each tree so they would all lean in different directions.

My second consideration was less creative and more practical. I wanted to have models that were functional, so that I could manipulate them with as little trouble as possible and still allow the computer to calculate them quickly and easily without crashing. I accomplished this by building models that conserved memory resources as much as possible. I did this by avoiding polygons that would not be visible and diminishing the number of segments or polygons in objects like arcs, circles and sphears. The difference in memory consumption per object was almost negligible but the savings of all the objects combined does diminish the rendering time somewhat.

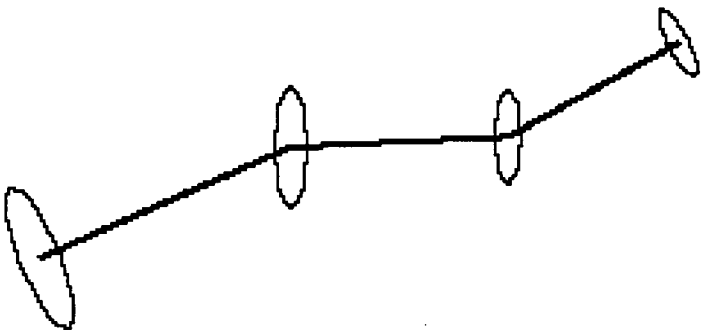
The Trees:

I started the tree top with a sphere, and drilled the bottom third off. I did not create an inside polygon so that when the camera was under the tree, it could look up into the hollow treetop. To give the tree top a little more of an organic look, I pulled some of the sphere's points out of alignment. This created bumps and ridges.

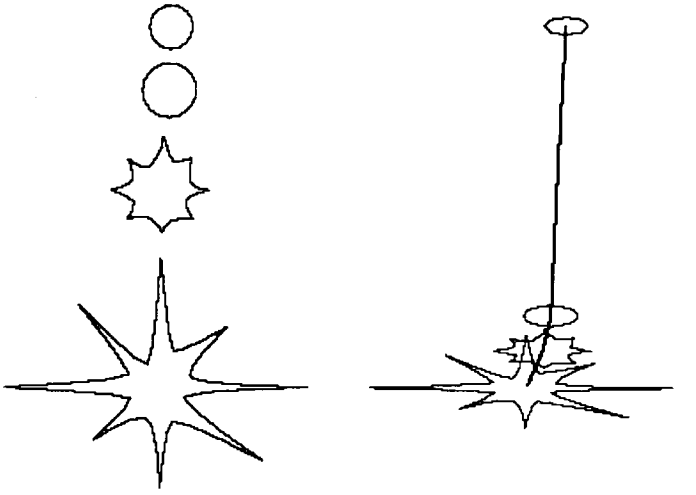


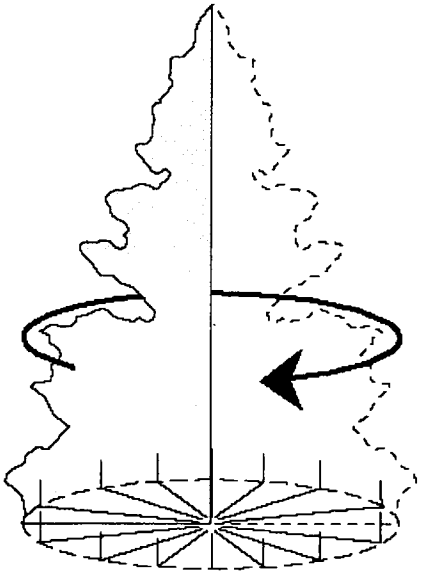


To create the branches I used polygonal cross-sectional modeling with four circles that get smaller as they approach the end of the branch. I set the number of sections (sides) on the circles to a low number. this was to diminish the number of polygons generated in the branch.



Again I used cross-sectional modeling to create the tree trunk. It is almost exactly the same as the branches except the cross sections are different, and it took a little more time to tweak. I set the cross sectional polygons to a low setting so that the number of polygons in the trunk would be low and manageable.



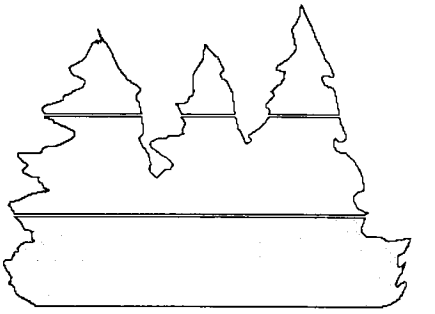


The 3D Spruce:

One of the three kinds of trees is the 3D spruce which was fun to build and successful in appearance. I digitized a picture of a spruce and created a polygonal outline for one side of the tree. After projecting the picture onto the polygon, I created several duplicates rotating each about 10 or 20 degrees until I had assembled one quarter of the tree. Using the mirror option twice, I doubled the tree to one-half and then mirrored the half to finish the entire tree. I grouped all of the polygons together as I did with all of the trees. As I duplicated and placed them into the world, I stretched and scaled them so they would all appear to be different ages and sizes.

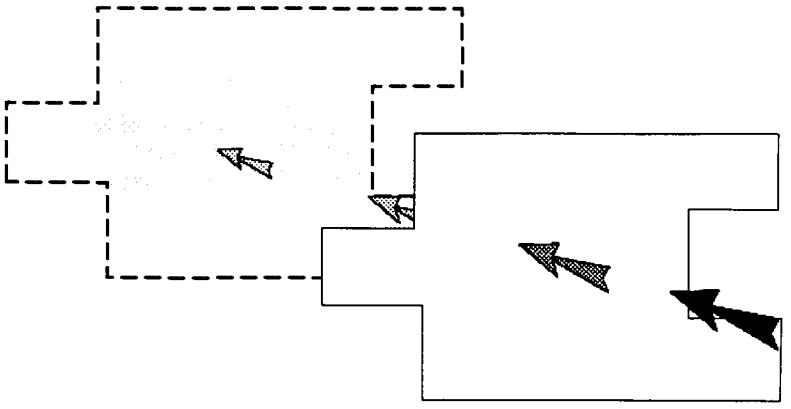
The 2D Spruce:

The 2D spruce was built just like a theatrical prop. I took a picture in Topas of a clump of trees. Using the picture, I created 5 polygons that together outlined the clump of trees. After projecting the appropriate portion of the picture onto each polygon, I grouped them all together. Unlike the 3D spruce, This clump looks considerably less refined as well as having fewer polygons. I used these trees in places that would be far enough away from the camera so that you wouldn't notice that they were 2D. This allowed me to create a full looking forest that had depth without consuming all of the memory on the trees.

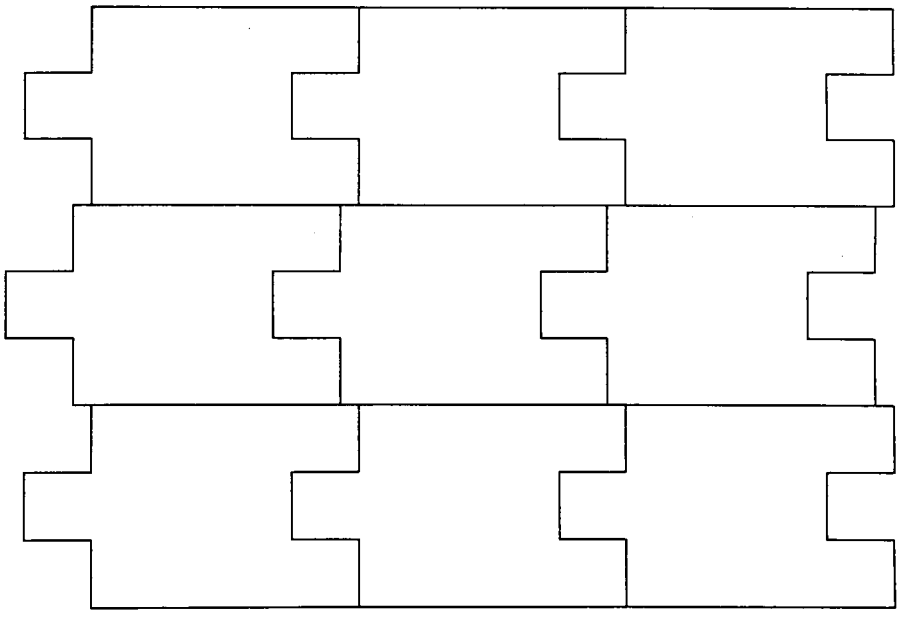


The Wall:

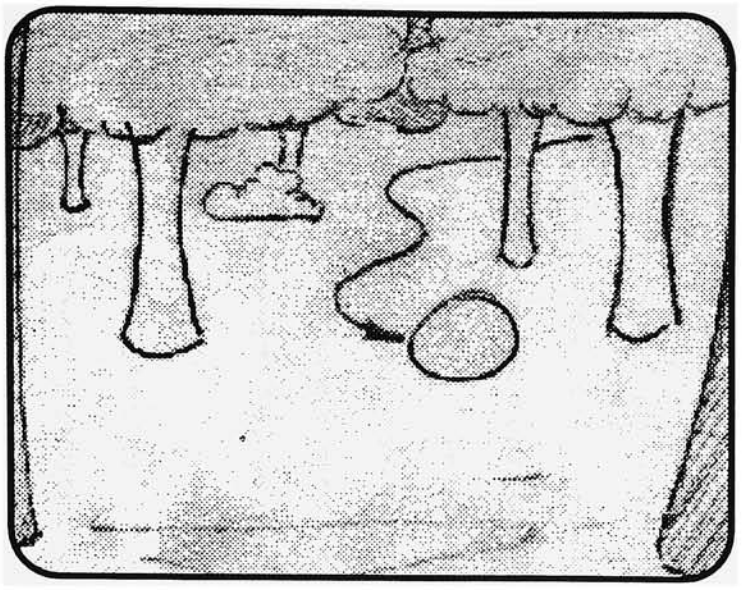
The wall is a series of interlocking puzzle pieces that all have the same seamless picture projected onto them.



I created one piece, and duplicated it 15 or 20 times to create a section of wall.



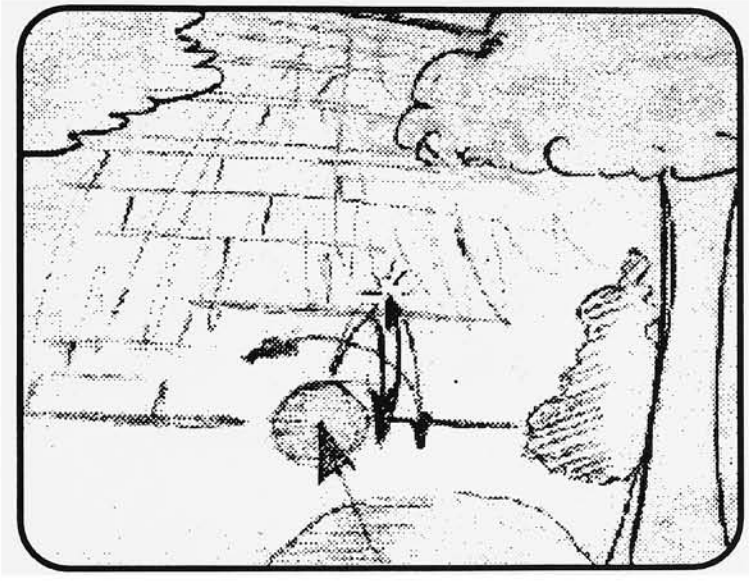
Then I duplicated the section to amass an entire wall. This allowed me to hide unseen portions of the wall in the animation process. By doing this, I was able to conserve memory and minimize rendering time.



1

A small ball playfully comes out of the forest.

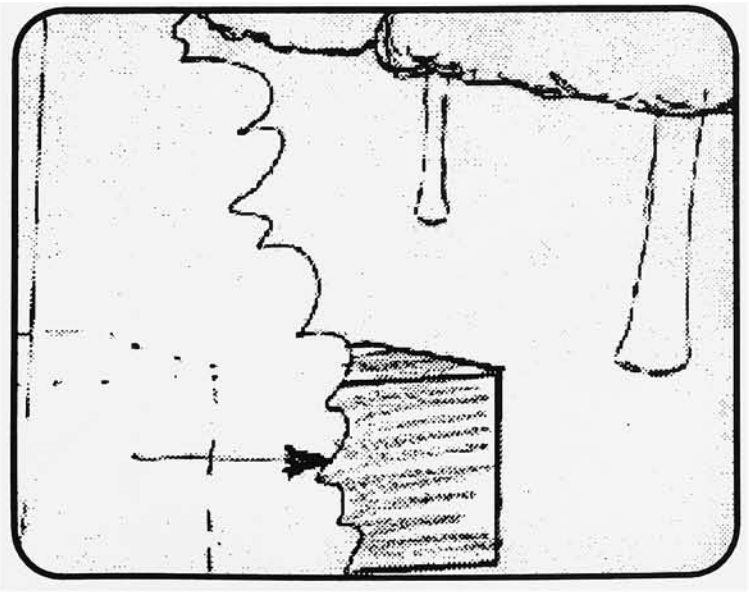
Medium/Long Shot–No movement.



2

As the ball bounces on it's way it finds a great wall that divides the forest. The small ball tries to jump over the top of the wall.

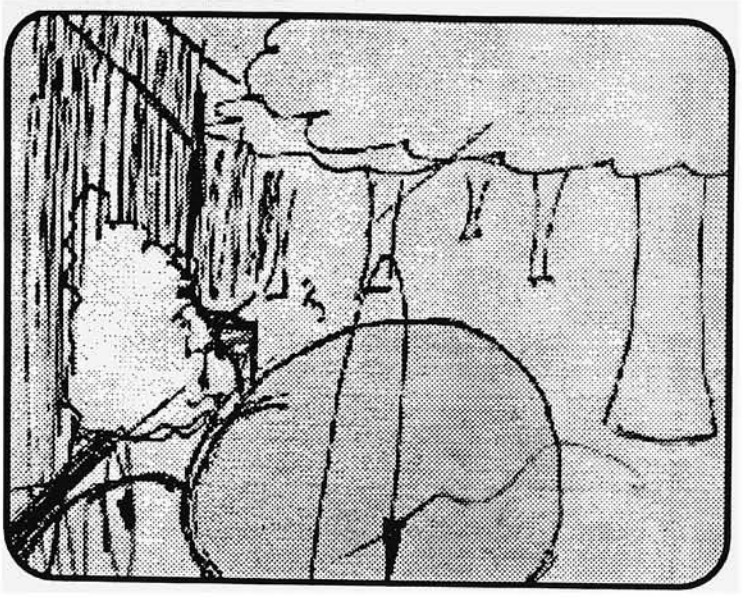
Medium shot–Camera Moves with ball, keeping ball between wall and camera.



3

A cube, hiding in a nearby bush, spies upon the curious ball.

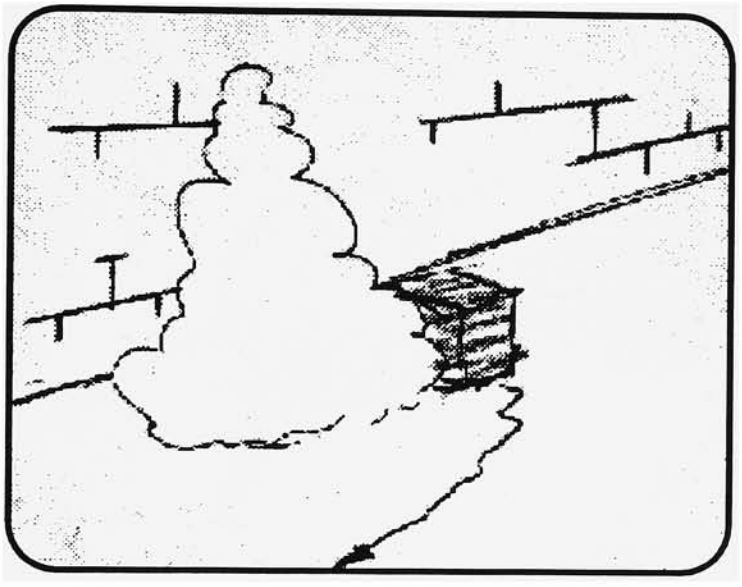
Medium/Long shot–No movement.



4

The puzzled cube, watches the ball bouncing at the base of the wall.

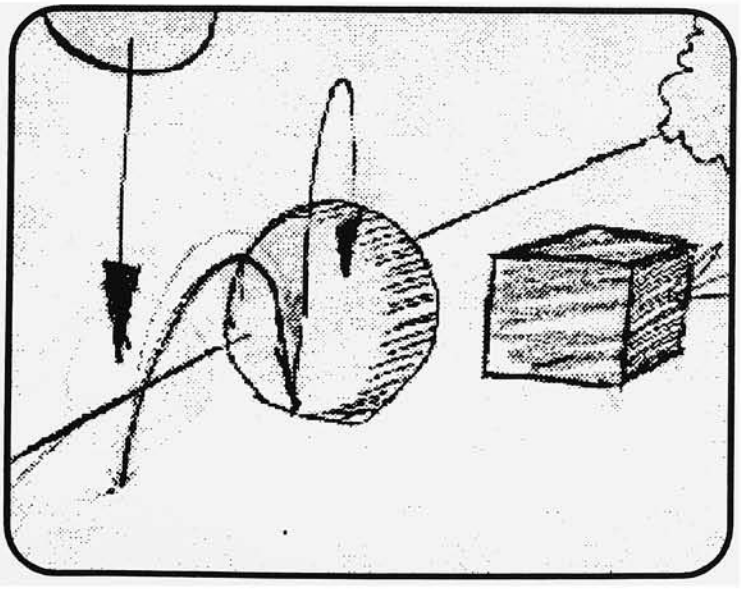
Long shot–No movement.



5

Wanting to know what the ball is doing, the cube decides to approach the ball.

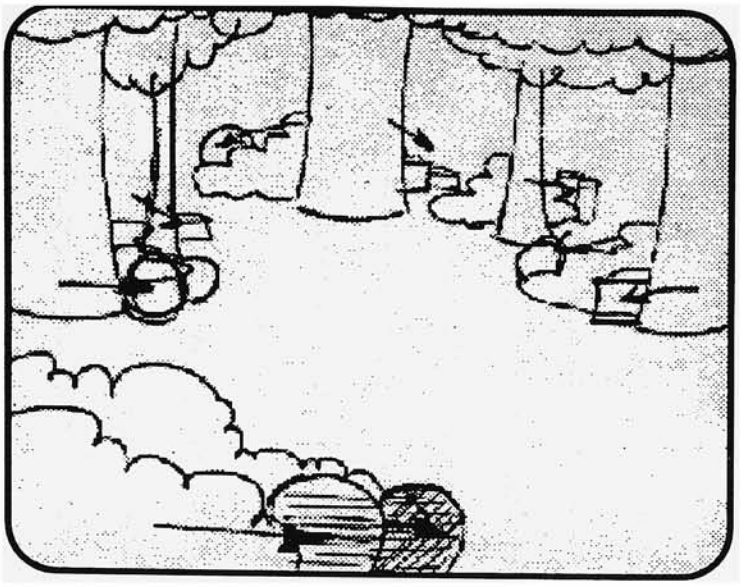
Medium shot–Camera follows Cube as it moves to bouncing ball.



6

As the cube moves in, the ball continues to bounce.

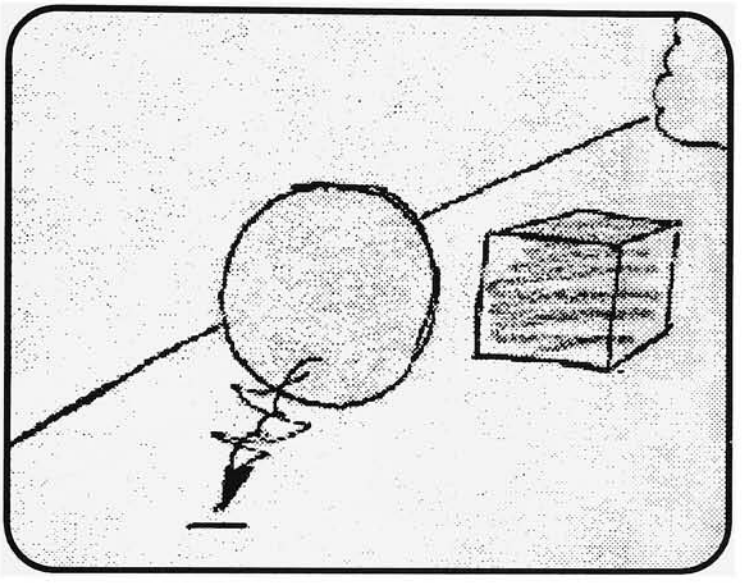
Medium shot–Camera follows Cube as it comes to rest next to the bouncing ball.



7

Other shapes in the forest see the two at the wall, and look on with curiosity.

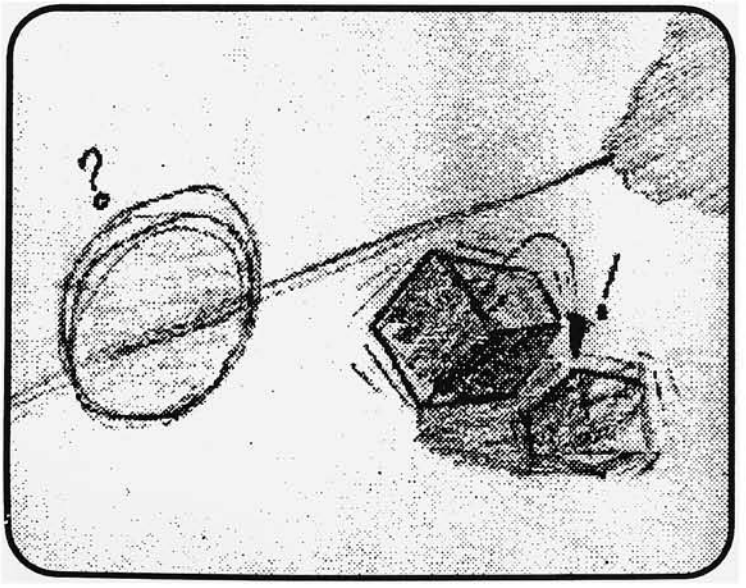
Long Shot–No movement.



8

The ball stops bouncing, and hesitantly backs off to a safe distance.

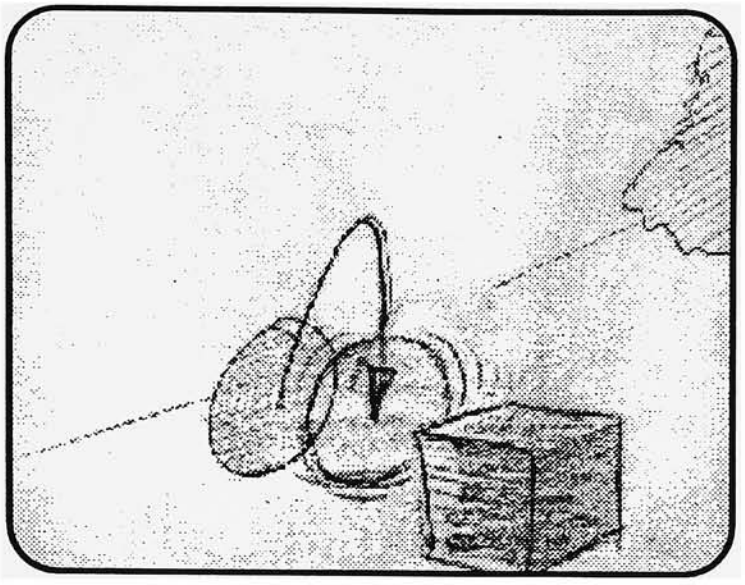
Medium Shot–No movement.



9

The cube starts to bounce around, mimicking the ball, as though to ask what it was doing.

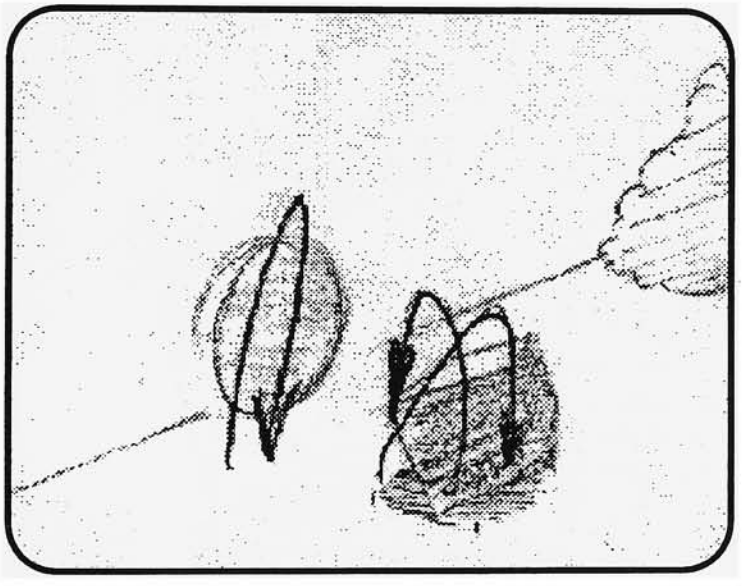
Medium Shot–No movement.



10

The ball starts to bounce around, and points to the top of the wall.

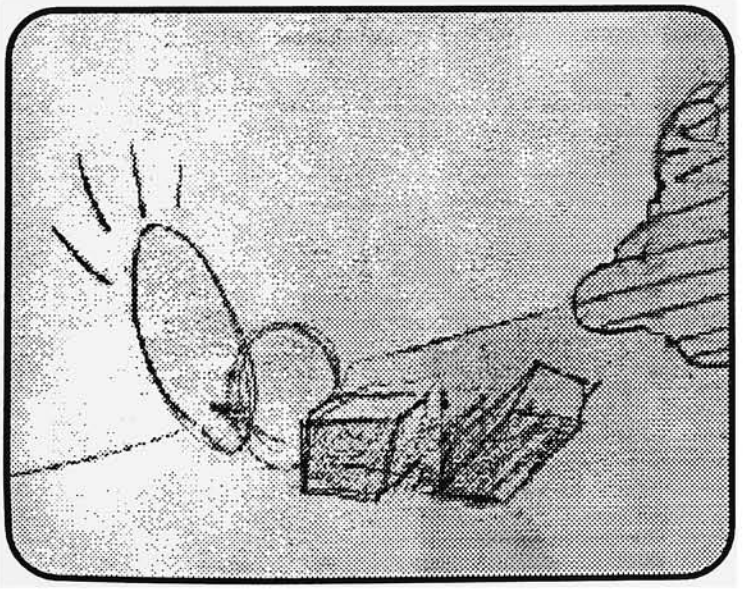
Medium Shot–No movement.



11

The two shapes start jumping and bouncing together.

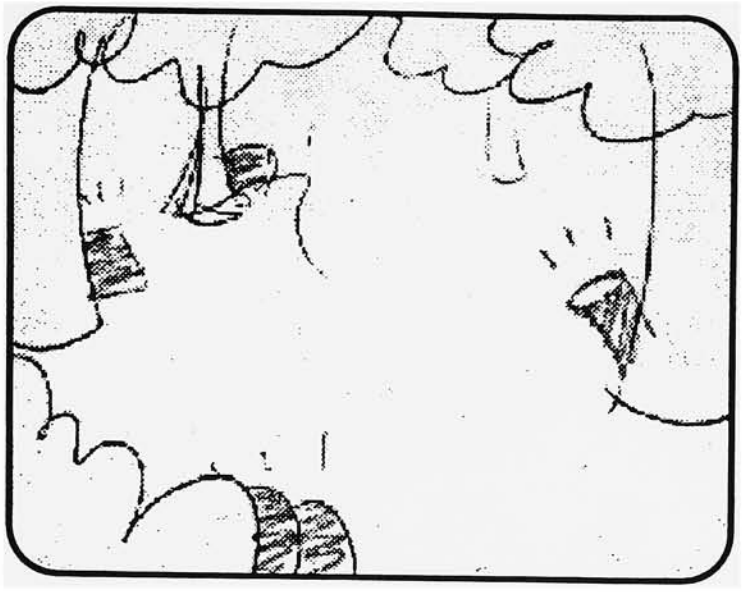
Medium Shot–No movement.



12

They accidently bump into each other.

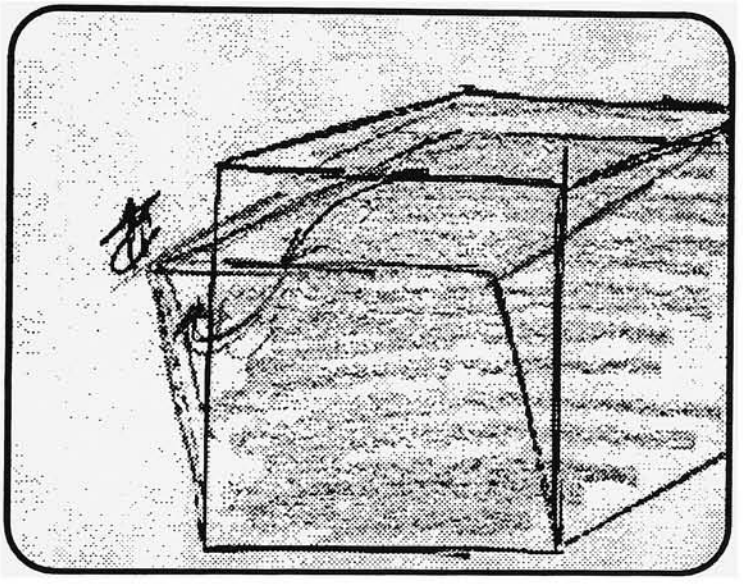
Medium Shot–No movement.



13

The shapes in the forest perk up when they see the two working together.

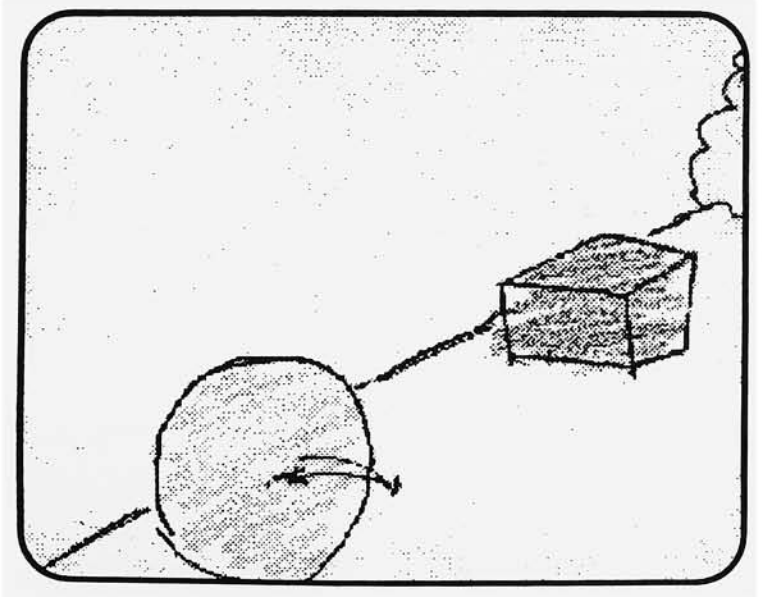
Long Shot–No movement.



14

The cube stops jumping, and motions to the ball to bounce up on his back so he can get more height.

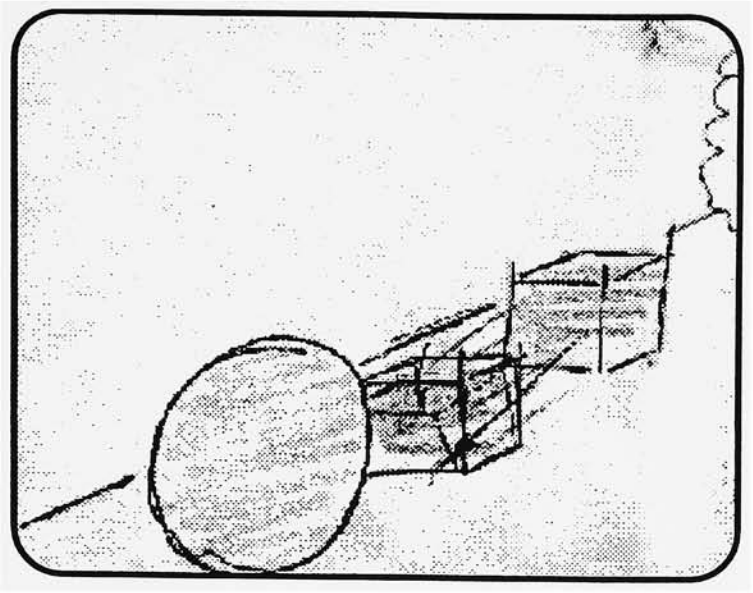
Close Shot–Camera slowly revolves around the two shapes pulling back to a Medium shot (until shot 18).



15

The ball stops bouncing, and hesitates.

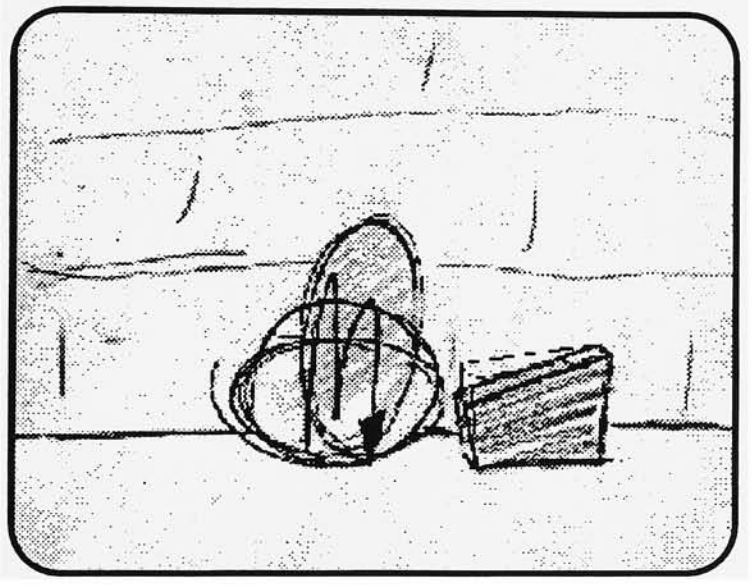
Continuation of camera motion



16

The cube, now tucked down low, scoots forward towards the ball inviting it to jump on top.

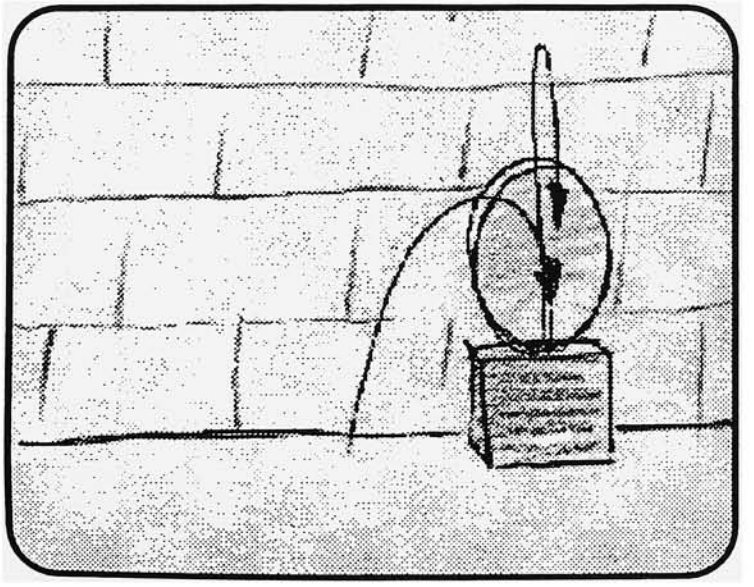
Continuation of camera motion



17

The ball starts bouncing towards the cube.

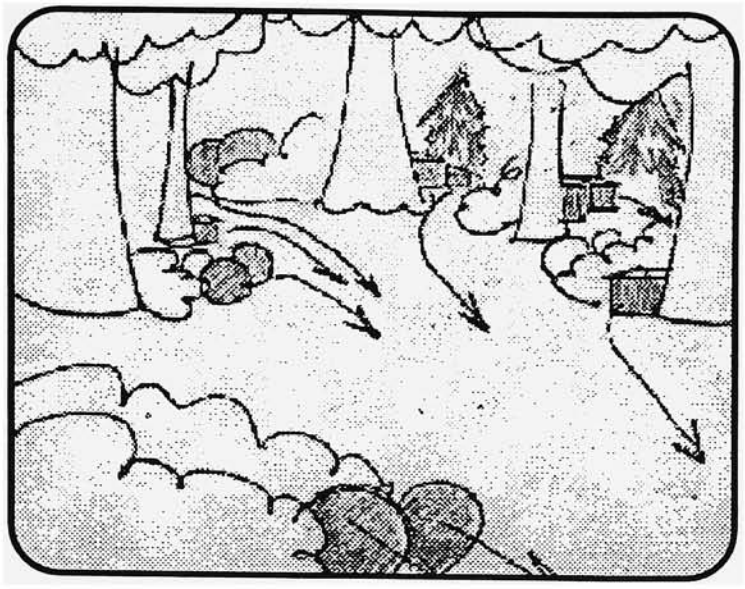
Continuation of camera motion



18

and jumps up onto it's back.

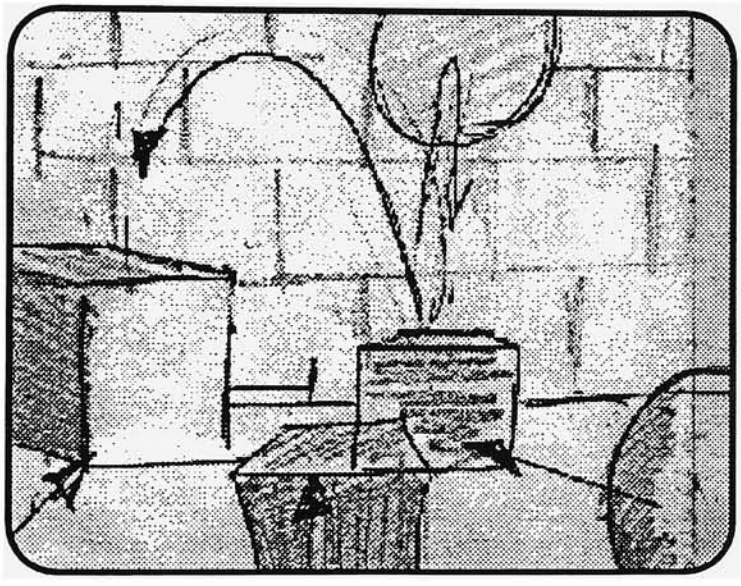
Medium shot–camera comes to rest.



19

The shapes in the forest are so excited with the two working together, that they all rush to join in.

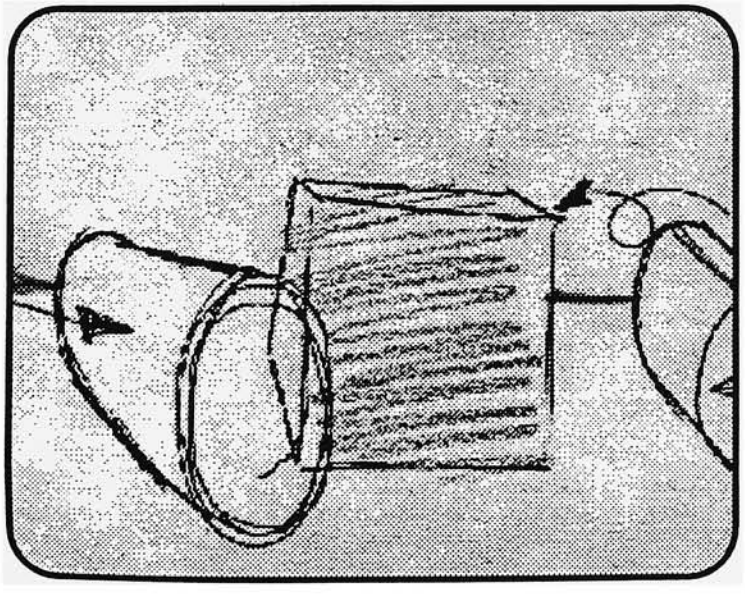
Long shot–No movement.



20

As the shapes gather around the two, The ball jumps over to the top of another cube.

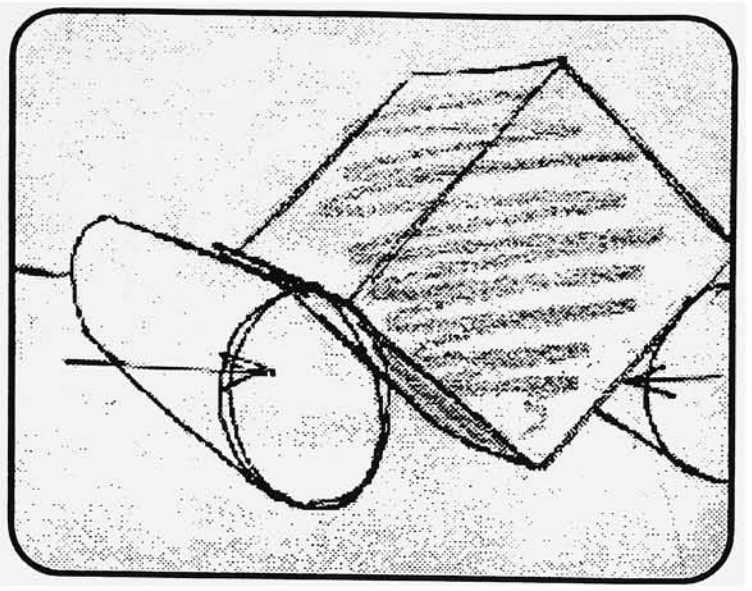
Medium/Long shot–Camera floats up and dollies in to medium shot on bouncing ball.



21

A cube is watching the ball when two cylinders roll up from in front and behind.

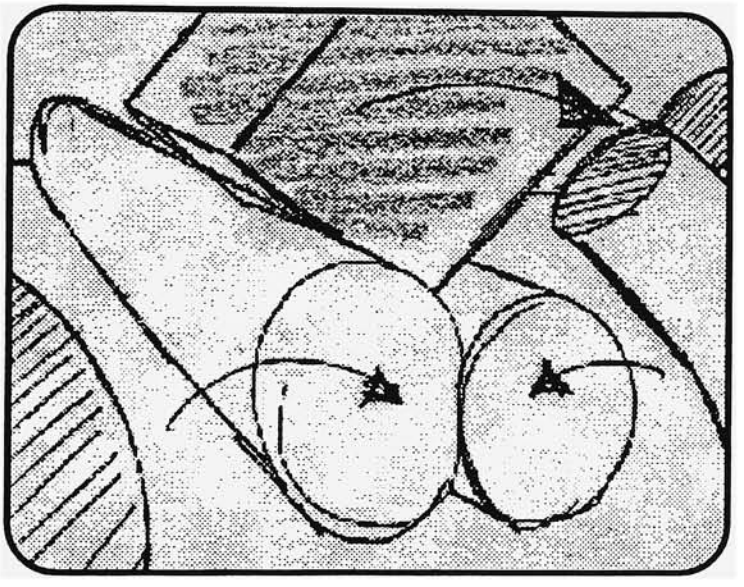
Medium shot–No motion.



22

They pick up the cube,

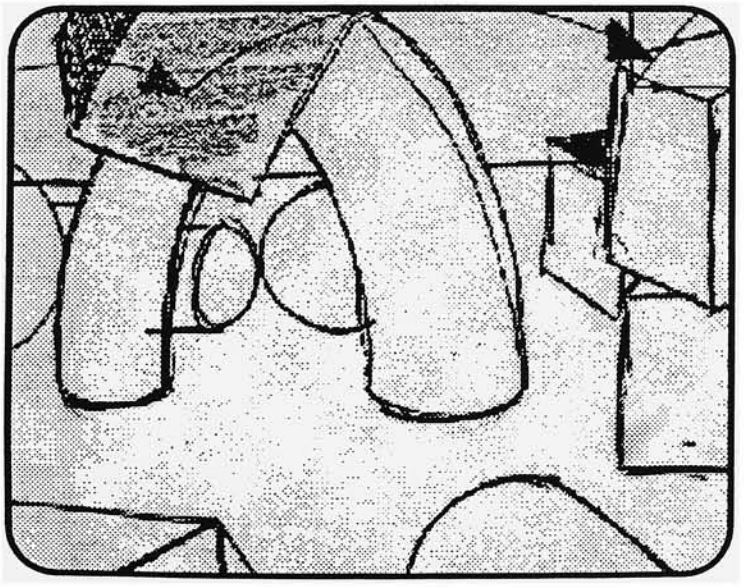
Medium shot–Camera pans with the cube,.



23

and roll it towards the group.

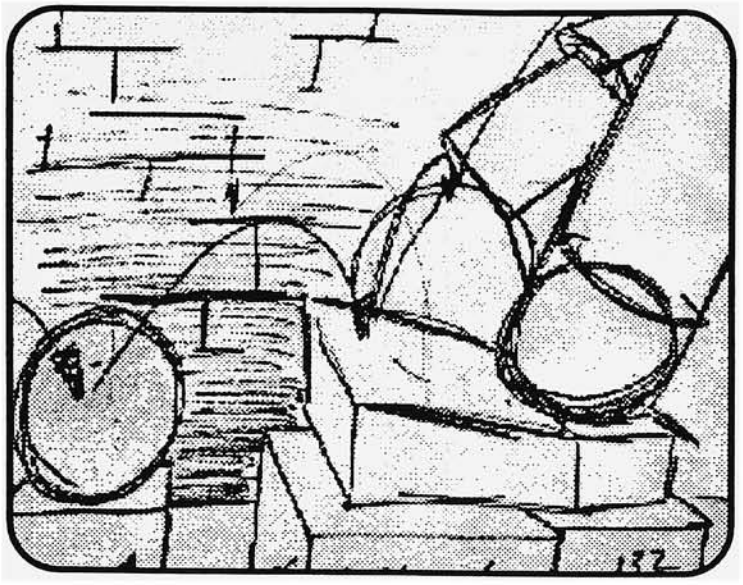
Medium shot–Camera pans with the cube.



24

Cylinders take the cube, and pass it along to a resting place on top of another cube.

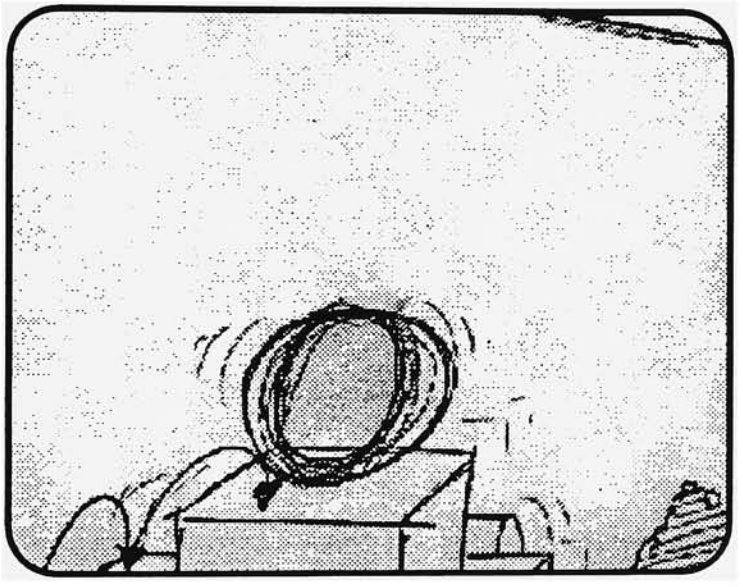
Medium shot–Camera pans with the cube.



25

As the shapes pile higher and higher, the ball bounces from shape to shape,

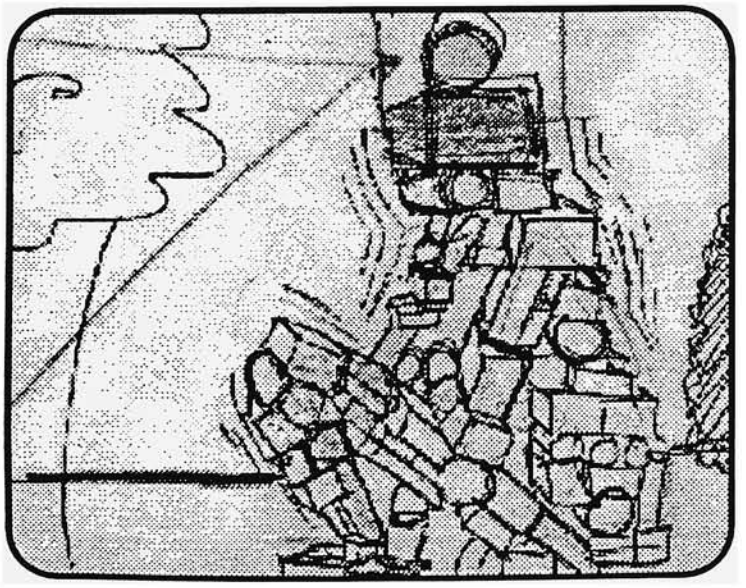
Medium shot–Camera pans with the ball.



26

moving towards the top of the pile.

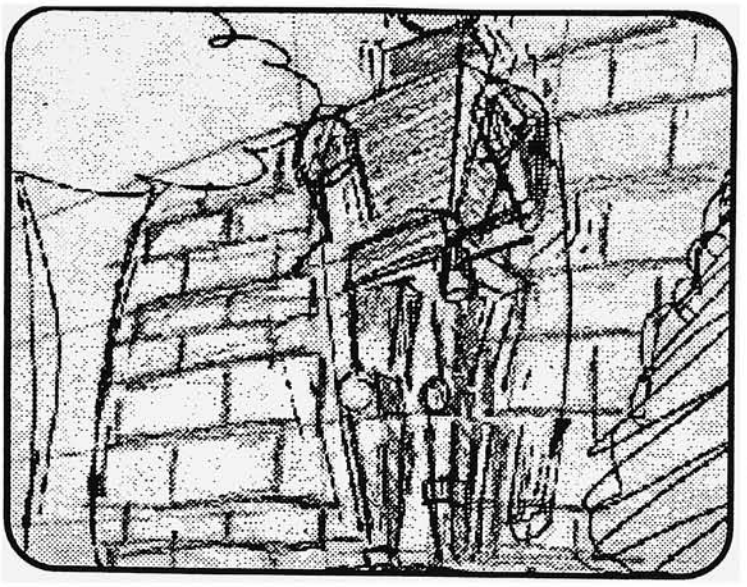
Medium shot–Camera pans with the ball coming to rest at the top of pile.



27

At the top of the pile, the ball pauses while the rest of the shapes hold their places. The mass shakes and shifts for a moment,

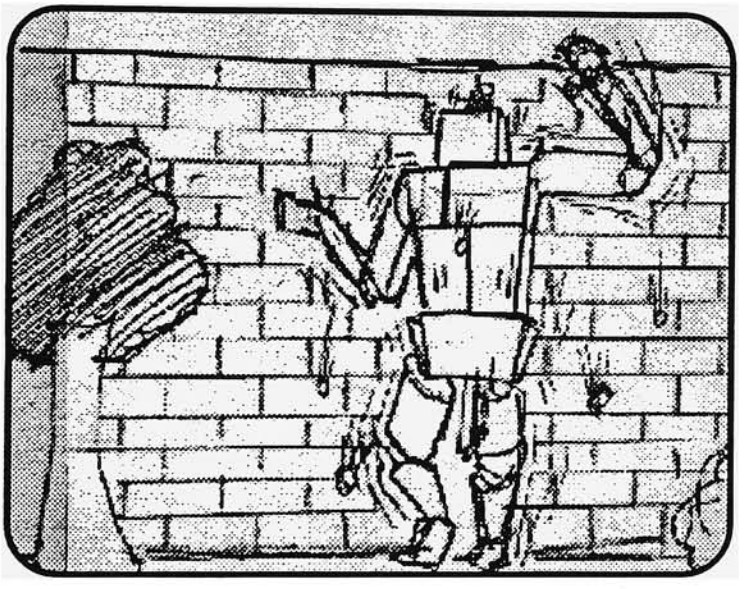
Long shot–Starting still, Dolling in to a Medium/long shot of standing shape (shot 28).



28

before it rises as one big shape.

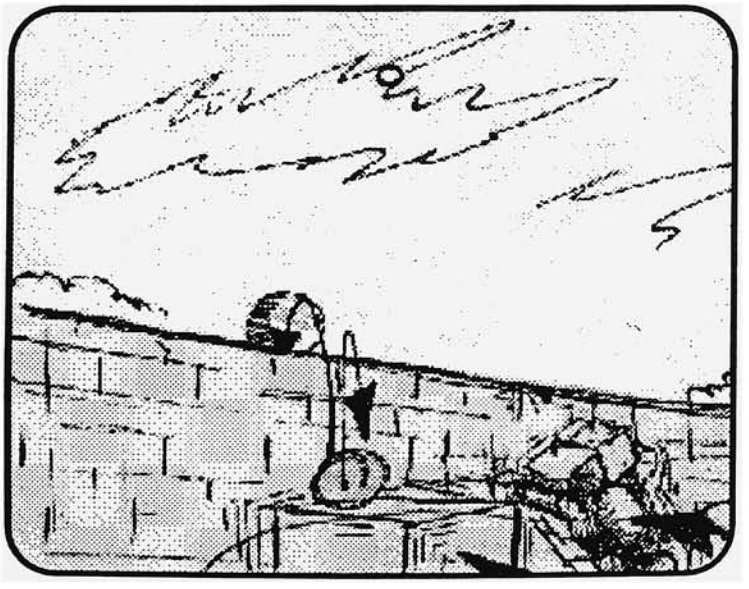
Continuation of camera motion



29

The massive shape starts to fall apart as it moves towards the wall.

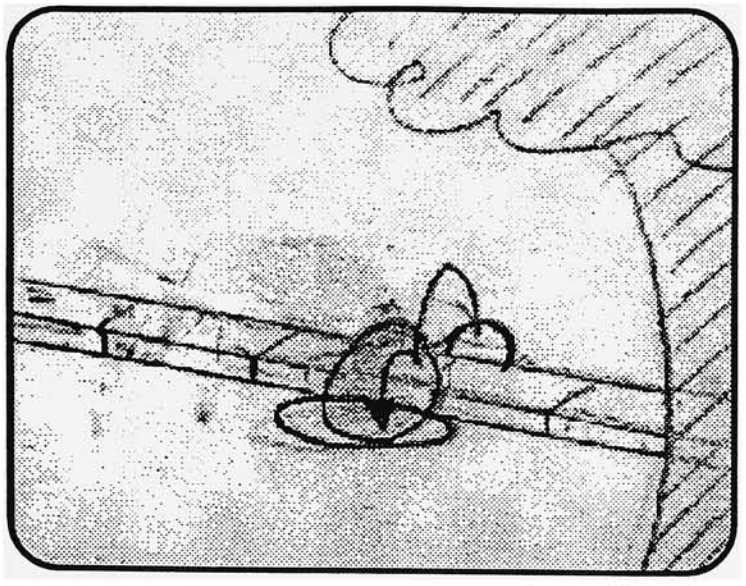
Continuation of camera motion



30

The small ball leaps over to the top of the wall, before the massive shape collapses to the ground.

Close shot–Camera loosely pans with ball as shape moves around.



31

At the top of the wall, the small ball bounces around with joy over it's success.

Medium shot–No movement.

32

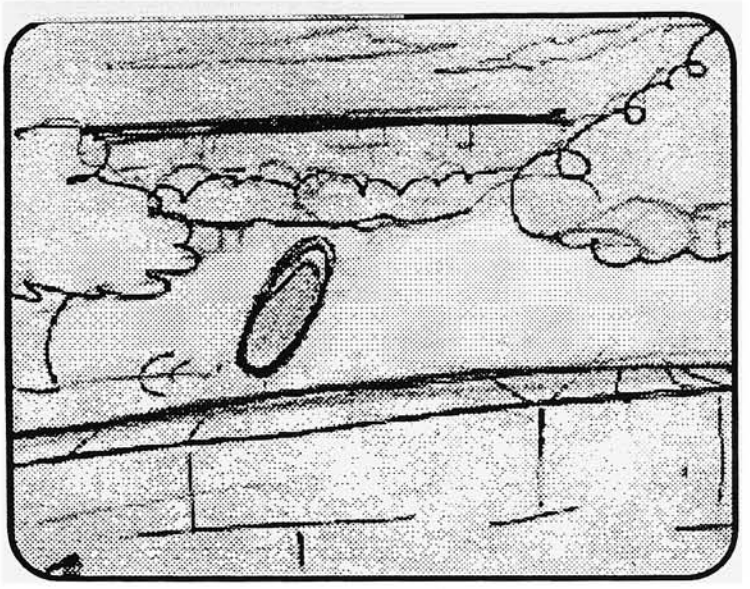
Settling down, the ball looks around at it's new world.

Medium/Close shot–Camera slowly revolves around ball to reveal wall (shot 34)

33

The ball jumps with a horrible shock,

Continuation of camera motion



34

as it sees another wall off in the distance.

Medium shot–Camera slowly dollies back to very long shot.

The End
